

# Japan : Fukushima updates, Kashiwazaki-Kariwa and Monju

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## Fuel removal

### **Fuel removal starts at Fukushima Daiichi No. 4 spent fuel pool**

TOKYO (Kyodo) — The operator of the Fukushima Daiichi nuclear power station started a yearlong operation Monday to remove fuel from a pool at a damaged reactor building, in a move to address one of the major hazards remaining at the disaster-stricken plant.

While the process of removing fuel rod assemblies from the spent fuel pool of the No. 4 reactor unit is a milestone toward the decommissioning of Tokyo Electric Power Co.'s Fukushima plant, the work will require careful attention to prevent another radiation leak.

« This work is an important step in the decommissioning process that will be carried out over the next 30 to 40 years. We will conduct this work safely and steadily, » TEPCO President Naomi Hirose said in a statement.

At 3:18 p.m., workers started using equipment to extract the first fuel assembly — about 4.5 meters long — from a fuel rack located inside the spent fuel pool that is filled with water around 12 meters deep. It took about 40 minutes to transfer the fuel to a transportation container, also placed inside the pool.

A TEPCO official told a press conference that four fuel assemblies were put into the transportation container without a hitch during the work that ended at 6:45 p.m. The work involved the removal of unused fuel rods that are relatively easier to handle than spent fuel.

Once the container is filled with 22 fuel assemblies, workers will transfer it to another pool in a

different building around 100 meters away, which is expected to provide more stable conditions for keeping the fuel cool. It is expected to take about a week to complete the work cycle.

As for preparations to achieve the removal of a total of 1,533 fuel assemblies, including 202 unused ones, at the No. 4 unit, TEPCO has cleared large pieces of rubble that fell on the upper floor of the reactor building as a result of a hydrogen explosion.

It also created a huge cover, supported by a steel frame, to blanket the reactor building. The cover is attached with equipment necessary for fuel removal and will ensure radioactive substances do not spread outside during the work.

TEPCO said it has conducted fuel removal work from spent fuel pools « more than 1,200 times, » reassuring that the newly installed fuel handling equipment has a number of inbuilt mechanisms to prevent fuel from accidentally dropping.

Even if a few fuel assemblies break and release radioactive materials, it would not pose significant exposure risks to areas surrounding the plant, according to the utility's analysis.

But nuclear regulators have called for « great prudence » because the pools still contain small pieces of rubble.

« The fuel has to be handled very carefully. There is a need to make sure that a fuel assembly is not pulled out (from the fuel rack) by force if it gets stuck because of the rubble, » Nuclear Regulation Authority Chairman Shunichi Tanaka said earlier.

The No. 4 unit suffered a hydrogen explosion but avoided a reactor meltdown, unlike the Nos. 1 to 3 reactors, as all of its fuel was stored in the spent fuel pool because the reactor was undergoing periodic maintenance work at the time.

However, the condition of the spent fuel pool on the highest floor of the crumbling building was a major source of concern in the early days of the crisis, as the water level was suspected to have dropped low enough to expose the fuel. TEPCO later said the fuel of the No. 4 unit was unlikely to have sustained major damage.

The fuel removal operation at the No. 4 unit will continue until the end of 2014. TEPCO will then move to extract fuel from the spent fuel pools of the Nos. 1 to 3 units, and seek to start the removal of the melted fuel inside the crippled reactors in 2020 at the earliest.

But the prospects remain unclear because technology must still be developed to perform the unprecedented decommissioning work.

The fuel inside the Nos. 1 to 3 reactors is believed to have melted through the reactor pressure vessels and been accumulating in the outer primary containers, making the task of defueling more challenging than in the case of the 1979 Three Mile Island accident in the United States.

**Kyodo News**, November 18, 2013

<http://mainichi.jp/english/english/newsselect/news/20131118p2g00m0dm028000c.html>

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**TEPCO transfers 1st batch of fuel rods from Fukushima No. 4 spent fuel pool**

TOKYO (Kyodo) — The operator of the crippled Fukushima Daiichi nuclear power plant on Thursday transferred the first batch of fuel rod assemblies taken from the No. 4 unit spent fuel pool to a different building that provides more stable storage conditions.

