



# Overview of JANSI Annual Conference 2026

- Time & Date: March 17, 2026 (Tue), 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.**

As Chairman of the Japan Nuclear Safety Institute, it is my great honor to welcome all of you to the 2026 Annual Conference. This year marks the 13th JANSI Annual Conference. As you are likely aware, we hold this conference in March each year to reflect on the lessons learned from the Great East Japan Earthquake and nuclear accident at Fukushima Daiichi.

Today, many participants are joining us 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 representatives from overseas organizations. Today we have 100 people attending here at the venue and 400 participating remotely. We sincerely appreciate your participation.

I like to begin these opening remarks with an overview of the industry and recent activities. Today 15 reactors at 9 sites have returned to operational service. It is important to note that all stations that have returned to service have done so without a significant event in spite of the proficiency challenges inherent in a prolonged shutdown. Notably earlier this year TEPCO restarted Kashiwazaki Kariwa Unit 6 and the unit is now in operational status.

On the other hand, the industry and Chubu Electric Power Company suffered a serious setback when misconduct in the calculation of design basis information associated with the seismic design of the Hamaoka Nuclear Power Station was uncovered. This is a serious issue and Chubu Electric Power Company, and the industry are committed to learn the lessons from the misconduct and take appropriate actions to prevent recurrence.

We feel this is an appropriate time for the industry to look back on the progress at JANSI and industry and provide a view into the future. As I look back over just the last year, JANSI has worked closely with WANO<sup>®</sup> and the Japanese operators to establish a program of

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performance monitoring and continuous improvement for the operating stations, advanced the quality of peer reviews and completed the necessary field work to renew WANO equivalency for our peer review program, and established forums to improve industrial safety and collective radiation exposure, two areas in which the Japanese operators lag global performance.

The theme of this year's Annual Conference is Risk Management with a focus on frontline field management of risk. Especially, how we instill expectations in the frontline fields personnel and supervision is important common challenge across nuclear industry.

I like to think of the 3 elements of risk management: recognition of risk, reduction of risk to the degree practical, and management of the residual risk. This simple model of risk is foundational to everything we do and you will hear about this today.

I hope today's conference will contribute to the nuclear industry making further efforts instill a risk management mindset in the field.

JANSI has made significant progress as a self-regulatory organization due, in large measure, to your support and engagement. We will continue to make efforts for further improvement and reform. I believe the industry's commitment to autonomous safety improvement and effective regulation by the NRA will generate synergy to enhance safety of nuclear operators.

Keeping the motto "Excellence Starts at Home" in mind, we 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.

※ : WANO formally recognizes that the peer reviews conducted by JANSI are at the same level as WANO peer reviews in terms of evaluation methodology, processes, and quality, and that they can be used as a substitute for WANO peer reviews.

## Guest Speech



Commissioner,  
Nuclear Regulation Authority

**Tomoyuki Sugiyama**

I would like to begin by looking back on the state of nuclear power generation over the past year and then talk about my expectations for JANSI. Although I considered starting this speech on a positive note, I will begin with a serious topic that must be addressed.

As you all know, the design basis ground motion used in the requirement conformance review for Chubu Electric Power Company's Hamaoka Nuclear Power Station was developed fraudulently. This matter has significantly undermined public trust in nuclear power. The NRA has been criticized for failing to identify the falsification during the reviews, and there have been calls for stronger monitoring and cross-checking in future reviews. Although discussions on measures to prevent such incidents have not yet begun, I personally believe that conducting reviews under the assumption that applications contain falsehoods is not realistic. Effective reviews are only possible when both the licensee and the regulatory authority recognize each other's technical capabilities and integrity and build a relationship of mutual trust.

The NRA, however, must implement some preventive measures. On the other hand, I believe operators must voluntarily implement precautionary measures, both individually and



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collectively, rather than waiting for instructions from the NRA. One of JANSI's primary activities is peer review. It would be a great reassurance if JANSI were able to conduct reviews that also cover the implementation status of quality management related to the preparation of review documents.

JANSI also needs to further promote the fostering of a sound safety culture, which is one of the ten important success factors in its 10-Year Strategy. Although fifteen years have passed since the Fukushima Daiichi Nuclear Power Station accident, efforts to recover public trust are still ongoing. I believe progress can only be made if the regulator, operators, and supporting organizations such as JANSI each fulfill their respective responsibilities.

From the perspective of nuclear regulation, there are four topics that can be said to indicate progress in our country's nuclear energy sector. Turning to plant restarts, this year's focus was mainly on BWRs. Onagawa Unit 2 restarted in late 2024 and Shimane Unit 2 in early this year, and both have been operating without major troubles. Earlier this year, Kashiwazaki-Kariwa Unit 6 also returned to operation. The issues those arose during its restart were not unexpected, and the key point is that they were successfully addressed. For BWRs, conformance reviews of Shimane Unit 3 and Ohma are ongoing and can be described as on track. While no PWRs restarted last year, Tomari Unit 3 obtained permission to modify its license in July 2025 after a long review period. For Tomari Unit 3 and several other plants, review periods have been extended mainly because natural hazard assessments required considerable time. Against this background, the NRA is considering improving the review process by separating natural hazard assessments from plant reviews.

The next topic is the Long-term Facility Management Plan. Under this new system, this System came into full-scale effect in June 2025, assessment and management plans covering up to ten years must be submitted and approved for plants that have been in operation for thirty years or more. This is not a simple revision of the old system; new assessment criteria have been added and it has been upgraded into an enforceable approval scheme. Above all, this system represents a shared commitment by operators and the NRA to ensure plant safety even during long-term operation extending beyond sixty years.

Another topic is the demonstration tests for online maintenance, which were conducted at Ikata Unit 3 and Ohi Unit 3. I believe these tests provided valuable insights from various perspectives. Online maintenance, which had been permitted only in unavoidable cases, is now expected to contribute to overall safety improvements.

Finally, regarding innovative or replacement reactors, I believe that some specification-based requirements should be intentionally maintained in light of the lessons learned from the Fukushima Daiichi accident, although further in-depth discussion will be necessary.

In closing, I would like to reiterate my expectations for JANSI. First, conduct peer reviews rigorously so that they function as effective pressure on operators, and expand their scope as necessary. Please aim to identify issues before the NRA Secretariat does and reduce regulatory inspection findings to zero. Second, extract and highlight good practices in operator initiatives and actively commend them to enhance motivation.

Third, strengthen communication with the NRA. While our perspectives differ due to our respective roles, we ultimately share the same goal, and I hope to explore forms of collaboration that benefit both sides.

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Director, Office for Nuclear Safety Improvement, Electricity and Gas Industry Department, Agency for Natural Resources and Energy,  
Ministry of Economy, Trade and Industry

### Seiichi Miyashita

On last week's March 11, we marked the 15th anniversary of the Great East Japan Earthquake and Tokyo Electric Power Company's (TEPCO) Fukushima Daiichi Nuclear Power Plant accident. We must strive to always prioritize safety above all, taking to heart the experiences, reflections, and lessons learned from the accident and never forgetting the profound regret of succumbing to the "Safety Myth" revolving around nuclear power plants (NPPs) and failing to prevent the tragedy. Furthermore, Recovery of Fukushima area is the most critical issue for the Japanese government, and as a person involved in nuclear power, I am committed to steadfastly working on this effort until the job is done.

At the same time, energy landscape surrounding Japan is undergoing a dynamic change. Advances in digital and green transformation are expected to increase electricity demand, while data centers that are thought to expand with the advent of generative AI, as well as emerging growth industries—such as materials industries including chemicals, steel, and semiconductors, which are important strategic materials—require decarbonized energy sources that are stable in terms of both cost and supply. On the global arena, actions are being taken not only to secure renewable energy but also to utilize existing NPPs and invest more in the construction of next-generation innovative reactors. In light of this situation, Japan's 7th Strategic Energy Plan, approved by Cabinet last year, presents a policy to maximize the utilization of nuclear power alongside renewable energy. However, escalating instability in the Middle East is a significant concern for the stable supply of energy worldwide. Expectations for nuclear energy is accordingly set to rise further, and we have the responsibility to meet them. The first among that responsibility is to ensure safety, and the second is, based on that foundation of safety, the effort to pursue even higher levels of safety. The Ministry of Economy, Trade and Industry plans to be at the forefront of efforts to restart NPPs—which had their compliance with the new regulatory requirements approved by the Nuclear Regulation Authority (NRA)—while obtaining the understanding and cooperation of the plants' host local government and other relevant parties. We expect operators to work in a "Safety-First" manner.

