

Nuclear Safety Reform Plan

FY2020 Q2 Progress Report

Special Issue

~Improving Safety and Quality by Correctly Ascertaining Field Conditions
and the Conditions of Equipment in the Field~

TEPCO

Tokyo Electric Power Company Holdings, Inc.

November 17, 2020

Foreword

We would like to offer our deepest apologies for the inconvenience and concern that the Fukushima Nuclear Accident, and subsequent troubles, have caused the siting community and society as a whole. TEPCO will continue to work as one to provide compensation quickly and smoothly, accelerate recovery efforts in Fukushima, move steadily forward with decommissioning, and ensure that nuclear safety is our first priority.

On March 29, 2013, TEPCO announced its Reassessment of the Fukushima Nuclear Accident and Nuclear Safety Reform Plan to implement nuclear safety reforms. Since then we have provided quarterly updates on the progress of these reforms. The following is a report on the progress that we have made during the second quarter of FY2020 (July~September)

It is with great sorrow that we announce the passing of Nuclear Safety Reform Committee Deputy Chair, Lady Barbara Judge, on August 31. Lady Judge closely monitored our efforts from the time the Nuclear Safety Reform Plan was created until her passing, and all of us at TEPCO would like to take this opportunity to express our gratitude for her service, and offer our condolences to her family. She will be greatly missed.

You will notice that in some of the photographs, employees are not wearing masks. At TEPCO, we are requiring all employees to wear masks at all times, but in order to show you the facial expressions of our employees, we have taken these photographs upon implementing thorough measures to prevent the spread of Covid-19. Some of the photographs were also taken prior to December 2019, and predate the pandemic.

Special Issue

~Improving Safety and Quality by Correctly Ascertaining Field Conditions and the Conditions of Equipment in the Field~



Director, Managing Executive Officer, Nuclear Power & Plant Siting Division GM/ Nuclear Reform Special Task Force Acting Director/ Nuclear Reform Special Task Force Secretary General

Shigenori Makino

In this special issue I would like to introduce our initiatives to improve safety and quality by correctly ascertaining field conditions and the conditions of equipment in the field.

Maintaining and improving safety and quality is indispensable, no matter what task we engage in. In light of our regrets and the lessons learned from the Fukushima Nuclear Accident, we continue to improve safety and quality based on the idea of “never-ending reform and improvements,” which is the fundamental principle of the Management Model that embodies the spirit of the Nuclear Safety Reform Plan.

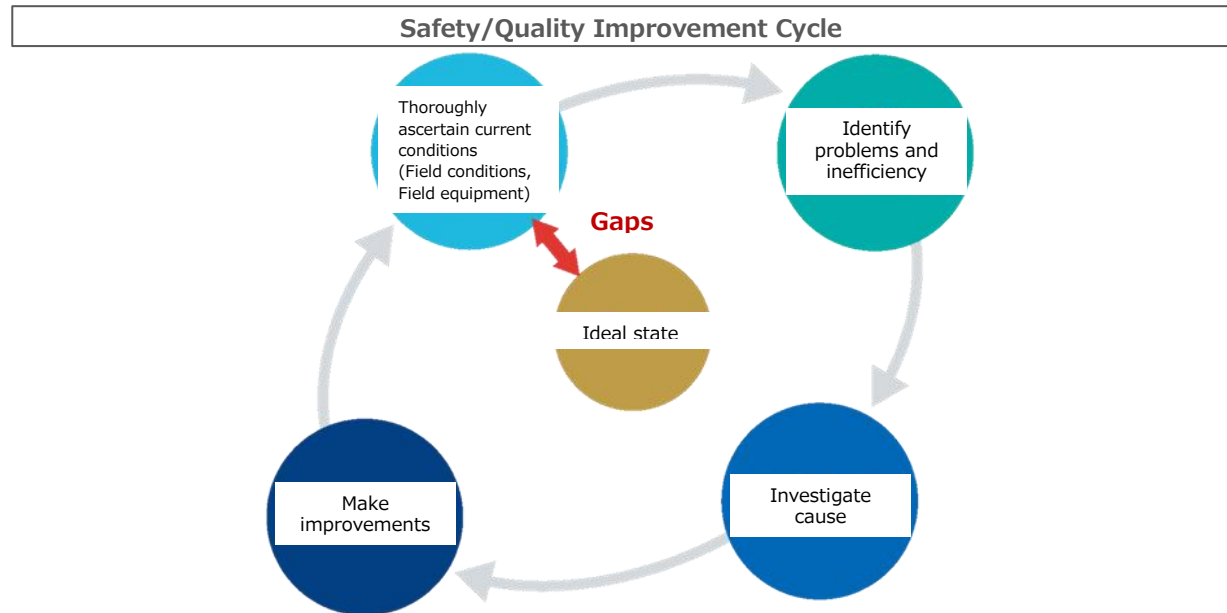
Headquarters and power stations are engaged in activities along with contractors to improve safety and

quality. Going into the field, observing actual pieces of equipment and thoroughly ascertaining current conditions is how these activities begin. After that, problems are identified by finding gaps between current conditions and ideal conditions, and the true reason for these conditions is investigated. We are striving to improve safety and quality by engaging in this cycle of actions that aims to achieve an ideal state. Furthermore, we believe that engaging in these activities will lead to the cultivation of human resources with excellent skills that can carry out required tasks because they are intimately familiar with the field and fieldwork.