The move came three days after Tokyo Electric Power Co. started a yearlong mission to eventually remove over 1,000 fuel assemblies from the spent fuel pool of the damaged No. 4 reactor building to address one of the major hazards remaining at the disaster-stricken plant.

After filling a container with 22 unused fuel assemblies by Tuesday, workers on Thursday used a crane to lower the container from the fifth floor of the building housing the spent fuel pool to the ground about 32 meters below.

The container was then placed on a trailer and taken to a different building about 100 meters away. There is a pool inside the building.

**Kyodo News**, November 21, 2013

<http://mainichi.jp/english/english/newsselect/news/20131121p2g00m0dm078000c.html>

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### **TEPCO to start fuel removal from Fukushima No. 4 unit Monday**

TOKYO (Kyodo) — Tokyo Electric Power Co. said Friday it plans to start removing nuclear fuel from the spent fuel pool at the No. 4 reactor building at the crippled Fukushima Daiichi plant from Monday.

The process, which will continue until the end of next year, will mark a new stage in the decommissioning of the Nos. 1 to 4 units that were severely damaged by the huge earthquake and tsunami on March 11, 2011.

The No. 4 unit avoided a reactor meltdown, unlike the Nos. 1 to 3 reactors, as all of its fuel was stored in the spent fuel pool due to the reactor undergoing periodic maintenance work at that time.

But the building housing the reactor was greatly damaged by a hydrogen explosion, raising concerns over the continued storage of the more than 1,000 fuel assemblies in the spent fuel tank.

The pool currently contains 1,331 spent fuel assemblies and 202 unused ones. The utility succeeded in taking out two unused fuel assemblies in a trial last year.

The fuel will be placed in containers and taken to another pool in a different building about 100 meters away, which is expected to provide more stable conditions for keeping the fuel cool.

**Kyodo News**, November 15, 2013

<http://mainichi.jp/english/english/newsselect/news/20131115p2g00m0dm088000c.html>

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### **TEPCO to conduct test for Fukushima No. 4 unit fuel removal**

TOKYO (Kyodo) — Tokyo Electric Power Co. will conduct a test for nuclear fuel removal at the No. 4 reactor building at the stricken Fukushima Daiichi power plant, delaying the start of the actual fuel removal operation by up to two weeks, sources close to the matter said Monday.

The operator of the plant, crippled in the March 2011 quake and tsunami disaster, planned to start removing nuclear fuel from a cooling pool at the reactor building as early as next Friday.

The decision comes after a government-affiliated nuclear safety agency called for an initial test operation, including transporting a protective fuel cask from the storage pool to another pool in a different building about 100 meters away for more stable conditions for cooling spent fuel, the sources said.

The administrative agency, the Japan Nuclear Energy Safety Organization, has already inspected equipment to be used in the fuel removal work on behalf of the Nuclear Regulation Authority.

It also urged TEPCO to have the planned work evaluated by a group of Japanese and overseas experts formed by the International Research Institute for Nuclear Decommissioning, a Tokyo-based organization founded by Japanese government agencies, nuclear facility manufacturers and electric power companies.

Of the four Fukushima plant reactors in use at the time of the 2011 disaster, only the No. 4 unit did not experience a reactor meltdown, with all of the fuel stored in the spent fuel pool for maintenance work.

The building housing the No. 4 reactor and the storage pool suffered a hydrogen explosion at the time as loss of power disrupted the pool's cooling function. Over 1,300 spent fuel assemblies and more than 200 unused ones still sit in the pool.

A crane has been installed to carry a protective cask into and out of the pool. The spent fuel will be placed inside the cask and moved to the nearby storage pool by trailer.

The work at the No. 4 unit will mark a new stage in the decommissioning of the Nos. 1 to 4 reactors damaged in the crisis.

Efforts continue to contain leaks of a massive amount of highly radioactive water accumulating at the plant as a result of water injections into the crippled Nos. 1 to 3 reactors. Underground water into the plant's premises has been compounding the problem and leaky water storage tanks have added to fears of seawater contamination.

**Kyodo News**, November 5, 2013

<http://mainichi.jp/english/english/newsselect/news/20131105p2g00m0dm035000c.html>

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## **‘Scrap’ reactors**

### **TEPCO to ‘scrap’ 2 Fukushima reactors that avoided meltdowns**

TOKYO (Kyodo) — Tokyo Electric Power Co. plans to permanently shut down two reactors at the Fukushima Daiichi nuclear power plant that avoided meltdowns during the 2011 accident, company

sources said Wednesday.