The current fiscal year has seen a series of important progress in nuclear power policies. The Restart of TEPCO's Kashiwazaki-Kariwa Nuclear Power Plant Unit 6 in February, 2026 is extremely significant from the aspects of stabilizing power supply and demand, keeping electricity rates down, and ensuring decarbonized power sources; it marks a major milestone for the energy policy as a whole. Additionally, last July, Hokkaido Electric Power's Tomari Power Plant Unit 3 obtained permission to modify its establishment license, marking progress in the restart of plants in eastern Japan subsequent to last year's Onagawa Unit 2. On another note, there have been advancements related to next-generation innovative reactors: one example is that Kansai Electric Power announced last July—and started in November—its restart of voluntary on-site surveys to consider installing a successor reactor at Mihama Power Plant. The government, for its part, seeks to carefully explain the necessity of replacing reactors and establish a business environment to promote investments.

With that being said, this January's discovery of misconduct related to the setting of design basis ground motion at Chubu Electric Power's Hamaoka Nuclear Power Plant is an

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intolerable incident that significantly erodes public confidence in safety—the very foundation of nuclear energy use. We are taking this issue very seriously. The Agency for Natural Resources and Energy has demanded the operator to thoroughly investigate its cause and both consider and take effective recurrence prevention measures. Based on the results, we will take strict actions.

In moments like these, operators' voluntary safety enhancement efforts—efforts that go beyond just meeting regulatory requirements—take on greater importance. The Japan Nuclear Safety Institute (JANSI), which is at the core of such endeavors, serves a major role as a platform on which operators learn from one another, incorporate external knowledge, and scrutinize their own challenges in an objective fashion. Progress in endeavors to restart reactors boosts the significance of issues such as maintaining and enhancing safety culture in the operation phase, adapting to next-generation technologies, and incorporating international safety standards and knowledge, as well as securing and training human resources.

Public trust in the safety of NPPs does not rely on institutions or regulations alone. Rather, it is accumulated daily through a deep-seated safety culture in the field and the operators' continuous commitment to improvement. I would say that this epitomizes both the endeavors undertaken by JANSI and what the organization aims to become. It is my sincere hope that through this conference, participants will make new discoveries and gain a wealth of specific insights for their respective fields.



Chairperson,  
Federation of Electric Power Companies of Japan  
**Nozomu Mori**

First, the incident concerning the development of a design basis earthquake ground motion for the Hamaoka Nuclear Power Station, announced by Chubu Electric Power Company on January 5, 2026, was a serious matter that undermined the public trust placed in us in regards to the nuclear power operations. The industry sees this as a grave issue with the potential to shake the foundations of the business.

As you all are aware, a single inappropriate incident could undermine trust in the entire nuclear power industry. With that in mind, The Federation of Electric Power Companies of Japan (FEPC) has again asked all member companies and nuclear operators that they strive to conduct their businesses appropriately. We are informed that similar incidents were not identified when the Atomic Energy Association, known as ATENA, asked each operator to review their operations in response to this incident.

While closely monitoring progress in the investigation of the root cause and development of recurrence prevention measures at Chubu Electric Power, the FEPC will fulfill our responsibility as appropriate.

Nuclear operators will continue to operate their business with a “Safety-First” mindset and a high level of vigilance, and do its utmost to operate our business in a way to earn and maintain the trust of the public.

Next, I want to touch on the energy landscape both within Japan and abroad. Looking at the domestic and international energy landscape, the United States is advancing policies that prioritize its own national interests, and tensions with Russia and China are becoming more obvious. Because of uncertainty in the international order, the outlook for security frameworks, free trade, and decarbonization has become increasingly unclear.



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At the same time, it has become clear that each country is advancing its own initiatives to secure energy based on its own national interests as seen in Europe resuming the use of nuclear power and its investments in maintaining and further developing its LNG infrastructure, to support industrial development. Resource-poor Japan must also adopt a flexible approach in advancing initiatives to further develop the country, ensuring that we do not fall behind other nations.

Meanwhile, steady progress is being made domestically. For example, TEPCO Holdings started the reactor of the Kashiwazaki-Kariwa Nuclear Power Station Unit 6, a BWR plant in January this year and Hokkaido Electric Power Company's Tomari Nuclear Power Station Unit 3 has taken a large step forward last year in gaining local understanding for restart.

In the short-term, including this summer, the outlook for electricity supply and demand is expected to be tight. As electricity demand is projected to grow in the coming years, the restart of nuclear power plants will have a large positive contribution to our ability to secure stable electricity supply and realize decarbonization.

I hope each company continue to pursue a higher level of safety and work carefully to gain the understanding of the siting community.

It goes without saying that the securing safety is a premise in utilizing nuclear power as much as possible. We must aim to achieve and maintain the world's highest level of safety and reliability.

I have witnessed JANSI promote improvement through peer review assessments and support, while leading operator safety improvement initiatives as the nuclear industry's self-regulatory organization. We ask that you continue your work to achieve the JANSI vision of "leading operators from an independent standpoint as the authority of world's excellence".

In closing, learning about domestic and international initiatives, and other industries through discussions at this conference is a very valuable opportunity for further improving nuclear safety. We, as nuclear operators, are committed to continuing in our journey of improving safety by using the learnings and findings from today.

## Activity Report



### JANSI's Activities over the past years and future initiatives

President and CEO, JANSI

**Isao Kato**

On 2:46 p.m., March 11, 2011, a massive magnitude 9.0 earthquake occurred 130 km east-southeast off the coast of Oshika Peninsula, Miyagi Prefecture. Four NPPs—Onagawa, Fukushima Daiichi [1F], Fukushima Daini, and Tokai No. 2 on the Pacific coast were struck by strong ground motion and tsunamis, leading to a severe accident at 1F. Differences in each plant's preparedness against tsunami risks significantly impacted the earthquake's and tsunami's outcome. I would like to review these four plants, based on whether their reactor's decay heat removal function was maintained.

Onagawa NPP, located nearest to the epicenter, succeeded in bringing its three reactors to cold shutdown. This is because from the time of its construction, the plant gave full consideration to past tsunamis that struck the local Sanriku area and constructed a site elevation of approximately 15 m, did not locate reactor cooling-related critical equipment on the shoreline, and placed seawater pumps in pits excavated from the 15m site level instead.

At 1F's Units 1–5, tsunami-induced flooding caused a station blackout, triggering a loss of decay heat removal functions. Units 1–3 that were online at the time consequently experienced core damage.

At Fukushima Daini, the tsunami damaged seawater pumps and motors, rendered heat removal from the reactor unavailable. However, with temporary cable routing and other all-out recovery activities, the seawater pump-based decay heat removal function was restored, and the plant thereby managed to bring all units to cold shutdown without reaching core damage.

Tokai No. 2 was at rated thermal power when the earthquake struck. Three emergency diesel generators started up automatically to secure necessary power sources, but one generator was subsequently impacted by the tsunamis and became unavailable. However, a protective barrier that had been under construction as a tsunami countermeasure since before the earthquake shielded the remaining components, which allowed for bringing the reactor to cold shutdown. Constructions of the barrier had been underway based on the Japan Atomic Power Company's executive decision to protect seawater pumps in response to Ibaraki Prefecture's 2007 tsunami height reassessment.

All four plants were in compliance with legislative regulations, but their response to tsunami differed. What protected the plants from the ferocity of nature—one that exceeded our imaginations—was a stance to improve continuously by learning from the past as well as other operators, and a resilient capacity to recover under severe circumstances. While nuclear operators properly respond to incidents that have already occurred—including actions against non-conformity—they must continue to improve their responses to events that have not occurred yet, as well as to anticipated risks.