These initiatives to improve safety and quality are based upon Toyota-type kaizen methods and we are trying to enable the Division to make a fresh start by not

only receiving guidance from experts, but also proactively incorporating good practices from other departments and industries.

The government’s new inspection system that went into effect this fiscal year requires operators to identify problems on their own and continually engage in initiatives to improve safety. One of the most important lessons we learned from the Fukushima Nuclear Accident is that complacency leads to degradation. I strongly believe that the essence of our job is to continually make improvements, and we will continue to engage in these initiatives.



Main Interview

“I want us to turn our attention to the field and proactively engage in efforts to improve safety and quality”



T3

Managing Executive Officer, President of
Fukushima Daiichi Decontamination and
Decommissioning Engineering Company (FDEC),
Chief Decommissioning Officer

Akira Ono

Q What was the impetus that made safety and quality improvements a key issue?

I was Site Superintendent at Fukushima Daiichi for three years from June 2013 until June 2016. At the time, the priority was quickly building equipment to respond to the accident, but at the root of our actions was awareness about having to improve quality.

The specific event that led me to believe that we have to further elaborate quality was the series of troubles that we had with Unit 3 spent fuel pool fuel removal equipment in 2018. Rather than merely solving each problem, we decided to temporarily suspend all work in the fall of 2018 to conduct a general quality inspection so that we could once again confirm that quality has really been improved overall,

and that all our i's and t's have been dotted and crossed.

Q In particular, what are you focusing your attention on now?

You need to be motivated to take on challenges if you're going to improve safety and quality. In order to do this one must understand and accept what their own job consists of, and why procedures are laid out as they are. You have to understand why equipment is configured the way it is. You have to start from these basics. If the inner workings remain a mystery, or a "black box," as we say, you'll never accept them. By deepening our understanding, we can engage in more serious discussions with manufacturers and contractors, and offer suggestions to make improvements. Engaging in kaizen activities and in-house manufacturing enables us to improve our engineering ability and deepen our understanding about our own jobs. I believe this is an excellent way to promote discussion and suggestions.

Q You reorganized departments in April. Is there any relationship to improving safety and quality?

A department is like a piece of fabric. It doesn't consist of only warp threads, which symbolize functions in this case, but also of weft threads, which are the actual working units that cross through the department. It's the addition of these weft threads that complete a piece of fabric. In April, we established

the Decommissioning Safety and Quality Office as a department for comprehensively examining safety and quality throughout the entire FDEC. Taking action to actually improve safety and quality is the job of line departments, but the Decommissioning Safety and Quality Office looks across the whole organization to ensure that this is actually taking place and that safety is being guaranteed.

We are also changing and incorporating various initiatives aimed at ensuring safety that have been implemented to date, and we will begin putting these initiatives into trial use.

We've made department changes and developed mechanisms, and are finally at the point where we've just begun to head towards our ideal state. I think by rooting this behavior we can reduce troubles and human error.

Q What are your expectations for employees?

I'd like them to focus more attention on the field. If you don't go into the field you won't completely understand the work that you are responsible for. You won't know where the places are in which it is easy to engage in unsafe behavior, or in what environments tasks are extremely difficult to carry out unless you go into the field.

It's only after going into the field that you notice these issues and can think about how to change procedures and equipment configurations in order to solve them. I'd also like to see employees take steps to improve their technical skills and abilities. I want each employee to feel like they know their job better than anyone.

I'd also like employees to think and behave with the

awareness that society is watching them. Fukushima Daiichi is under close scrutiny by society and they've been given a difficult task, so in various respects they have to be better than employees at other sites. That's the spirit I'd like them to have as they engage in their duties.

Q Could you say something to your new employees, and also talk about how you feel about cooperating with local companies?

I had a chance to speak with 41 new employees in July. I was reassured to learn that they are optimistic about decommissioning and feel that it is a new business opportunity. I want them to go about their job with a sense of curiosity. Being able to ask anything without care is a privilege of a new employee, so I'd like them to go into the field with curiosity and ask questions about anything they don't understand. Decommissioning continuously requires new skills. In that respect, I think it's a field in which curious people can achieve great things. It's our job to provide education and a work environment in which these employees can be highly motivated to engage in their duties.

Proactively working with local companies that have various technical expertise will contribute to recovery in Fukushima. In March, we created the Mid/Long-Term Decommissioning Action Plan that shows what work needs to be done when at Fukushima Daiichi over the next 10 years.

Sharing this plan with local companies will enable them to start making preparations to provide the technical skills that will be required in the future. The skills of local companies will be cultivated through the



decommissioning process, and when that takes root Fukushima will become the birth place of that technology as it spreads to other regions. By creating an environment such as this we can balance recovery with decommissioning and accelerate recovery in Fukushima.