The decision was reached following a request by Prime Minister Shinzo Abe, who said in September that the utility should scrap the Nos. 5 and 6 reactors to focus more on the plant's crisis cleanup efforts.

The two reactors will not actually be dismantled and instead will be used as a research facility to develop technologies for achieving the unprecedented task of removing melted fuel from the Nos. 1 to 3 crippled reactors as part of their decommissioning process, which will last for decades.

TEPCO will explain its plan to local governments possibly later this month and, if approved, will make the decision official, the sources said.

By accepting Abe's request, the cash-strapped company is apparently seeking to win further state support over costs of decontamination outside the plant, which one estimate has shown could reach 5 trillion yen.

TEPCO is currently expecting the Fukushima plant's decommissioning cost to reach some 2 trillion yen.

There are strong calls from local people that TEPCO should also scrap the Fukushima Daini plant, located about 12 kilometers south of Fukushima Daiichi. According to the sources, the utility is considering making a decision on the issue next year or later.

The Nos. 1 to 3 reactors suffered meltdowns and the building housing the No. 4 reactor, which did not have fuel inside the core because it was under maintenance, was damaged by a hydrogen explosion.

But the Nos. 5 and 6 reactors, which were also under maintenance at the time of the earthquake, achieved cold shutdowns, helped by an emergency diesel generator that was not flooded.

**Kyodo News**, November 20, 2013

<http://mainichi.jp/english/english/newsselect/news/20131120p2g00m0dm074000c.html>

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## Waste

### **Gov't to buy land to store waste created from decontamination work**

TOKYO (Kyodo) — The government plans to purchase a vast area of land around the crippled Fukushima Daiichi nuclear power plant to build sites to store radioactive soil and other waste created by decontamination activities in Fukushima Prefecture, government sources said Friday.

The land will total 15 square kilometers, involving thousands of landowners. The construction of the interim waste storage facilities is expected to accelerate the sluggish cleanup activities in Fukushima Prefecture.

But former residents in areas to be put under state control, who used to live there before the 2011 nuclear crisis, may not be able to return to their homes. A large part of the plant's vicinity has

already been classified as a zone difficult to return to for a long time.

Environment Minister Nobuteru Ishihara is expected to visit Fukushima Prefecture in early December to seek official approval from Fukushima Gov. Yuhei Sato and mayors of four local towns.

The government plans to start the operation of some of the facilities from January 2015. It is expecting to spend about 1 trillion yen for the project, including 200 billion yen the Environment Ministry is seeking to set aside in the budget for the next fiscal year as land purchase costs.

Facilities will be built in an area 5 kilometers north-south and 3 km east-west in the towns of Okuma and Futaba, which host the Fukushima Daiichi complex, as well as in an area in the town of Naraha, which hosts the Fukushima Daini plant, and in the town of Tomioka.

Several types of facilities are to be built, such as a contaminated soil storage place, a facility to keep waste with radiation level above 100,000 becquerels per kilogram, and a facility to sort the waste that is brought in.

The government is seeking to purchase a vast area of land so that part of it can be used as a buffer zone that is expected to help allay the concerns of residents in surrounding areas.

It also believes the vicinity of the facilities will not be suitable for habitation because dump trucks carrying contaminated waste could pass by.

The government plans to keep the waste inside the storage facilities for up to 30 years and dispose of it outside Fukushima Prefecture, but the final disposal site is undecided.

**Kyodo News**, November 23, 2013

<http://mainichi.jp/english/english/newsselect/news/20131123p2g00m0dm004000c.html>

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## Election

### **Fukushima voters shun incumbent to elect newcomer in mayoral election**

FUKUSHIMA — A 54-year-old political novice scored a stunning victory over the incumbent in the Fukushima mayoral election on Nov. 17, backed by voters who have been dissatisfied with the central government's handling of the crisis at the Fukushima No. 1 Nuclear Power Plant and protracted decontamination work.