JANSI was founded 15 years ago in 2012 as an independent organization leading nuclear operators, under the recognition that preventing similar accidents require self-regulation—one that involves making continued efforts to voluntarily pursue the world's highest level of safety by going beyond regulatory frameworks and consistently learning from the latest knowledge and other utilities' good practices.

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Self-regulation has a long history in nuclear industries worldwide, going back to the accident at Three Mile Island Nuclear Power Plant Unit 2 in 1979, which led to the establishment of the U.S. Institute of Nuclear Power Operations (INPO). In 1986, a severe accident occurred at the former Soviet Union's Chernobyl Nuclear Power Plant, spreading radioactive materials to eastern and northern European countries. This accident resulted in the founding of the World Association of Nuclear Operators (WANO) in 1989. In Japan, the 1999 criticality accident at the Tokai-mura nuclear fuel processing facility prompted the establishment of NS Net for the purpose of sharing nuclear safety culture. JANSI was established in 2012 as an evolution of the 2005-launched Japan Nuclear Technology Institute (JANTI), following the 1F accident. Thereafter, the Nuclear Risk Research Center (NRRC) was established in 2014, and the Atomic Energy Association (ATENA) was launched in 2018. Partnering with these organizations, JANSI seeks to continuously improve the safety enhancement efforts of NPPs.

JANSI began its activities based on the mission to pursue the world's highest level of safety, but its path was not without its challenges. A 2015 gap assessment conducted under an agreement with INPO resulted in harsh feedback, and in response to it, JANSI made reforms that included devising its expected end state to realize self-regulation, reinforcing its own authority, and rebuilding its governance. Today, the organization has an independent standpoint and strong leadership, and undertakes its activities while maintaining a cycle of excellence establishment, assessment, and support.

One of JANSI's major endeavors is the effective and efficient implementation of high-quality peer reviews as the evaluation. In terms of support, the organization (1) routinely monitors plant PMCM (Performance Monitoring and Continuous Monitoring), (2) supports safety culture development, (3) devises guidelines on organizational effectiveness, (4) collects/analyzes international and domestic operating experience and presents countermeasures, (5) enhances leadership training/seminars, and (6) undertakes activities to apply the knowledge of restarted plants at the following units.

Before the 1F accident, 54 reactors among Japan's NPPs were in operation and accounting for 30% of the country's power demand. With the effort of nuclear operators and 1F affiliated companies—alongside the but all of them shut down following the accident. understanding of local communities and support from the government—15 units are now back online, and the rate of unplanned reactor shutdowns has become less frequent. This is likely a result of peer review-based evaluations, restart support, and other efforts effectively functioning in addition to performance enhancement undertakings made by nuclear power utilities.

Amid such trends, JANSI set its 10-Year Strategy jointly with nuclear operators in 2019, and subsequently updated it in 2024 to reflect changes in the environment. The future vision presented by the new strategy aims to achieve and maintain the world's highest level of safety and reliability. While plant performance has improved steadily since JANSI's peer reviews started in 2017, we need to accelerate its current pace of improvement to attain its goal of having at least half of all plants achieve the highest rating by 2033. Moreover, to have all the indices of NPPs in Japan enter the world's top quartile by 2033, more improvement needs to be made on radiation dose levels and industrial accidents—the two-industry safety-related indices. This prompted the establishment of the radiological protection review meeting and the industrial safety review meeting in 2025. Improvement efforts have been advanced accordingly.



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The misconduct in Hamaoka NPP's review on compliance with new regulatory requirements is a serious matter that threatens the foundation of the nuclear industry's voluntary safety enhancement culture. JANSI will take every possible step to support Chubu Electric Power's recurrence prevention measures, promptly incorporate the lessons learned from the incident into JANSI's activities, and share them with operators across Japan.

Since the 1F accident, government regulations have been tightened, safety-related equipment has been added and reinforced, and emergency training has been increased. Still, it is also a fact that nuclear operators in Japan have lost many operating experience opportunities during this period. To make up for the lost 15-years' worth of operating experience and to accelerate performance enhancement, we need to improve three types of competence. The first is fundamentals—reinforcing practical learning rather than mere knowledge. Sharing operating experience of the entire industry and learning from one another can help compensating for the experience lost. The second is strengthening the ability to identify changes and risks. Nuclear professionals need to foster the ability to critically reflect on their jobs and capabilities, and proactively identify challenges and risks. The third is mitigation, or the reinforcement of risk mitigation measures. We need—and also must ingrain—a strong commitment to considering mitigation measures for identified risks, as well as following through on the measures with a sense of personal accountability. As partners aboard the same boat, we must move forward toward excellence together with the entire nuclear industry.

## Keynote Speech



### **Safety Measures in the Aviation Industry**

#### **- Threat & Error Management (TEM) and Resilience -**

Chairman of the Board, ANA Wings Co., Ltd

#### **Kiyoshige Kameda**

The ANA Group is committed to the following Safety Principles: “Safety is our promise to the public and is the foundation of our business. Safety is assured by an integrated management system and mutual respect. Safety is enhanced through individual performance and dedication.” As a public transportation provider carrying a social responsibility, safety is our top priority, underpinned by each individual’s conscientious behavior.

The year 2005 saw the JR West Fukuchiyama Line accident and a series of other accidents and unsafe events across every mode of transport. ANA was no exception: we received administrative guidance from the government as a result of causing a number of unsafe incidents, including multiple in-flight violations of air traffic control (ATC) instructions, an event where a flight was maintained based on incorrect altimeter readings, and an incident in which a flight attendant forgot to perform necessary door operations. Against this backdrop, amendments were made to the Civil Aeronautics Act mandating the introduction of the safety management system (SMS), and ANA accordingly introduced it as well in 2006.

The rate of aviation accident occurrences around the world dropped dramatically by around 1975 with advancements in the flight environment, such as the enhancement of aircraft reliability and the establishment of the ATC radar network. The decline has been steadily ongoing in recent years as well, albeit moderately. This is likely a result of measures taken from various aspects, including, but not limited to, the further enhancement of aircraft reliability, improvements in equipment such as Ground Proximity Warning Systems (GPWS) and Terrain Awareness and Warning Systems (TAWS), and the introduction of SMS and Crew Resource Management (CRM) training by airlines. In particular, companies in the IATA Operational Safety Audit (IOSA) registry have maintained a lower-than-average level, with recent accidents staying at below one case per one million flights. Unfortunately, the aviation industry lacks self-regulatory organizations that pursue excellence like JANSI, but I consider IOSA and other international standard audits to be guarantors of global-level safety.

The key to building an SMS is that management, all employees, and the safety division work united as a team and take personal ownership in the undertaking. ANA’s operational division consists of siloed organizations—pilots, cabin attendants, ground handling, maintenance, dispatchers, and airports, for instance—but it is critical that they collaborate cross-sectionally to perform operations and safety measures. This is why we hold weekly operation reviews where division managers and the airline’s president gather to reflect on the past week. We intend to maintain this effort to aim for further heights, with a central focus on reinforcing incident prevention.

To stop events from recurring or to prevent them from occurring, it is important to maintain and standardize a cycle where, first, in the wake of an event, information is

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collected from captain reports, voluntary reports, and flight data. Following this are factor analyses and risk assessments. Where necessary, measures are implemented—such as sharing information with the field, incorporating it into manuals, and conducting education and training. Effects are measured through situational analyses based on Safety Performance Indicators (SPIs) and checks through Safety & Monitor (SAM) flights, among other means, and are fed back to pilots. Standardization is about making risk management ingrained in the field. To achieve this, management and department managers must both remain mindful about and take action with regard to whether there is an environment that allows for voluntary reporting, whether psychological safety is ensured, whether revised procedures are feasible, and whether the information fed back has reached the pilot.

Risk management approaches in the field of aviation are transitioning away from eliminating errors themselves and toward controlling their outcomes to prevent them from leading to accidents.

Starting by looking at how risk management approaches in the field of aviation have evolved, the 1960s to 1970s concentrated on human factors (HFs)—in other words, the behavioral traits of individuals who make errors. However, because this approach aimed to eradicate errors themselves, its effect was limited. In the 1980s, CRM was developed as a method to ensure safety as a team, based on the premise that errors could occur, and it remains a fixture in the aviation industry even today. From the 1990s onward, the Threat and Error Management (TEM) approach was developed as a method that applies CRM and highlights error-triggering threats. This approach clarified when and what actions need to be taken—which were previously ambiguous factors—and is today regarded as the core philosophy for safe flights.