A word from one of our leaders

“Weave safety and quality into the process and approach it like it’s a personal responsibility”



T5

Director, Nuclear Power & Plant Siting Division
Deputy GM, CFAM Supervisor

Takeyuki Inagaki

Embodying the Management Model

The mission of the Nuclear Power & Plant Siting Division is to “provide efficient nuclear power at the world’s highest levels of safety” in accordance with the Management Model, which carries on the spirit of the Nuclear Safety Reform Plan. We are employing Toyota-type kaizen activities as a means for embodying the objectives of the Management Model. Our basic plan is to move forward with the awareness that kaizen “is what our work is all about.”

We intend to reach a point where we have weaved safety and quality into the process to a degree that if we

are abiding by the process, we can guarantee safety and quality on our own and not have to depend on inspections to identify problems. To achieve this, I have asked all Division personnel to create a visual representation of their duties. Upon clarifying who does what in regards to individual tasks, and examining how safety and quality are being guaranteed, it is important to identify problems and move forward with activities to resolve these problems. Furthermore, we are proactively learning from, and incorporating, precedents set by other divisions and other companies as well as other power stations and JERA, which runs our thermal power business.

Get out into the field and think about issues with workers

In order to make these activities prevalent throughout the company department leaders need to display leadership. I have continued to frequently go to power stations to see conditions in the field and the condition of actual equipment with my own eyes, and then engage in deep discussions with general managers and group managers about individual issues. About three years after these activities were started, I began to see younger employees eagerly participate. This made me fully realize that when supervisors display leadership and department members fully comprehend the meaning of that action and approach their duties as a “personal responsibility,” things go in a better direction.

Currently, CFAM/SFAM※, who are responsible for leading us to the world’s highest levels of safety in each functional field of the Management Model, are also responsible for driving kaizen activities. At Kashiwazaki-

Kariwa there are five CFAM and a kaizen officer from Headquarters who patrol the field to ascertain the state of worker behavior and equipment conditions. They then come together with power station personnel to discuss issues, identify problems and formulate solutions. My intention is to have personnel from Headquarters also go out into the field in order to see conditions with their own eyes, think along with workers, and discuss issues in order to achieve our ideal state.

Conveying to younger employees the true meaning of “Never forgetting Fukushima”

I would like younger employees who are not shackled by conventional norms to ask questions without hesitation if they feel that there is something unusual about equipment status, the behavior of workers, or the way that their own duties are to be carried out. And, leaders have to create an environment in which employees can speak up about irregularities.

It’s been approximately 10 years since the disaster and the number of younger employees who were not at the company when the accident occurred is increasing. In order to ensure that the lessons we learned from the accident are not forgotten, I will continue to convey to younger employees why their job is important and the importance of our ultimate objective of achieving the world’s highest levels of safety.

※CFAM (Corporate Functional Area Manager: HQ) /SFAM

(Site Functional Area Manager: Power stations) : Leaders in each functional field of the Management Model that engage in activities aimed at achieving the world’s highest levels of safety.

A word from one of our leaders

Improving safety and quality by developing activities that focus on field conditions and the condition of actual equipment in the field



Fukushima Daiichi Decontamination and Decommissioning Engineering Company, Fukushima Daiichi Nuclear Power Station

Kazuo Yashiro

Kaizen and safety/quality are two sides of the same coin

The basic idea is how to move forward with kaizen without lowering safety and quality. Kaizen and safety/quality are two sides of the same coin, and by promoting kaizen activities we can ultimately improve safety and quality.

However, at current time we are still in the process of conveying this idea to each and every employee. Since the degree to which we can get employees to engage in

kaizen activities with a certain objective in mind is important, the Kaizen Office will formulate measures that make it easier to engage in these initiatives while upper management displays strong intent and leadership. These two elements will be inseparable as we move forward with these activities.

Leveraging things noticed in the field in the course of kaizen activities

This is the third year of kaizen activities and various kaizen have been implemented throughout the organization. Up to now we have focused our energies on raising the flag of action and getting everyone to act. However, recently we've been able to have detailed discussions about exactly what type of activities we should engage in.

Currently, I go into the field with two group managers on Monday and Tuesday of every week to discuss things that we notice in the field and identify areas for kaizen. Furthermore, we are also providing guidance briefings to primarily department heads. We also participate in guidance briefings given at other power stations and in other divisions, such as the thermal power division, and proactively share information with the Headquarter Improvement Promotion Office and other industries. Good initiatives in these other industries, etc., are also referenced in the course of our kaizen activities. Since we have been confined to the Nuclear Power Division in certain ways until now, it's very helpful for us as we

move forward with these activities to be able to leverage various benchmarks.

Aiming to improve engineering skills as we promote in-house manufacturing and in-house maintenance, etc.