Kaoru Kobayashi, a former head of the Tohoku Regional Environmental Office of the Environment Ministry, stunned incumbent Mayor Takanori Seto, 66, who ran for a fourth four-year term supported by the Liberal Democratic Party (LDP) and the New Komeito party. He garnered 72,441 votes, compared with 32,851 votes for Seto and 7,620 votes for Yutaka Yamada, backed by the Japanese Communist Party. Voter turnout came to 49.10 percent, up from 38.18 percent in the previous election.

Seto's setback in the prefectural capital follows the electoral losses of the incumbent mayors in Koriyama and Iwaki in April and September this year, respectively. The three cities each have a population of around 300,000. The incumbent mayor of Tomioka, a town near the crippled nuclear

power plant, also lost his re-election bid in July.

Kobayashi announced his candidacy in August, vowing to do his best to realize his hometown's reconstruction as a former Environment Ministry bureaucrat as Fukushima residents have been tormented by nuclear radiation.

He left the ministry in July this year and relocated to Fukushima, leaving behind his wife and two sons at their Tokyo home. When Kobayashi launched his mayoral election campaign, a campaign worker relates, there were only a desk and sofa in his office and there were hardly any visitors.

He started canvassing for votes by contacting relatives and former high school classmates as part of a grassroots campaign. Some of his former classmates unilaterally opened a « support Kobayashi » account on Facebook and other supporters also made heavy use of the Internet. The candidate walked around the city, losing about 5 kilograms along the way.

“The wind shifted” after the Iwaki mayoral election on Sept. 8 in which the incumbent was defeated. The following day, Kobayashi's election campaign office started receiving applications for membership and the number of supporters topped 30,000 before official campaigning began. About 500 people gathered at a women's rally on Nov. 12 as the “Change Fukushima !” message resonated with local residents.

*Mainichi Shimbun*, November 18, 2013

<http://mainichi.jp/english/english/newsselect/news/20131118p2a00m0na014000c.html>

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## **Kashiwazaki-Kariwa plant**

### **Safety assessment process for TEPCO's Kashiwazaki-Kariwa plant begins**

TOKYO (Kyodo) — Nuclear regulators on Thursday began a safety assessment process to decide whether two reactors at Tokyo Electric Power Co.'s Kashiwazaki-Kariwa plant are qualified to restart, nearly two months after the utility filed an application.

The move is a sign of progress for TEPCO, which is eager to restart the seven-reactor plant in Niigata Prefecture to improve the tough business conditions it faces due to the crisis at its Fukushima Daiichi complex, but the Nuclear Regulation Authority suggested earlier that the process may not go smoothly.

At the outset of the first safety review session for the Nos. 6 and 7 reactors, TEPCO Managing Executive Officer Takafumi Anegawa said, « We are deeply aware that we are facing doubts over our safety awareness, organization, technical abilities and management. We are expecting strict screening. »

Questions from regulators during the 90-minute session focused on a filtered venting system TEPCO plans to install so that radioactive substances will be reduced when gas and steam need to be released to prevent damage to reactor containment vessels.

The installation of the equipment has become a requirement for boiling water reactors for the first time in Japan, after the 2011 Fukushima nuclear crisis led to the release of a massive amount of

radioactive material amid the meltdown of three reactors.

Regulators said they want to check the system's filtering ability as well as its operation procedures, given that TEPCO stated in its application document that it will start using the equipment after securing local approval.

TEPCO has included the statement as a result of exchanges with Niigata Gov. Hirohiko Izumida, who has been critical of TEPCO's behavior.

The activity of small geological faults beneath the two reactors could also become a contentious point in the following review process, although TEPCO has denied that the faults are active.

Open safety screening meetings, which the NRA has convened dozens of times for other reactors, had not been held until Thursday for the Kashiwazaki-Kariwa plant as regulators have been wary following TEPCO's poor handling of the Fukushima Daiichi crisis cleanup activities.

As for why the NRA decided to go ahead with the screening process, Chairman Shunichi Tanaka has said the NRA could not continue putting off a screening meeting as format checks of documents submitted by the utility have finished.

He also said that he took positively a recent announcement by TEPCO on a set of measures to improve the working conditions at the Fukushima plant, which could help the company to address mishaps caused by human error.

But Tanaka has warned that regulators may temporarily suspend the assessment process if serious problems occur at Fukushima Daiichi.