One HF-related accident is the Tenerife airport disaster, the worst collision disaster in history. Two jumbo jets collided in 1977 on the Spanish Canary Islands, claiming 583 lives. The contributing factors are said to have included poor visibility resulting from a dense fog, interference on communications, misunderstanding of ATC instructions, and psychological pressure. Another case is the 1978 United Airlines Flight 173 accident where, prior to the aircraft landing, some of the green lights indicating that the tires were down failed to illuminate. Suspecting a landing gear malfunction, the crew chose to delay the landing, but the captain became preoccupied in responding to the failure and lost his focus from the amount of the remaining fuel. The co-pilot was concerned about the aircraft running out of fuel, but was unable to assert this to the captain. Consequently, the fuel was exhausted, all engines shut down, and the aircraft crashed into a residential neighborhood. The cause is said to be a communication breakdown resulting from an extreme power dynamic (authority gradient). These two accidents prompted the establishment and mandating of CRM that maintains safety as a team effort.

By contrast, in the 2009 US Airways Flight 1549 accident, in which the aircraft collided with a large flock of birds at an altitude of approximately 900 m shortly after takeoff and lost all engines, Captain Sullenberger determined that the insufficient altitude made it impossible to return to the airport, and decided to ditch in the Hudson River. Five minutes after takeoff and apparently only three minutes and twenty-eight seconds after the bird strike, the aircraft successfully touched down on the river upon shutting down all engines and completing the checklist for water-ditching. With prompt rescue efforts by ferries and other vessels navigating nearby, all 155 crew members and passengers survived. The accident is referred to as “Miracle on the Hudson,” and is said to be a good example where resilience was demonstrated and TEM was practiced.

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TEM is a conceptual framework for ensuring safety by identifying flight-affecting threats in advance and taking countermeasures, accordingly preventing errors and breaking the chain of errors that occurred, thereby properly responding to them before they develop into an accident/incident. The approach manages the three core elements of threats, errors, and undesired aircraft states (UAS).

Threats are events that lead to future risks and errors outside the pilot's control, such as poor weather or equipment failures. Errors refer to factors commonly known as pilot errors, including deviations from procedures, routes, or altitudes. UAS describes situations when failed control over threats or errors left aircrafts in an inappropriate position, altitude, or orientation, and prompt recovery operations are required in order to secure a safety margin. The goal of TEM is to properly deal with these three elements and secure safety before they lead to an accident.

Threats can be grouped broadly into environmental and organizational categories. The former covers weather (e.g., fog, crosswind, snow, thunderstorm, turbulence), ATC (e.g., complex ATC instructions, ATC errors, sudden changes in landing runways), terrain (e.g., slopes, mountains near the airport, highlands), and airports (e.g., confusing beacons, on- and off-airport construction, birds). Birds are a difficult threat to take measures against, and no dual engine failure has likely occurred besides the Hudson River case, but still, ANA has experienced events where birds were sucked into all engines and the next flight consequently had to be cancelled. While these environmental threats cannot be directly removed by the pilot, some organizational threats—such as flight schedules and airport curfews that cause time pressure—are reducible through organizational efforts and coordination with relevant parties. For threats foreseeable in advance, countermeasures should be taken beforehand, whereas in the event of unforeseeable threats, individuals must utilize their competence and take action.

Specific TEM actions start with the countermeasure-planning phase. Pilots arrive at the airport 60 to 90 minutes before departure and conduct a pre-departure briefing. The key of TEM is to predict as many threats as possible and prepare for them at this stage: carrying extra fuel in anticipation of poor weather at the destination is one example. The second phase involves taking and checking countermeasures. During flights, predicted or new threats, as well as detected errors, are remedied immediately. Examples include thorough instrument monitoring and cross-checking, compliance with standard operating procedures (SOPs), and reliable conduct of call-outs. The final stage is the countermeasure review phase. Countermeasures must be reviewed whenever they are taken, and if the situation changes and a UAS arise, immediate recovery is required. In the United Airlines Flight 173 accident, the worst-case scenario might have been avoided had the fuel depletion UAS been detected and an early landing been attempted. This review process is essential to avoiding accidents.

ANA's manual states that up to 70 percent of a pilot's job concerns countermeasure activities. Pilots need to be prepared from normal times to be capable of thoroughly utilizing countermeasures of all kinds. In my view, predicting threats while in the planning stage and asking yourself whether you can thoroughly utilize the countermeasure functions as personal competence management and self-assessment. ANA defines the competence that pilots need based on four elements under the "ANA Crew Competence" concept: a professionalism-centered attitude; technical skills such as aircraft operation competence and system management; knowledge of systems and flights; and CRM skills such as communication, team-building, workload management, situational awareness, and decision-making. Demonstrating these CRM skills is crucial to the practice of TEM.

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Lessons learned from accidents in recent years have prompted a shift in the focus of training toward enhancing resilience, or the ability to recover safety margins even in the event of contingencies. To raise resilience and practice TEM whatever the situation may be, it is essential to hone not only specialized technical skills but also non-technical skills (CRM skills), including judgment and communication capabilities.

ANA is currently pursuing two efforts to foster non-technical skills. The first is education and training. Our previous approach was primarily subject-based, focusing on whether you succeeded or failed. Today, however, we have introduced process-focused, experiential learning-type training. We maintain a cycle of experience, introspection, conceptualization, and practice, thereby working to establish non-technical skills. The second effort involves a change in the roles of instructors. We have transitioned from the “teacher” model, in which knowledge is shared unilaterally, into a supporter model, where the instructor encourages introspection and conceptualization.

Before I end my speech, I wish to share about our pilots’ organization from the perspective of how to have risk management, TEM practice, and other safety systems ingrained in the field. Under the ANA brand are around 3,000 pilots, each belonging to an organization based on aircraft type. The largest sector, the B787 flight crew department, has around 1000 pilots. The department manager is a capable and competent individual, but no single person can oversee 1000 people, so we split the department into 33 sections—each with three to four teams featuring around seven co-pilots. Team leaders, who serve as a mentor, hold team meetings to share information in person and listen to the opinions of the co-pilots. They also support co-pilots’ competence enhancement efforts through “team flights,” a form of accompanied flights. Keeping the number of people under the team leader small in this way makes everyone in the organization visible, and leads to developing a relationship of trust. These organizational development efforts are important in terms of having a safety system ingrained.

To sum things up, in terms of an SMS, it is vital for all management members and employees to build an SMS by taking personal ownership in the system. The key to standardizing risk management is to make it take root in the field. Demonstrating “ANA Crew Competence”—which includes non-technical skills—and practicing TEM leads to enhancing resilience.

## Panel Discussion

### Theme:

**Further improvement of plant performance**

**– Making risk management take root in the field –**

### Panelists:

<b>Takanobu Sugimoto</b>	Director-General for Nuclear Regulation, Nuclear Regulation Authority
<b>Kiyoshige Kameda</b>	Chairman of the Board, ANA Wings Co., Ltd
<b>José Antonio Gago Badenas</b>	Chairman, World Association of Nuclear Operators (WANO)
<b>Koji Matsuda</b>	President & Director, Hokuriku Electric Power Company
<b>Yoichi Hiraoka</b>	Senior Vice President, Japan Nuclear Safety Institute

### Moderator:

<b>Ken Kurosaki</b>	Director and Professor, Institute for Integrated Radiation and Nuclear Science, Kyoto University
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### Opening Remarks:



Director and Professor, Institute for  
Integrated Radiation and Nuclear Science,  
Kyoto University

#### **Ken Kurosaki**

I will be moderating the panel discussion. Today we will have the four presenters, excluding Chairman Kameda who gave his keynote speech earlier, to each offer a short speech. Based on the speeches, we will move into the panel discussion. A total of three topics will be presented for the discussion. Once we go through the discussion, we plan to take questions and opinions from the audience, which will be followed by short comments from each panelist.