As we aim to improve safety and quality, one of the ideal states we are looking to achieve involves strengthening our engineering skills. In order to improve safety and quality we must be intimately familiar with the field and equipment in the field, as well as actual work being done in the field. There are still many places where kaizen is required in the field. In order to ascertain these areas for improvement, we are currently promoting in-house manufacturing and in-house maintenance, etc., in the Nuclear Power Division so that we can engage in tasks ourselves. Moving forward with these activities will ultimately lead to an improvement in engineering skill.

I want younger employees to learn the skills they need to engage in in-house work, and carry out their daily duties with the motivation to overcome future challenges that they will face during the decommissioning process. In order to do this, we are focusing on helping each individual to set objectives and cultivate human resources.

Examples of Initiatives underway at Fukushima Daiichi

All personnel are uniting to explore the possibilities of remotely operated equipment in order to improve safety



T7

When we heard from TEPCO about dismantling the Unit 1/2 exhaust stack, our first thought was the fact that we wouldn't be able to get people close to the bottom of the exhaust stack to erect scaffolding as usual in these circumstances due to high radiation levels. So, in consideration of worker safety, we decided to explore the possibility of dismantling the exhaust stack using remotely operated equipment, something that had never been done anywhere in the world. ABLE Co., Ltd. is a local company located in Oguma Town, Fukushima Prefecture, and we've been involved in work at Fukushima Daiichi from prior to the disaster. In a way we consider Fukushima Daiichi "our plant" as well, and were strongly motivated to do anything we could to help.

Prior to beginning construction, we repeatedly ran tests on an 18m tall mockup of the exhaust stack. However, since the actual exhaust stack was 120m tall, the conditions, such as the impact of wind and warping caused by the age of the structure, etc., differed, and the project did not go as smoothly as we had anticipated. In particular, when we were cutting the first block, we got about one fourth of the way through and then were unable to cut any further. When it ultimately took a month to finish cutting one block, people around us started to get worried and asked, "Will you be able to finish this job?" We heard some harsh opinions that made a lasting impression.

It also took considerable effort to get each and every person actually working on the project in the field to

Project Explanation

Since cracks in the exhaust stack tower caused by the Great East Japan Earthquake and Tsunami were found the top half of the stack is being dismantled in order to reduce the risk of injury to personnel or damage to equipment if the tower were to topple.

Remotely operated equipment is indispensable for decommissioning, but this was the first time that it had been used for this type of project. Therefore, everything from examining the dismantling method and procedures, to solving problems, was attempted for the first time. The knowledge and experience gained from this project will be leveraged during decommissioning work still to come.

understand their role and the objectives of the project. In spite of that, however, as a result of having all parties involved from different fields and occupations express their honest opinions with each other, find optimal methods through trial and error and work together as one, from the fourth month work went unimaginably smoother than the previous three.



Executive Director and Sales
Department General Manager,
ABLE Co., Ltd.

Isamu Okai

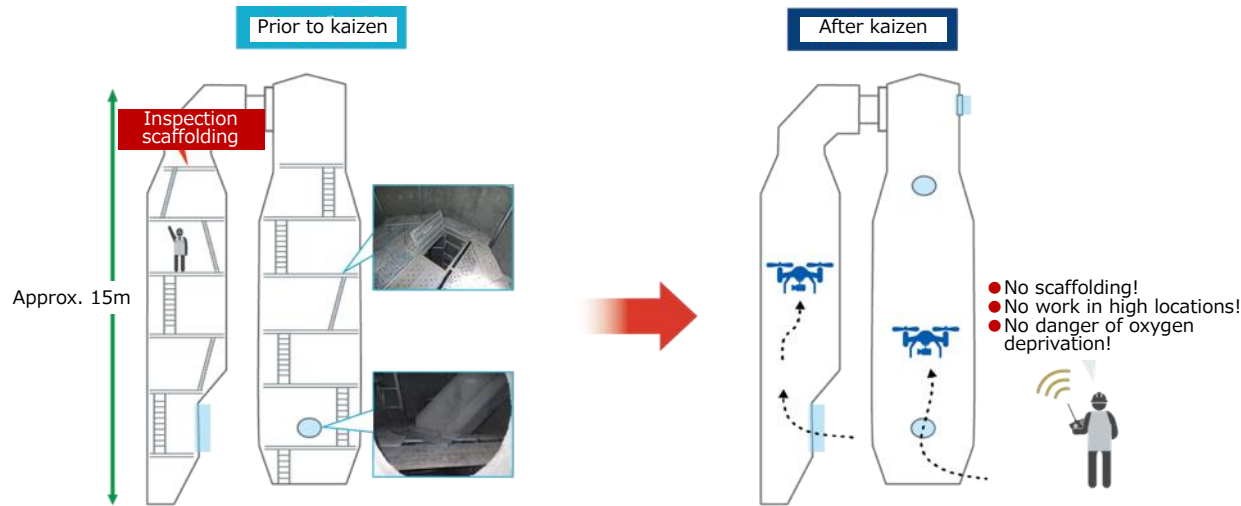


Section Chief, Daiichi
Construction PJ Group GL,
Daiichi Construction
Department, ABLE Co., Ltd.