For TEPCO, bringing its idled reactors back online would help it cut the huge cost of importing fuel for thermal power generation to meet electricity demand in Tokyo and surrounding areas.

The Nos. 6 and 7 reactors are advanced boiling water reactors and the newest among the seven units at the Kashiwazaki-Kariwa plant, the world's largest nuclear power plant with a combined output capacity of 8.2 million kilowatts.

**Kyodo News**, November 21, 2013

<http://mainichi.jp/english/english/newsselect/news/20131121p2g00m0dm074000c.html>

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## **Inspections of Kashiwazaki-Kariwa nuke plant to resume ahead of possible restart**

Japan's nuclear regulatory agency decided Nov. 13 to resume safety inspections at Kashiwazaki-Kariwa Nuclear Power Plant after operator Tokyo Electric Power Co. (TEPCO) submitted a plan to address contaminated water leaks at its stricken Fukushima nuclear plant.

The Nuclear Regulation Authority (NRA) had refused to conduct the safety inspections of the No. 6 and No. 7 nuclear reactors at Kashiwazaki-Kariwa — which are required if the reactors are to be reactivated — following reports of repeated radioactive water leaks at the Fukushima No. 1 Nuclear Power Plant due to human error.

The leaks prompted the NRA to meet with TEPCO President Naomi Hirose on Oct. 28, demanding



that the utility institute sweeping reforms. In response, TEPCO announced plans on Nov. 8 to improve the work environment at the Fukushima plant, including the construction of a large-scale rest facility with a capacity of around 1,200 as well as a cafeteria.

At a regular meeting of the NRA, acting chairman Kunihiro Shimazaki praised the plan and decided the agency would monitor the power company to see that the plan was carried out.

The NRA secretariat has completed its closed-door confirmation of TEPCO's safety inspection application, and as with other nuclear reactors for which similar applications have been submitted, decided it would hold a public screening meeting. Various elements of the application will be hashed out during the meeting, after which the agency will determine how to proceed with the inspection.

The safety inspections are expected to take at least six months. And even if the reactor passes the NRA's inspection, TEPCO must gain the consent of the plant's host communities, including the Niigata Prefectural Government — which is wary of reactivation — and other local municipalities.

*Mainichi Shimbun*, November 13, 2013

<http://mainichi.jp/english/english/newsselect/news/20131113p2a00m0na009000c.html>

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## **TEPCO expects Kashiwazaki-Kariwa plant to restart next July**

TOKYO (Kyodo) — Tokyo Electric Power Co. expects its idled Kashiwazaki-Kariwa nuclear plant in Niigata Prefecture to restart in July next year and may mention the likelihood when updating its business turnaround plan soon, sources close to the matter said Wednesday.

Under the existing restructuring plan compiled last year, TEPCO projected restarting several reactors in April or later this year to improve its tough business conditions following the severe nuclear accident at its Fukushima Daiichi complex in 2011.

TEPCO applied for state safety inspections of the Kashiwazaki-Kariwa plant's Nos. 6 and 7 reactors in late September, seeking to resume their operations in April. But the checkup process by nuclear regulators is not yet in full swing amid concerns over the utility's poor handling of the Fukushima plant.

By presenting a more realistic schedule for resumption of the reactors, which would enable the utility to save costs from importing fuel for thermal power generation, TEPCO apparently wants to assure banks that its earnings will significantly improve in the next fiscal year so that it can secure 500 billion yen in loans in December.

TEPCO has no intention of resorting to further electricity rate hikes in the meantime, according to the sources.

But the plant's restart could be delayed further, depending on discussions held by the Nuclear Regulation Authority and whether TEPCO can secure local approval on the issue.

TEPCO's business plan, compiled jointly by the utility and a state-backed bailout fund, may be revised by the end of the month. The Nuclear Damage Liability Facilitation Fund injected 1 trillion yen in public funds in July last year to bolster the firm's financial standing.

All of the country's 50 commercial reactors are currently offline, with many of them unable to restart after shutting down for regular checkups.

Since Japan revamped its nuclear regulations in July, a total of 14 reactors, including the two owned by TEPCO, have applied to the NRA for safety confirmation required for their restart.