Then I will wrap things up at the end. That's the plan for the panel discussion. I look forward to your cooperation.

## Panel Discussion

### Short Speech : (in the order of their presentation)



Senior Vice President, Japan Nuclear Safety Institute

#### **Yoichi Hiraoka**

After JANSI's establishment, the first recommendation it made to operator CEOs was about developing a risk management system. Power plants perform PDCA cycle-based performance enhancement activities that are underpinned by the development of a safety culture. Corrective action programs (CAPs) are utilized in a series of activities ranging from risk specification and countermeasure preparation in the

planning phase, the use of domestic and international trouble information as well as human error prevention tools in the implementation phase, to the use of performance indicators and the results of benchmarking on other companies to both perform self-assessments and obtain correction measures in the evaluation phase. Additionally, safety culture development activities are undertaken to further solidify these activities.

JANSI evaluates the efforts of NPPs from a third-party perspective and supports their improvement activities, and among the organization's representative undertakings are peer reviews (PRs) and safety culture diagnoses. The former involves 30 or more reviewers visiting the field every four years to perform observations and analyses for at least two weeks, thereby specifying gaps. The latter entails identifying organizational traits and challenges through interviews with employees of diverse levels.

Previous cases have revealed common challenges: there are shortfalls in risk identification and countermeasures, as well as in practicing measures based on individual ownership. Worsening these challenges are such factors as a reduction in risk sensitivity caused by long-term shutdowns, shortfalls in frontline penetration as a result of a multi-layered contractor structure, and the "bloating" of rules. Another cause is leaders being pushed for deadlines and losing their capacity to encourage improvements.

By contrast, there is a trend in the U.S. that values efforts for maintaining high performance as well as the ability to specify and respond to risks in addition to knowledge and skills. A stance to make findings and improvements voluntarily is regarded important in both of these trends. JANSI works to utilize and share these good practices through training or other means.

Enhancing risk sensitivity is a challenge for JANSI itself as well, which is why we are training new reviewers. Though this training is intended to foster awareness in the field, we make operators take it as well. The key from here on is to reduce workload by taking stock of rules and enhancing frontline engagement. Ultimately, I believe that risk sensitivity can be ingrained in the field by establishing a culture in which risks are proactively recognized by frontline workers, and eliminated in advance by reinforcing organizational self-assessments.

## Panel Discussion



Chairman, World Association of Nuclear Operators  
(WANO)

### **José Antonio Gago Badenas**

WANO has compiled its general rules of risk management into a document called the “Principles.” By integrated risk management, WANO refers to the integrated set of actions and processes that are utilized to identify, reduce, and manage the inherent risks associated with operating commercial nuclear plants.

Included in the set is factors such as nuclear power, radiation, people, the environment, operations, power generation, projects, and business risks, both inside and outside nuclear power organizations. When it comes to comprehensive risk management, the term covers risks in important processes and conditions, infrequent activities, certain types of decision-making, and risks associated external events and impact.

Integrated risk management consists of five consecutive elements. It starts with the risk detection phase, the assessment phase, and the mitigation measure implementation phase, which continues on to the execution of the risk management policy, and the evaluation and improvement of the policy. The “Principles” sort out the elements necessary in each phase, while Appendix A indicates the actions required of each level in the organization. Appendix B describes the organizational traits needed for effective integrated risk management, and Appendix C provides warning flags in integrated risk management.

Another important resource is “SOER,” a report compiling significant operating experiences across the industry. It aims to share common challenges and good practices so that each organization can draw on them for their own improvement. In fact, analyses of the roughly 5,000 WANO event reports filed annually deem that approximately 25% of severe and caution events are preventable by implementing existing recommendations, and that deficient decision-making is the root cause of 70–90% of the events.

The bottom line is that risks are not simply a number or a category; rather, they must be assessed dynamically based on the situation. Risk management must be incorporated into every process including daily work, and practicing it requires strong human actions and behaviors. Phased responses based on the size of the impact, a healthy safety culture, capable personnel, and continuous engagement with the field are important. At the same time, overconfidence, time pressure, and experiences of past successes can undermine risk management. Keeping these factors in check are accordingly the key to comprehensive risk management.



Representative Director & President, Hokuriku Electric  
Power Company

### **Koji Matsuda**

The 2024 Noto Peninsula Earthquake struck two years ago on January 1, 4:10 p.m. It recorded a maximum seismic intensity of seven and left severe damage in four municipalities, where 90% of the homes experienced some, half, or complete destruction. Around two hours after the disaster, our company held our first videoconference connecting all offices, and started integrated responses that involved a nuclear power restoration team.

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The earthquake caused a blackout at 98% of the Okunoto area, and a torrential rain disaster subsequently struck in September, prolonging the earthquake's damage. The restoration process prominently highlighted the importance of logistical support, such as confirming transit routes, supplying materials and equipment, and securing food and lodging. In the process, many challenges came to light. For example, with roads cut off, efforts were made to utilize drones to grasp the situation, but disaster-period flight regulations slowed the permit-obtaining process and the drones were consequently not operated until two weeks later. Systems were improved in light of this experience, thereby enabling approvals to be obtained promptly in the wake of the next disaster. There also was an issue in which lining up many drums instead of tankers, when operating power generator vehicles to power evacuation shelters, presented a conflict with the Fire Service Act and revealed a gap between emergency systems and practical operations.

It is important to identify each of these experiences and accumulate knowledge so that workers can expect the unexpected, which is an effort that requires making adjustments with related institutions from normal times and arranging effective systems. Also essential are practical drills that combine diverse events, since disasters occur in a compound manner and training for single-events is not enough. In fact, we saw a spread of nuclear power-related misinformation, which presented a challenge regarding the difficulty of communicating information.

From here on, under our slogan that translates to "Together as One for Noto" Hokuriku Electric Power will come together as a team to reinforce our ties with contractors, sort out our knowledge, and make the lessons learned from the disaster take root within the Hokuriku Electric Power Group while also disseminating them to relevant organizations nationwide in an effort to contribute to reinforcing the resilience of the Hokuriku region and the entire country.



Director-General for Nuclear Regulation, Nuclear  
Regulation Authority

### **Takanobu Sugimoto**

Before the 1F accident, it was not clear whether operators had the primary responsibility for ensuring nuclear safety. This generated a concern that regulatory institutions appeared to provide assurance, and that this might consequently hinder the sufficient functioning of operators' proactive safety enhancement efforts. Additionally, previous inspections were primarily checklist-based, which resulted in a system where it was difficult to focus on safety-important matters. In light of this situation, the Act on the Establishment of the Nuclear Regulation Authority, enacted in 2012, made explicit that operators carry primary responsibility for safety assurance. Moreover, a revision to the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors in 2013 positioned necessary measures—such as the enhancement of facility safety, the proper and reliable performance of inspections, and the enhancement of safety training—as obligations of nuclear operators.

Furthermore, in 2020, the Nuclear Regulatory Inspection System was introduced, marking a shift from the conventional approach to a performance-based and risk-informed approach. Under the new system, operator safety activities are monitored in its entirety through team inspections and as-necessary additional and special inspections conducted by NRA specialists, in addition to day-to-day inspections by on-site inspectors. The system also covers

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operators' continuous improvement processes, such as findings in the field, corrective action programs (CAPs), and the integration of operating experiences. Any issues are evaluated and notified depending on their safety significance, a comprehensive rating is made each fiscal year and incorporated into the next fiscal year's inspection plan. Additionally, regulatory response measures are taken, when necessary, based on the results of safety significance evaluations.

Improvements on systems and operations are ongoing based on the results of reviews and inspections as well as knowledge from Japan and abroad, upon focusing on risk-informed regulation. Efforts are also made to enhance the system through dialogue with operators, by, for instance, the utilization of probabilistic risk assessments (PRAs) and field demonstrations of online maintenance. As you can see, we promote a "graded approach," where we concentrate regulatory resources toward safety-important items in a risk-based manner.

At the same time, how to maintain and enhance safety with a limited number of personnel is a major challenge when the country's shrinking population is placing constraints on human resources. While the current system provides a certain framework, we need to continuously verify whether it can detect critical risks and indicators in daily operations more quickly. The regulator's role is to monitor the safety activities of operators and encourage necessary improvements. We strongly hope that operators continue to make improvement efforts so that small findings at the field lead to discovering organization-wide challenges.