Tetsuo Sato

Examples of Initiatives underway at Fukushima

Having workers feel a sense of ownership of the plant



Examining whether drones can be used to perform internal inspections

Miscellaneous solid waste incinerator equipment inspections have always been delegated to contractors. Due to the vast amount of equipment that needs to be inspected, and the content of those inspections, the facility would have to be shut down for several days. In addition, the facility also needs to be shut down if there are nonconformities, so daily adjustment and management was a task that we struggled with. When a detailed examination of inspection records was conducted, we found that criteria for requiring inspections and replacing consumables were vague, and began to think that if we were a little more innovative the workload, and the risks associated with it, such as injuries, etc., could be reduced.

So, we began to take a second look at the requirements for inspections, perform inspection work in-house, thoroughly ascertain the cause of nonconformities, and examine recurrence prevention and recovery measures. For example, we tried to incorporate new technology, such as using drones to inspect locations that are high off the ground instead of assembling scaffolding as usual.

Frequently going into the field and conducting in-house work became beneficial as we are able to invigorate communication with managers from contractors. And, our awareness of safety and quality was also heightened. Going forward we will attempt to perform other work in-house with a sense of

Project Explanation

Waste, such as personal protective equipment used in the course of work, is turned into ash by incinerating it in the miscellaneous solid waste incinerator facility thereby reducing its volume, after which it is stored as radioactive waste. During inspections and repairs of this incinerator facility workers are exposed to radiation, and the necessity to inspect equipment at high locations where it is dark and there is poor ventilation, increases the risks associated with this task.

So, we are revamping procedures and reducing risks by having employees thoroughly understand the structure of incinerator equipment and how it is inspected, go into the field to observe equipment and work being done on it, and having them perform inspections themselves. Furthermore, we are looking back at past nonconformances to thoroughly ascertain the causes. Recurrence prevention measures are proposed through coordination with in-house research departments, and the effectiveness is examined.

ownership of the plant. In the future it would be wonderful if we could approach tasks with the same knowledge and technical expertise as an engineering company.



Manager, Shared Equipment Group, Machinery Department,
Construction/Operation/Maintenance Center,
Fukushima Daiichi Nuclear Power Station

Ryoichi Endo



Team Leader, Shared Equipment Group,
Machinery Department,
Construction/Operation/Maintenance
Center, Fukushima Daiichi Nuclear Power
Station

Akira Imafuku

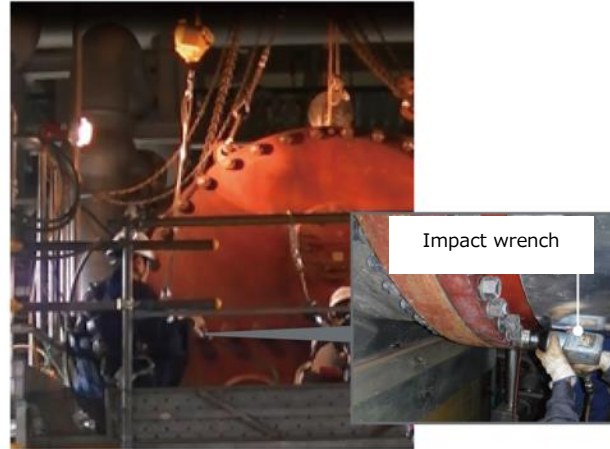
Examples of Initiatives underway at Kashiwazaki-Kariwa (Contractors)

Examine issues along with field personnel and deepen understanding

Prior to kaizen



After kaizen



Kaizen for the removal and tightening of water chamber bolts/nuts

Since TEPCO wants to revamp the seawater heat exchanger work we are examining possibilities while talking to workers and team leaders in the field engaged in these duties to find out if there are any tasks that take time, or are difficult to complete. We've been formulating various ideas with the attitude of attempting whatever we can think of.

There were people who considered revamping procedures bothersome, but we repeatedly explained our position carefully until they understood that worktime would be shortened and that workload would be reduced. After they experienced for themselves that workload had been reduced, they commented that they were glad the changes had

been made and participated more proactively in the process with the feeling that it is worthwhile.

One task that left a lasting impression on me was the removal of large bolts and nuts. Conventionally, a large hammer was used to strike a wrench which posed the risk of injury if a worker missed, as well as the risk of damaging equipment. By using a pneumatic impact wrench, we were not only able to reduce the risk of injury associated with using a hammer, but also reduce the number of workers and the time needed to perform the task, and ensure quality.

Going forward, we will make various changes along with TEPCO, such as replacing scaffolding with movable work platforms thereby eliminating the need

Project Explanation

There are many pieces of equipment required to produce power that generate heat, such as motors and lubrication, so cooling is necessary. A heat exchanger is used to remove this heat using water cooled by seawater, and this heat exchanger is periodically disassembled for inspection.

Massive bolts and nuts are used to tighten equipment used for feeding seawater, and conventionally a hammer was used to strike a wrench in order to accomplish this. By using an impact wrench instead of this combination of a hammer and a wrench, which required strength, experience, and a feel for the tools, we were able to not only reduce the risk of injury and equipment damage, but also enable the nuts to be loosened appropriately. This also reduced the burden on the worker having to swing the hammer.

to assemble and disassemble scaffolding.