**Kyodo News**, November 6, 2013

<http://mainichi.jp/english/english/newsselect/news/20131106p2g00m0dm041000c.html>

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## Leaks

### **TEPCO plans to change drainage channel outlet heading to ocean**

FUKUSHIMA, Japan (Kyodo) — The operator of the crippled Fukushima Daiichi nuclear power plant said Monday it will build a new drainage channel as part of efforts to prevent toxic water from directly flowing into the Pacific Ocean when leaks occur at water storage tanks.

The new drainage channel will be built to direct toxic water to the plant's port, which is separated from the sea with breakwaters. The steps will be taken by the end of March, according to Tokyo Electric Power Co.

TEPCO decided on the move after it found in August that 300 tons of highly radioactive water had leaked from one of the tanks, part of which is believed to have flowed into the Pacific Ocean through existing drainage channels.

Under the plan, workers are expected to create a new water route that diverges from the current drainage ditch. When a leak occurs, TEPCO will dam the existing drainage ditch so that the water flowing in it heads to the plant's port.

At the Fukushima plant, hundreds of tanks have been set up to store radioactive water created as a result of continuing water injections into the three crippled reactors that suffered meltdowns during the 2011 nuclear crisis.

**Kyodo News**, November 12, 2013

<http://mainichi.jp/english/english/newsselect/news/20131112p2g00m0dm036000c.html>

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### **TEPCO confirms water leaks around Fukushima reactor for first time**

Tokyo Electric Power Co. (TEPCO) has confirmed two water leaks from piping in the No. 1 reactor building at the Fukushima No. 1 Nuclear Power Plant, company officials said.

This is the first time the utility has located water leaks around the plant's damaged reactors since hydrogen explosions occurred at the plant in March 2011.

TEPCO has found that used reactor coolant water was leaking into the No. 1 reactor building's « Torus Room, » which holds the reactor's pressure suppression chamber, after observing the room with a remote-controlled, camera-equipped floating device. The instrument measured high radiation levels in the areas, at between 0.9 and 1.8 sieverts per hour.

In order to proceed with reactor decommissioning, these leaks will have to be stopped and the reactor immersed in water to reduce radiation emissions.

*Mainichi Shimbun*, November 14, 2013

<http://mainichi.jp/english/english/newsselect/news/20131114p2a00m0na002000c.html>

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## **TEPCO to begin to recover spent nuclear fuel**

Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 Nuclear Power Plant, is set to begin recovering nuclear fuel from the facility's pool holding spent fuel in mid-November, sources at the government regulator and the utility said.

The Nuclear Regulation Authority (NRA) is expected to approve TEPCO's plan to remove fuel rods from the pool in the plant's No. 4 reactor building as early as the beginning of next week after confirming the safety of the work procedure.

Zengo Aizawa, vice president of TEPCO emphasized at a news conference on Nov. 8 that the work can be conducted safely. « The possibility is extremely slim that criticality, a chain reaction of nuclear fission, will occur during the work. »

TEPCO extracted two fuel rods from the pool in summer last year on an experimental basis.

The work to remove fuel rods from the pool in the No. 4 reactor building is viewed as a litmus test for the success of decommissioning the Fukushima No. 1 nuclear plant, which is expected to take 30 to 40 years.

Under the plan, 36 workers, including those hired by subcontractors, will extract all 1,533 nuclear fuel rods by the end of 2014, and transport them to another pool, which is about 100 meters away from the reactor building.

TEPCO will begin extracting 566 fuel rods from the pool in the No. 3 reactor building in 2015, and 392 from the No. 1 building pool and 615 from the No. 2 building pool in 2017 at the earliest.

*Mainichi Shimbun*, November 9, 2013

<http://mainichi.jp/english/english/newsselect/news/20131109p2a00m0na007000c.html>

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## **Radiation**

### **Plan to lower radiation readings OK'd**

To facilitate the return of evacuees, the Nuclear Regulation Authority has approved a change in the way radiation doses are monitored around the crippled Fukushima No. 1 nuclear power station that will effectively result in lower readings, but observers warn this could raise public mistrust.

The change calls for basing monitoring on data from dosimeters held by individual residents.

It was proposed by the regulatory commission's secretariat at its meeting Monday and gained broad-based consensus.

Dosimeter readings tend to be less than half of those using the existing method based on air dose rates, which assume that residents stay outdoors for a total of eight hours a day, according to the NRA Secretariat.