### Discussion



○Kurosaki: Now let's start the panel discussion. "The field" was a major keyword in the talks given by the presenters today, so I prepared three discussion points around it.

The first point concerns whether the challenge of approaches to establishing risk management in the field has commonalities with other industries and the rest of the world. The second point involves a closer examination of "personal ownership," or the idea of identifying and solving problems on one's own when many individuals are acting at the field.

The third point explores how "signs latent in everyday work" and "findings in the field" contribute to a healthy safety culture.

I would like to start with the first discussion point—"risk management challenges"—and hear opinions from Chairman Kameda, Managing Executive Officer Hiraoka, and Chair Gago particularly about commonalities in terms of establishing a mindset in the field.

○Kameda: Listening to Managing Executive Officer Hiraoka and Chair Gago, I noticed many common threads. The "bloating" of rules happens in the world of pilots as well. Also, self-assessment, capability shortfalls, leadership, the underestimation of risk caused by past successes, and time pressure are common challenges.

Among these topics, I would like to talk about self-assessment. There is a concept of self-competence management in the world of pilots, which is about understanding the competence that one is required to have, accurately recognizing the gap between the goal and oneself, and making self-improvements to reach that goal. What the



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organization needs to do in this regard is to clarify the competence that the company requires of a pilot. It is extremely important to present competence levels clearly, based on the years of experience and proficiency, particularly when it comes to pilots in training and co-pilots who are aiming to become captains.

ANA and ANA Wings both categorize co-pilots by competence and set target values accordingly. For instance, we require those in stage one—these are generally co-pilots up to around their second year—to perform fundamental duties accurately. The first goal, for example, is to master ATC communication and monitoring, and in terms of flight operations, to ensure they can operate reliably within the scope of co-pilot operating requirements. The goal for stage two, or co-pilots in their third year or above, is for them to be able to identify threats. Comprehensive management is still difficult at this stage, so we start by having the co-pilots identifying and responding to threats. Co-pilots in stage three, the final phase, are required to have roughly the same level of competence as captains. To put another way, the requirement level we set is that co-pilots can manage flights by practicing TEM and supervise and command the crew by demonstrating CRM (non-technical skills).

Japan's pilots are professional license holders, so we expect them to manage their competence at their own initiative and self-improve. Still, as the responsibility of an organization with thousands of pilots, our system is one where we guarantee their competence through training and reviews, and have the captain—the team leader—support this endeavor.

OHiraoka: The points about the “engagement of all employees” and “mutual understanding and trust” that Mr. Kameda stressed in his speech were challenges that we share, in terms of how to enhance psychological safety and have frontline workers take personal ownership of safety management.

Mr. Gago mentioned “complacency resulting from past success.” I think complacency is precisely the biggest point of remorse regarding the 1F accident. Complacency with past success and not doubting conventional approaches is the very factor that hinders risk management. I felt this is a clear commonality between Japan and the rest of the world.

A slight difference, however, is the difficulty in evening out maintenance in Japan's NPPs throughout the year. This makes it very challenging to conduct all work activities directly in-house, and thereby calls for contract work. Furthermore, to respond to peak periods, NPPs use subcontractors and sub-subcontractors—which creates a multi-tiered structure. Getting safety culture penetrate down to employee staff levels is difficult enough, which means enhancing psychological safety across different companies is a monumental undertaking. This is likely a characteristic of Japan's nuclear industry, one that differs from Aviation industry or the situation of other countries.

OGago: There are some commonalities around risk identification, impact assessment, and mitigation, but the subcontracting structure is definitely a distinctive aspect of Japan's industry. I would say another point is that risk identification and mitigation are left to the contractors. But we must remember that everything that occurs at a plant is the operator's responsibility: regardless of the number of contractors, the operator takes all responsibility for assessing and identifying risks, and for taking proper mitigation measures. However, with specialized work activities, there may be cases where contractors specializing in them shoulder all the risk and the operator has no involvement in specifying, assessing, or mitigating the risk. There also may be cases where, despite the situation looking excellent on paper, the actual behavior at the field may contain shortfalls in terms of risk specification and assessment.

OKurosaki: I appreciate your insightful input. Let us turn to the next theme now.

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What efforts are effective to have workers in the field take personal ownership of risk management and both think and act proactively? I would like to start with CEO Matsuda: in the event of an earthquake, the situation cannot be contained unless the field acts and judges at its own initiative. I would like to ask your insights on this matter in particular, since you have experienced this kind of situation.



○Matsuda: The key to enhancing field engagement is for management to have strong interest in the field, and convey to the field that management is interested in safety and risk management. This is why as a general rule I visit the field monthly and engage in direct dialogue with a group of about ten people. When speaking with younger individuals, I first always tell them to be frank—that I will not tell their division heads what they say in the dialogue—and then ask topics that are troubling them, or talk about the entire company. Employees at the field have commented that they gained a clear picture of the entire company and a better sense of where nuclear energy stands, so I plan to continue this undertaking. We also launched a new effort in which all employees visit a plant at least once. Further, we established what we call a “Day to Declare Our Commitment to Safety, Fairness, and Integrity.” Every year on this day, we quietly ring a gong to make a renewed pledge to safety, fairness, and integrity. By steadfastly undertaking these efforts, I hope to raise each individual’s awareness and encourage staff members to take personal ownership of risk management under a unified organization.

○Kurosaki: I had the honor of ringing that gong. Around the gong, the walls of the room are covered with newspaper articles and other resources about past incidents and events. The process of reading them and personally reflecting on safety before ringing the gong has left a strong impression on me. It is a very good undertaking in terms of communicating our message to the field.

On that note, I would like to ask Director-General Sugimoto on his reflections for all the topics we discussed today.

○Sugimoto: The NRA performs management observations, where management members observe the behavior of on-site inspectors. Management, including myself, regularly make the rounds to each regional regulatory offices, and taking advantage of our visit, we exchange opinions with management—including plant managers—to share any issues or challenges with them. When I ask inspectors about their assigned operators, most of them say the operators are responding very diligently. However, for instance, when the inspectors ask about events they suspected might be non-conformities, it appears that the responses provided are often symptomatic fixes or stopgap answers to avoid any findings, despite the inspectors asking the questions to hear about substantive matters related to safety.

Hearing this makes me think the field’s risk sensitivity has not reached high standards yet. Since the NRA’s role is strictly observational, there is no need for the operators to mind NRA inspectors even when they are present. We want operators and workers to be aware of, and focus on, their respective event or field responses.

That said, whenever I exchange views with plant managers during my visits, I find they are highly committed and working hard on various fronts despite facing challenges. Many people in the field are working hard, so I really felt that the key is how to have a safety

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culture ingrained in the field to further enhance risk sensitivity.

OKurosaki: I serve as the director of the Kyoto University Institute for Integrated Radiation and Nuclear Science. We are a university but also a nuclear power operator with two reactors. I like to think I have a high level of awareness in my role as the director, but I have been questioning the extent to which that awareness has reached the people working there.

Let's move on to the topic of multi-layered structures. Managing Executive Officer Hiraoka described this as a challenge specific to Japan; a relative divergence from foreign countries. I would like to start with Chairman Kameda: in response hearing how Japan's nuclear energy industry is multi-structured with contractors and operators, could you share any differences with the aviation industry? I would also like to ask Chair Gago if this is something unique to Japan.

OKameda: The aviation industry has challenges caused by a multi-layered structure as well. For example, while there are areas within ground handling where the maintenance division holds responsibility for safety, there has been a case in which the significance of checklists was not conveyed to field workers, which resulted in checks being forgotten and work proceeding without final checks being made. At the other side of the spectrum is a case where, despite the extreme danger of an aircraft moving within the ramp area, factors such as miscommunication with ATC and procedural errors caused the pilot to move the aircraft by mistake while a towing tractor was still being disconnected. Efforts were made to share the events with the field and discuss them in a department-wide manner, but we could not make an improvement. A sense of distrust emerged—one that involved a perception that pilots disregarded the ground handling department's safety—which led to inter-departmental conflict.