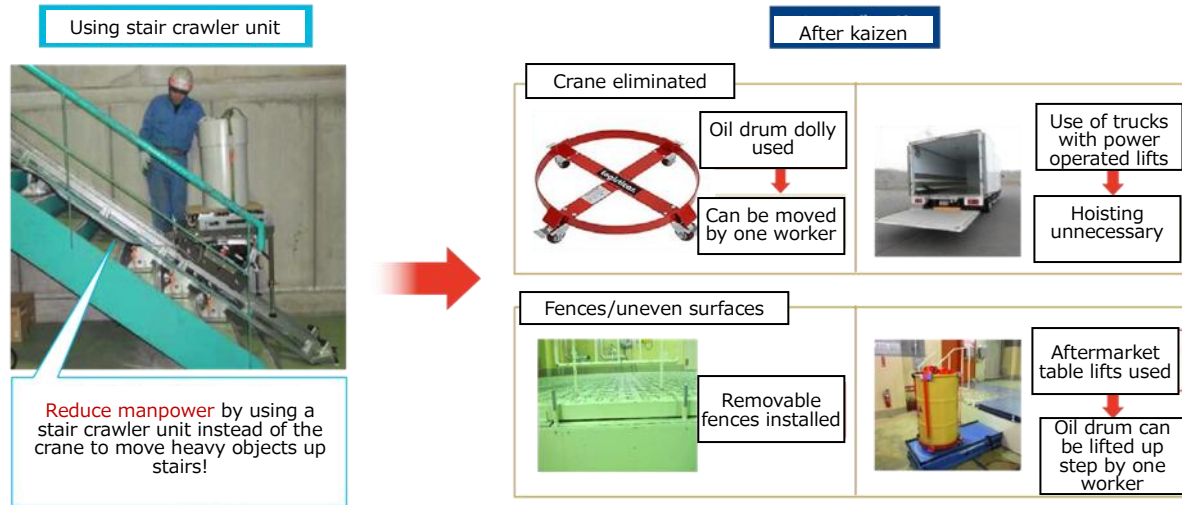


Chief, Daini Machinery Group, Niigata Branch, Nuclear Power Division, Tokyo Energy & Systems Inc.

Yasutsuna Watanabe

Examples of Initiatives underway at Kashiwazaki-Kariwa (Contractors)

Sharing information on objectives creates stronger team awareness



Solid waste treatment oil drum transportation kaizen

When we looked at the entire series of processes required for treating radioactive solid waste, we noticed inefficient aspects, such as the facts that many workers were involved, and that waste was sorted several times and being touched frequently. So, for each individual step we engaged in kaizen activities from the perspectives of, "Is this process necessary?" and "Have we merely convinced ourselves that this can't be done a different way?"

We are engaging in these activities in coordination with TEPCO, which is providing various types of information. Some of the information provided by TEPCO Power Grid was on a stair crawler unit for carrying transformers up and down stairs. Up until now, multiple workers would use a crane to lift oil drums, but

after watching the video on this device, we altered procedures to use this stair crawler to carry oil drums up the stairs. This has enabled the task to be carried out by only one worker, and also eliminates risks associated with dropping heavy loads and the dispersion of radioactive substances. Furthermore, by standardizing this work through a series of initiatives, we have eliminated discrepancies in procedures that will lead to improvements in work safety and human error prevention.

Workers from TEPCO and TEPCO Power Technology have become better team players as they have worked together towards a common goal. The atmosphere in the field is one of unity and everyone wants to make things easier. I would like to see everyone work to "make

Project Explanation

Radioactive solid waste generated at the power station is put into oil drums and transported to the solid waste storage warehouse for storage. The stored oil drums are opened in the waste treatment building where the contents is sorted. After this the waste is solidified using mortar and put into transport containers that are transported through the site and put onto ships. The ships then carry the waste to the Japan Nuclear Fuel Limited low-level radioactive waste reclamation facility located in Rokkasho Village, Aomori Prefecture.

By examining the processes used to handle radioactive waste and heavy objects, and making changes to the equipment and procedures used, we have been able to reduce the number of workers needed to engage in these tasks, as well as the time required to complete them. As a result, we've been able to eliminate the risk of reductions in safety and quality, and improve productivity.

work even easier," with the attitude that, "kaizen are not special activities, but rather the primary objective of our jobs."



Safety Management Group Manager, Niigata Nuclear Power Office, Tokyo Power Technology Ltd.

Takashi Hasegawa

Examples of Initiatives underway at Fukushima Daini

Improving our ability to perform tasks in-house has deepened our relationship with contractors



T11

When the Fukushima Nuclear Accident happened, we were dependent upon contractors for equipment repairs and became painfully aware of the need to improve our ability to perform tasks in-house during an emergency. This led us to conduct training to strengthen in-house technical field skills, after which in-house repair teams were created within maintenance departments. Team members include workers with proficiency in mechanical/electrical equipment and instruments in anticipation of enlarging the scale of work managed in-house.