The proposal comes as the government is aiming to lift the evacuation advisory for areas where annual radiation doses are estimated at 20 millisieverts or lower.

The new method is expected to help promote the return of evacuees as well as reduce costs for decontaminating areas tainted by radioactive fallout from the Tokyo Electric Power Co. plant.

But a change in the monitoring method could heighten local residents' mistrust of the government, observers said.

The NRA Secretariat's proposal said that a key condition for allowing evacuees to return home is that annual radiation doses estimated from air dose readings not exceed 20 millisieverts.

The government will manage the doses of residents who return home by using dosimeters distributed to them. Over the long term, the goal will be to limit residents' annual extra radiation exposure stemming from the disaster at the plant to 1 millisievert, the proposal said.

The government will also deploy counseling staff, including municipal officials, doctors and other medical experts, for returnees who are uneasy about radiation, according to the proposal.

Decontamination costs are estimated at ¥2.53 trillion to ¥5.13 trillion in Fukushima Prefecture, excluding radioactive waste disposal

In the city of Fukushima, Ichiro Kowata, 77, an evacuee from Iitate, called for the government to more fully explain the proposed method change. « Younger people say they can't trust statements that suddenly declare areas to be safe when they have been called dangerous until now, » he said.

**Jiji Press**, November 12, 2013

<http://www.japantimes.co.jp/news/2013/11/12/national/plan-to-lower-radiation-readings-okd/>

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## Evacuees

### **Fukushima recovery plan urges evacuees to make hard decision**

As the government seeks to speed up disaster recovery in areas near the crippled Fukushima No. 1 nuclear plant, evacuees have to decide whether to abandon their homes and start new lives or wait

until they can return.

Disaster-recovery task forces from the ruling Liberal Democratic Party (LDP) and its coalition partner, New Komeito, presented a Fukushima recovery plan on Nov. 11, in which they clearly stated that areas where annual radiation dosages exceed 50 millisieverts are likely to be uninhabitable for a long time.

Mitsuyoshi Kawahara, 71, who has evacuated from Futaba, Fukushima Prefecture, to a temporary housing unit in Fukushima city, said he had accepted the reality since the nuclear plant accident in March 2011 that he would be unable to ever return to his home. Of 32 households from Futaba that initially lived in the temporary housing complex, eight had moved out. Another two will leave by the spring of next year.

Kawahara returned home briefly at the beginning of this month, but radiation levels around his house measured 14-20 microsieverts per hour, about 100 times higher than permissible levels.

« If I was allowed to return home for good today, I could fix the house. But, that's not happening, » Kawahara said.

The recovery plan does not refer to decontamination work in the Futaba district nor a support system for those who voluntarily evacuate from the town.

« It's better to be told that I can't return for a while than being told that I can go home someday and having to wait for years, » said 66-year-old Namie town resident Yasuhiko Sasaki. « But I can't accept not being able to return home forever. I want the government to conduct decontamination work in my hometown so that we can occasionally visit our homes, » he added.

A 39-year-old housewife who has voluntarily evacuated from the city of Koriyama to Aizuwakamatsu in Fukushima Prefecture hopes for fair support from the government. « Voluntary evacuees are often criticized by people who think we're evacuating just to get compensation, » she commented. She pointed out that these labels such as « difficult-to-return » and « voluntary evacuees » are dividing the community.

*Mainichi Shimbun*, November 12, 2013

<http://mainichi.jp/english/english/newsselect/news/20131112p2a00m0na009000c.html>

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## Monju

### **Regulators warn Monju operator over breach of nuclear security rules**

TOKYO (Kyodo) — The Nuclear Regulation Authority on Wednesday admonished the operator of the Monju prototype fast-breeder reactor for failing to take appropriate measures to protect nuclear material from possible terrorist attacks and other malicious acts.

The rebuke is another black mark against the Japan Atomic Energy Agency, previously criticized by the NRA over a massive number of equipment inspection failures at Monju.

According to the NRA, some fences to restrict access to certain areas were about 30 centimeters

lower than stipulated in the JAEA's rules and regular checkups of equipment to ensure nuclear security, such as cameras, were not conducted appropriately.

The operator also allowed visitors inside areas where nuclear material exists without taking copies of their identifications, which was another breach of the rules.