We consequently decided to arrange opportunities for departments to interact. Ground handling workers were invited to pilot team meetings to talk about each other's work; board the cockpit to experience how pilots see the ground crew from there; and observe the tasks and ATC exchanges that occur pre-departure. We also did the opposite as well, and had pilots go to the ground-handling field to ride tow tractors, and experience firsthand an aircraft's 1 m-diameter landing gear closing in on them, thereby allowing to take personal ownership not through knowledge but through experience.

Since not all 3000 pilots can have this experience, we captured the content in video and shared it with all members in the next recurrent training. The number of people who actually experienced it was limited, but we converted it into collective knowledge through training, and as a result we have not seen a recurrence of similar incidents over the past year. While it is important to build systems and frameworks, I believe organizational development and other intangible elements are also important in terms of establishing risk management.

OGago: Again, all work activities conducted at an NPP, whatever they may be, fall under the operator's responsibility—this includes identifying necessary work, engaging engineers and operators, and assessing risks associated with the work. Ultimately, whether the work is conducted by a contractor, and whether that is a single contractor, or two or three, is irrelevant. The key is the operator's management and oversight, and it is important to identify risks by having management of all organizational levels steadfastly observe the activities in the field.



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OKurosaki: Our final theme is how to collect minor field observations and incorporate them into risk management. Similar to what Director-General Sugimoto mentioned, my university conducts CAP activities as well. We place great importance on how to utilize small findings from the field in risk reduction. I would like to hear from the five members on this topic. Let's start with Managing Executive Officer Hiraoka. Please share with us good practices demonstrated by Japan's operators.



OHiraoka: Presidents and division directors of each company frequently visit the field and place great importance on dialogue with frontline personnel. It's wonderful that frontline personnel and management can sit down together for a frank discussion, listen to each other's candid opinions, and share the management's vision. Some plants even have subsection chief-class individuals, who have up to 10 subordinates, take the time to engage in one-on-one meeting. There may be employees who feel difficulty in or are hesitant to comment in group discussions with leadership, whereas they find it easier to speak with supervisors they are familiar with. The comments are carefully recorded to identify the topics the individuals are usually wondering about, or potential changes for subtle improvements in their work.

Unlike direct dialogue, where management offers follow-up tasks, the one-on-one format asks the workers to establish the next steps themselves. Group members share what they commented in one-on-one talks, and in some cases, they resolve issues within their group, or for significant ones the members put together proposals. For actions feasible with the plant manager's decision, they are conducted internally; for matters the members want to perform but exceed that authority, the plant manager negotiates with headquarters to proceed toward implementing them. For group members, this creates meaningful experiences of success: the sense that their thinking led to improvement, or that actions were taken based on their request. This allows for moving beyond passive compliance, creating a proactive mindset and thereby boosting engagement and motivation.

I regularly visit plants across the country, and having visited this particular plant before and after the activity, I observed more forward-looking perspectives and smiles after the activity started. I shared about this since I thought maintaining such steadfast efforts and building an environment where people find it easy to share findings could be one example effort.

OKurosaki: That offered a good picture of the various efforts made in terms of ways to solicit input from the field. CEO Matsuda, you have shared about direct dialogue. Please share with us other efforts at Hokuriku Electric Power, if any.

OMatsuda: I really think small findings are important. Several keywords have emerged throughout this discussion, including Chairman Kameda's point that safety is the result of daily accumulation. A major incident is followed by a period of intense remorse and effort, but it is undeniable that this emotion gradually erodes. The archive mentioned earlier represents a shameful chapter in our history, but we display it where employees can see as a reminder of what we should never forget. Given that memories of the earthquake could fade with time, we have made and are preserving video archives of the various kinds of



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hardships and efforts experienced by each department. We have also established an archive corner in the large entrance hall on the first floor of Hokuriku Electric Power's headquarters to share with everyone the history of hardships caused by the earthquake. Having the area open not only to employees but also to the local community, we hope to make efforts to sustain memories of the earthquake while also enhancing daily findings and other types of engagement.

OKurosaki: On the same topic, Mr. Gago, please share good practices of operators abroad, and Chairman Kameda, please talk about ANA Wings' undertakings.

OGago: This is not a simple matter. One can gain a general sense of how a plant regards risk assessment by examining how effectively a CAP is implemented at a plant site, how many potential plant risk items have been missed in CAPs, who can propose CAPs, and by whom and how the identified items are evaluated.

Additionally, reviews on whether good communication is made among a plant's primary departments—operations, maintenance, and engineering—as well as the kind of communication made when specifying, assessing, and mitigating risks serve as an indicator as well. When I was the CEO of ANAV, an operator in Spain, I made sure to ask how often engineers visited the field, because while they excel at dealing with calculations and computers, they tend to stay at their offices and not communicate with maintenance division staff.

Reviews on plant backlogs can also be an indicator: checking whether any specified risks have remained unaddressed for years in the "pending design change" stage serves as a benchmark for the extent to which an organization's safety culture is functioning.

OKameda: The concept of a just/reporting culture is a part of safety culture. However, employee questionnaires still show a barrier to reporting, or that psychological safety has not been secured yet. One reason for this, for example, is the practice of assigning pilots to ground duties if they caused a certain level of an incident. Although this measure is for investigating the cause, preventing recurrence, and checking the degree of pilot competence establishment—rather than for punitive purposes—the field tends to perceive it as punitive. To communicate this to the field, there is a need for division heads, department managers, and leaders to genuinely and strongly feel that the measure is not disciplinary.

Psychological safety training is conducted as well, with sessions received not only by supervisors and management but also by personnel of the opposite end. A recent effort involves having supervisor-level pilots and trainees participate simultaneously in training, which has yielded strongly positive reactions. Trainees experience an increase in their sense of psychological safety by witnessing firsthand what training the instructors are undergoing. Concurrently, the training benefits the instructors as well by conveying that while personal attacks or yelling constitute harassment, rigorous coaching provided based on respect for the individual's personality does not.

OKurosaki: Director-General Sugimoto, please share your view based on these remarks.



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○Sugimoto: In terms of not missing minor findings, plants collect condition reports (CRs) daily, discuss responses for them in CAP meetings, and have the meetings attended by inspectors who, in turn, monitor the issues that exist. In addition, every operator currently collects CRs from contractors and prioritizes the most important ones. My observation, however, is that there is a very positive atmosphere in plants that seek to provide some form of feedback, even for small or minor ones as well as even when they cannot take immediate action. I feel the key is the extent of the commitment that the organization has in terms of capturing the various findings distilled in the CRs as much as possible. This itself directly ties into the organization's safety culture.





## Panel Discussion – Q&A –

○Kurosaki: Now I would like to take questions and comments from the audience in the venue. If you have any questions or comments, please raise your hand, state your affiliation and name, who the question is for, and ask your question concisely. We have received a question for Chairman Kameda. It states that you mentioned that the aviation industry voluntarily checks whether the TEM is used to its capacity, but is that mandatory?

○Kameda: The checks are not mandatory, but the Ministry of Land, Infrastructure, Transport and Tourism, Transport Bureau's training notice states that practicing TEM leads to aviation safety from the aspect of preventive safety. This itself is a part of the pilot's competence, so we regard it as the root of our job and a foundation for protecting safety. TEM is a framework for pilots, but I think it is applicable to various types of work, which is why efforts are underway to develop Wings' TEM, one that also includes ground handling.

○Chairman Webster: I would first like to thank the panelists for their deeply insightful and thought-provoking comments on risk management. The discussion first focused on the extent to which frontline field workers are aware of risk management, but as the next layer, we must examine how middle management practices risk management. A key point in risk management is the need to explore what kind of risks are acceptable—which is precisely the role of management. I invite panelists to comment on topics such as the middle management's role, how to define acceptable risks, which risks require mitigation, and the extent of that mitigation.

○Gago: This topic goes beyond middle management and ties into higher levels. Our discussion today focused on detecting risks at the field, but risks can be detected at all levels of an organization and assessments can be mitigated as well. If the risks could potentially intensify, they are to be moved up to higher levels. Most companies likely have risk committees, and the risks could reach their level. I would argue that all departments should have such functions, so if a risk is identified but cannot be assessed at the middle management level or requires the engagement of another department in the organization, it would be necessary to move the matter up the chain.