Recently, we are engaged in disassembly inspections of emergency seawater system vertical pumps. In order to learn how to disassemble and inspect vertical pumps, team members trained with manufacturers for three weeks disassembling and

assembling spare parts while receiving advice and instruction thereby obtaining the required skills. During this training we realized that manufacturers had different methods and procedures for pump inspections. So, members engaged in discussion and revised procedures by comparing these different methods. The resulting suggestions were presented to contractors and adopted.

Obtaining the skills required to conduct these difficult vertical pump inspections in-house has enabled us to engage in technical discussions with contractors about equipment and inspection work thereby deepening our relationship. Furthermore, contract workers now engage in tasks with the awareness that they are being watched by people who know what they are doing, which has led to

Project Explanation

Since FY2013 we have been engaged in initiatives to provide employees with the skills to inspect and repair important equipment needed to cool reactors in the event of emergency, such as pumps. In light of the lessons learned from the Fukushima Nuclear Accident, our objective is to be able to move quickly forward with repairs without depending on external help and minimize damage in the event of an emergency.

These initiatives started with learning how to conduct simple tasks in-house and have evolved into being able to conduct disassembly inspections of large, complicated equipment, such as emergency seawater system vertical pumps. Now that employees can engage in these tasks with a deep understanding of equipment structure, we have been able to shorten the time periods during which important equipment is inoperable due to inspections.

behavioral changes of everyone in the field.

Going forward we shall pass on the in-house technical skill that we have obtained to the next generation and increase the scope of in-house manufacturing to meet the needs of the power station, such as being able to conduct emergency inspections.



Daiichi Machinery Group Manager, Maintenance Department, Fukushima Daini Nuclear Power Station
Yasunori Arakawa

Progress Overview

Progress with Safety Measures at Power Stations

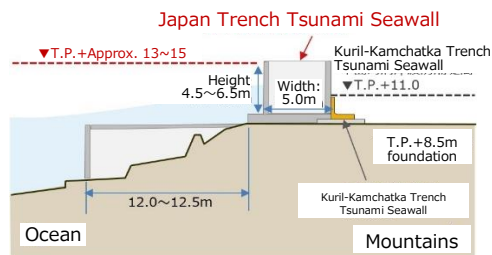
■ Fukushima Daiichi

In April, the Cabinet Office held a meeting to examine models that simulate massive earthquakes originating near the Japan Trench/Kuril-Kamchatka Trench and it was newly determined that a tsunami in the Japan Trench caused by one of these earthquakes may be imminent. Therefore, at Fukushima Daiichi we conducted a tsunami analysis that reflects newly built structures along the coast. Analysis results indicated that a tsunami originating from the Japan Trench (tsunami height: 11.8m above sea level) would inundate the Unit 1 and Unit 4 reactor buildings to a height of 0.3m, and the Unit 1 turbine building to a height of approximately 1.4m. In light of this assessment, from FY2021 through FY2023 we will newly build a Japan Trench Tsunami Seawall in order to mitigate the risk of having decommissioning work delayed due to a tsunami. Since the Kuril-Kamchatka Trench Tsunami Seawall was completed during the second quarter (September 25), we shall start construction to reinforce the seawall this fiscal year based on the results of the Japan Trench tsunami assessment. In conjunction with this, we aim to reduce tsunami-related risks by sealing all openings in buildings in order to prevent the accumulated water in R/B, etc. from being pulled out by tsunami drawback.

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Kuril-Kamchatka Trench Tsunami Seawall



Japan Trench Tsunami Seawall (Concept drawing)

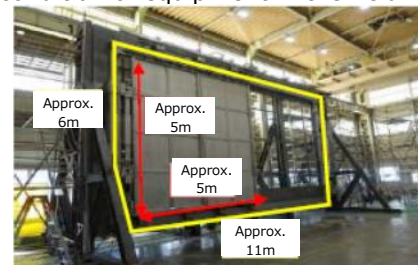
■ Kashiwazaki-Kariwa

On September 25, a revised construction plan permit application for Unit 7 that included detailed design, updated work schedules, review meeting discussions, and changes made in conjunction with revisions to the Nuclear Reactor Regulation Law, was submitted and the permit was received on October 14.

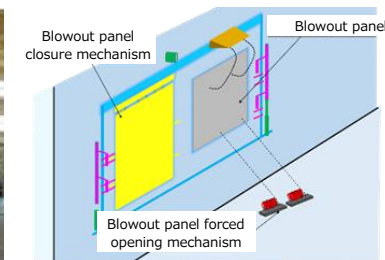
The safety regulations (authorized on October 30), which also state how to apply for an installation permit, note the seven promises made by the President in his reply to the Nuclear Regulation Authority. In these promises

it notes that the president is responsible for the decommissioning of Fukushima Daiichi and for improving the safety of all nuclear power stations under the major premise that TEPCO is responsible for the Fukushima Nuclear Accident. Furthermore, these promises incorporate a mechanism in which the president is instrumental when it comes to being involved in serious risk-related decisions based on various types of risk-related information gathered by each department, and must fulfill his responsibility for safely operating nuclear power stations.

Based on the installation modification permit, we are in the process of making safety measure renovations and meticulously designing various pieces of equipment to reflect the lessons we learned from our experience during the Fukushima Nuclear Accident. At Unit 7, we started to install a mechanism that will allow us to quickly and remotely close blowout panels in the event that they open in order to counteract rising pressure inside the reactor building (July 8). Going forward we will continue to listen to the opinions and concerns of local residents, and prioritize safety in accordance with our policy of accurately ascertaining field conditions and the actual condition of equipment in the field.



Blowout panel closure mechanism (before installation)



Blowout panel closure mechanism overview

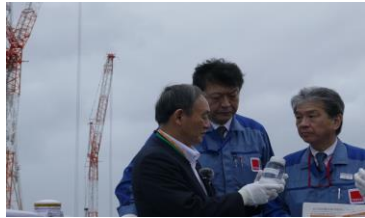
■ Aomori Region

In conjunction with revisions made to the Nuclear Reactor Regulation Law concerning the introduction of the new inspection system, which took effect on April 1, safety regulations for the Higashidori Nuclear Power Station Construction Site were submitted and approved (September 16). These safety regulations stipulate mechanisms required to maintain safety and manage quality from the design and construction stages of a nuclear reactor facility. Even at the construction site, we shall comply with safety regulations and prioritize safety as we move forward with the design and construction of this power station.

Progress Report (Management)

- Visit to Fukushima Daiichi by Prime Minister Suga 【External Communication】

On September 26, Prime Minister Suga visited Fukushima Daiichi for the first time since taking office. The Prime Minister was shown welded tanks where treated water is being stored, and was also given a close look at decommissioning work underway from high ground on the west side of the Units 1~4, where radiation level reduction measures are being implemented. The Prime Minister was also briefed on the characteristics of treated water resulting from the purification of contaminated water using multi-nuclide removal equipment. The Prime Minister commented that, "I know this is a very difficult task, but I'd like you to continue safely and steadily. The government will continue to do all it can to help you and provide support."



Visit by Prime Minister Suga (Fukushima Daiichi)



Emergency response training (HQ)

- Joint training between Fukushima Daiichi and Fukushima Daini 【External Communication】

During general training held on September 11, a joint training session was held between Fukushima Daiichi and Fukushima Daini personnel based on a simulated large-scale earthquake with a hypocenter in Hamadori, Fukushima Prefecture. During training, which was conducted amidst thorough Covid-19 prevention measures, such as having the Headquarter EDRC Commander give instructions from a different room outside of the Emergency Disaster Response Center (EDRC), trainees responded to a harsh scenario that simulated simultaneous disasters at multiple sites. During general training held in FY2019, problems were identified with how information was shared with the Nuclear Regulatory Agency during meetings to determine whether the simulated accident conditions met Clause 10 and Clause 15 requirements. In preparation for this, several scripts were written to convey various situations and during training these scripts were used to explain various necessary pieces of information, such as future repair strategies and repair forecasts, etc. However, although explanations given to the Nuclear Regulatory Agency were provided within the timeframe allotted between determining that accident conditions met Clause 10 and Clause 15

requirements, and confirming/certifying this decision, we will aim to further shorten the amount of time necessary to certify this decision based upon the required sufficient explanations.

- Monitoring by the Nuclear Safety Oversight Office 【Performance Monitoring】

Monitoring activities performed by the Nuclear Safety Oversight Office during the first and second quarters resulted in the following three recommendations:

- Detailed reviews of inspection procedures performed in preparation for the Unit 7 pre-use operator inspection yield valuable knowledge and know-how that should be organized and leveraged during inspections at other units to come. (Kashiwazaki-Kariwa)
- When designing new equipment, the requirement management process for taking stakeholder expectations from technical requirements and incorporating them into equipment specifications should be standardized. (Fukushima Daiichi)
- Headquarters and Fukushima Daiichi should coordinate to establish a process for the planned implementation of ALARA activities, and plan and implement awareness promotion activities in regards to eye lens exposure. (Fukushima Daiichi)

- Kaizen examples 【Implementing unending reforms and improvements】

At Fukushima Daini, on average approximately 1,000 pieces of clothing that require washing are generated each day by workers that must temporarily wear work uniforms, gloves, and socks in radiation control zones inside reactor buildings, etc. There are 18 washing-related processes, and multiple workers must engage in each process. Therefore, we have adopted the slogan of, "Reduce work and say goodbye to the large trucks, large containers, and large washing machines." By replacing large dewatering washing machines and dryers with household washers and dryers, we have reduced the amount of clothes in each load thereby rendering storage and accumulation processes unnecessary. Furthermore, through kaizen, such as using wheeled trunks instead of trucks to move around clothing, each process now requires only one worker and we have been able to standardize work procedures and improve quality.



Post-Kaizen (Left: Household washer/dryer; Right: Wheeled-trunks)