○Kurosaki: How identified threats are internally escalated to leadership is a very important topic. It would be problematic if top management was unaware of a major issue that occurred or if they learned of the issue through media coverage. CEO Matsuda, please offer any comments if you practice anything to prevent such situations.

○Matsuda: Staff members, middle management, and top management each have their roles and responsibilities, so the key is for their responsibilities to be fulfilled within their scope. To prevent situations where there is difficulty in making upward escalation within an organization, efforts need to be made to establish a culture in addition to rules. I'm ashamed to say this, but when we concealed our criticality accident, the fact that we hid the incident without disclosing it—not to mention the gravity of the matter—was regarded problematic, and we deeply regret this. A major challenge accordingly lies in building a system that makes it impossible to conceal issues, as well as how to establish a culture in which incidents are not concealed.

The gong in our company's archive area bears the inscription *gyōten fuki*, which means that hidden problems will not escape the eyes of heaven. I think it is important to set this at

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the basis of safety culture, and both enforce and establish it as our culture. We hope to steadfastly undertake this activity, in addition to working on rule-related matters.

OKurosaki: Finally, I would like each panelist to share their takeaways from this panel discussion, or anything they would like to say before we wrap things up.

OHiraoka: I fully agree with the point Mr. Kameda raised regarding the need for continuously enhancing resilience against threats on a daily basis. Mr. Gago offered us a tough critique. I would like to bear in mind that responsibility rests entirely with the operators. I also wish to keep in mind Mr. Matsuda's remarks on being able to anticipate the unanticipated, and Mr. Sugimoto's comment on operator-led safety enhancement and attentiveness to findings. With these considerations in mind, JANSI aims to further improve risk management with operators and pursue excellence.

OMatsuda: Today's conference provided an exceptionally valuable opportunity to hear, from diverse perspectives, about approaches to handling risk management in the field. I hope to reference the insights I gained in our entire operation. Risk management is foundational not only to the nuclear industry but also to business operations. I think it is crucial for us to share our experience with various relevant parties, establish institutions starting with matters that are feasible, and improve operations in a normal and calm environment. Today's discussion also yielded insights regarding how to enhance the awareness, culture, and engagement for daily risk management. We will continue to tie these into our operations and strive toward excellence in nuclear power.

OGago: Mr. Kameda shared that risk management is an effort that involves all employees, is maintained in a cycle, and requires competence. The exact same applies to my organization. While the aviation industry uses the term "competence" and the nuclear says "proficiency," the concept is identical. In many events, the processes and procedures in the field of risk management are well-established, but the weakness ultimately lies in behavior. Complacency, time pressure, and overconfidence cause individuals to miss the presence of high risks. We therefore need to avoid complacency that is prompted by past success.

OKameda: I felt that the energy and aviation industries truly share many commonalities. The nuclear industry is aiming to achieve the world's highest level of excellence, and when I think about what that means for us, it all comes down to complying with international standards. However, when I was serving as the head of the center, we could hardly do anything beyond achieving compliance. Serving as JANSI's advisory member has shown me that there is much to learn from JANSI's stance to go beyond compliance and strive to achieve the world's best—and global—excellence. Amid a multi-layered structure, it is important to develop systems, but the hardships of how to have things ingrained in the field is a challenge shared between power and aviation industries. I hope to apply what I learned today for the safety of the aviation industry.

OSugimoto: I understood through today's discussion that risk sensitivity is at the foundation of risk management. The demonstration tests of online maintenance, which Mr. Sugiyama shared at the beginning today, involved considering risks through full-scope PRAs—covering not only internal events but also earthquakes, tsunamis, fire protection, and internal



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flooding—as well as systematically preparing and taking action for matters such as what components to use to substitute standby-subject components, or the details of SA equipment. This showed how the tests are extremely beneficial in improving worksites and responding to personnel insufficiencies.

By thoroughly considering risks and corresponding countermeasures in advance, and working in field demonstrations, we made a case where we had all individuals cross-organizationally participate in risk management. The operator remarked that they were extremely nervous since the plant was in operation and any failure would necessitate a reactor shutdown. I felt that this is precisely a state of extremely heightened risk sensitivity, and an example of each participant accepting risk management as a personal responsibility. I encourage pursuing an organizational culture in this manner, where both management and the field constantly sharpen their sensitivity to risks.

OKurosaki: Today's conference has been tremendously educational for me as well. What resonated particularly strongly with me was Chair Gago's remarks about the importance of visiting the field. Managers must not remain in their offices; rather, they must visit the field frequently and communicate with the people there. This effort will make a multi-layered structure or the number of contractors irrelevant. I fully agree with his remark, where he said the key is how actively the managers of the operator—who bears primary responsibility—works at the field. If this is steadfastly practiced, management's mindset on risk sensitivity and other matters might permeate the field.

Also memorable was President Matsuda's point about preventing events from fading. Exactly 15 years have passed since the 1F accident. Memories remain vivid, and every person here has a safety-first mindset. Yet, as a decade, two decades, three decades pass and generations change, the extent to which that commitment is passed on to the next generation and beyond takes on importance. Making various efforts to maintain the memories is paramount. That is my reflection and my summary of today's discussion.

## Closing Remarks



President & CEO, Japan Nuclear Safety Institute

### Isao Kato

As we conclude the JANSI Annual Conference 2026, I would like to make some remarks.

This year, we welcomed approximately 500 participants from Japan and abroad, in person and remotely. 15 years have passed since the accident of Fukushima Daiichi Nuclear Power Station, and currently, Japan has a mix of 15 reactors that have resumed operations and 21 reactors that are in long-term shutdown. In light of this situation, we organized this conference to enhance JANSI's and the Japanese nuclear industry's awareness of the challenges ahead, particularly focusing on "instill risk management into the field" to improve the performance of nuclear power plants. We aimed to gain valuable insights from other industries and international efforts.

Through the keynote speech and panel discussion, we learned a strong commitment to proactive risk management and the decisive actions of those implementing it are crucial to instill risk management into the field. Additionally, it is essential to deepen our understanding of necessary measures based on lessons learned from actual disaster experiences and to explore "signs" of potential issues in daily work and lead to improvements. Also, we have received a message that we must address the events that are actually happening or might happen with our own initiative, not just as requirements from inspectors. I would like to express my gratitude once again to all who participated in the discussions today, as well as to Professor Kurosaki for facilitating the discussions.

I also want to take this opportunity to express my appreciation to Mr. Jeffrey Archie, who has served as an international advisor of JANSI for the past 6 years and will be stepping down this year. Since joining the advisory committee, he has provided numerous insightful recommendations based on his extensive experience and deep understanding gained in the U.S. industry, contributing to the improvement of safety culture, leadership, and the role of JANSI. Before his advisory role, he was the CNO of South Carolina Electric & Gas Company and participated in the early days of the Japan-U.S. CNO Leadership meeting, helping to lay its foundation. He also contributed to evaluations by INPO to reform JANSI. We are deeply grateful for his long-standing involvement in JANSI's activities, which has significantly contributed to enhancing the quality of our initiatives and improving the overall performance of the Japanese nuclear industry. We sincerely appreciate your significant contributions to the overall performance improvement of the Japanese nuclear industry.

To meet societal demands for nuclear power generation, it is essential for us in the nuclear industry to continue pursuing excellence and improving performance without faltering. We have gained many insights today regarding the direction the Japanese nuclear industry should aim for in the future. I hope you will take these insights back to your workplaces and apply them in your respective roles.

JANSI will continue to lead the autonomous and continuous improvement activities of operators as a self-regulatory organization in the industry, responding to their expectations. JANSI and nuclear operators have jointly developed a ten-year strategy that outlines our "Future Vision," which includes Operators should achieved the world's highest level of safety and reliability and JANSI leads operators from an independent standpoint as the authority of world's excellence. We aim to advance these efforts in collaboration with ATENA, NRC, and WANO.

As the organizer, I would like to extend my heartfelt thanks to everyone who participated today, and I will conclude my remarks. We really appreciate your attendance.