« We must say that people (in charge of the issue) lacked awareness of nuclear security, » the NRA said in its report.

During a meeting Wednesday, NRA commissioners expressed disappointment over the JAEA's behavior, noting that Monju is a facility that requires special attention in terms of nuclear security. The fuel for Monju contains plutonium, a material used in nuclear weapons.

« It is unprecedented. Why did breaches happen at this most important Monju facility ? » Toyoshi Fuketa, one of the commissioners, said.

NRA Chairman Shunichi Tanaka also said, « I hope this incident will not develop into an international issue. »

« The international society is very nervous about nuclear terrorism...So it will be a trouble if Japan becomes loose about such issues, » Tanaka told a press conference later in the day.

The Monju reactor is not operating because it was effectively banned from operation in May following the revelation of lax safety inspections.

But even before that, Monju remained largely offline since first achieving criticality in 1994, due to a leakage of sodium coolant and other subsequent problems.

Over 1 trillion yen has been spent on the Monju project, with Japan hoping it would play a key role in a nuclear fuel recycling policy that aimed at reprocessing spent nuclear fuel and reusing the extracted plutonium and uranium as reactor fuel.

**Kyodo News**, November 6, 2013

<http://mainichi.jp/english/english/newsselect/news/20131106p2g00m0dm056000c.html>

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## Holding company

### **TEPCO plans holding company system amid wariness from financial institutions**

To cut costs and boost its competitive edge, the stricken Fukushima nuclear plant's operator Tokyo Electric Power Co. (TEPCO) has begun deliberations toward establishing a holding company system as early as fiscal 2016.

Subsidiary companies dedicated to fuel and thermal power generation, power distribution and transmission, and retail, respectively, will be established under the holding company, in alignment with plans to separate power production from power distribution and transmission as part of electricity system reforms.

The plans, to which financial institutions that have loaned funds to TEPCO have expressed caution, will be incorporated into the company's comprehensive special business plan set to be revised before the end of the year.

In preparation for the move, in April, TEPCO introduced an in-house company system to foster further independent decision-making by reorganizing the company into three separate divisions and an additional section dedicated to human resources and other head office functions.

Under the new proposed plan, the three divisions will become three separate subsidiaries under the umbrella of the head office section, which will become the holding company. The fuel and thermal power generation company will sell electricity to businesses that will buy it for high prices. Meanwhile, the retail subsidiary will buy from power generation firms that offer low prices. Such measures carry the possibility of further streamlining TEPCO operations. The fate of a division dedicated to nuclear reactors and decommissioning will be deliberated at a later time.

Because the Electricity Business Act does not permit major utilities to split off into separate companies, TEPCO must wait for the passage and implementation of an electricity business law amendment in the ordinary session of the Diet next year. This would push back the company spin-offs to fiscal 2016 or 2017. If the plan pans out, it will precede the Ministry of Economy, Trade and Industry's plan to carry out the division of power generation and distribution between fiscal 2018 and 2020.

Even if TEPCO does separate its power generation functions from its power distribution and transmission functions, if they both remain under the umbrella of a TEPCO holding company, there is no guarantee that complete neutrality of the distribution and transmission subsidiary will be maintained. Financial institutions, in addition, are wary of TEPCO's plans to establish a holding company because of the chance that the treatment of collateral for loans to the company will change.

« We still can't predict if the loans will be repaid, » said one executive of a financial firm.

There also remains the possibility that demands to change the company's reorganization method and timing will arise.

*Mainichi Shimbun*, November 8, 2013

<http://mainichi.jp/english/english/newsselect/news/20131108p2a00m0na016000c.html>

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## **Working conditions**

### **TEPCO fleshes out steps to improve Fukushima plant working conditions**

TOKYO (Kyodo) — Tokyo Electric Power Co. on Friday fleshed out a set of measures to improve the tough working environment at the crippled Fukushima Daiichi nuclear complex, hoping to raise the morale of people involved in the plant's decommissioning process.

The measures include plans to build an additional temporary office space to house 1,000 employees in June, a facility near the plant to produce warm meals for workers by the end of March 2015 and

an eight-story building as a rest station. TEPCO will also take steps that could lead to increased wages for contract workers.

At a press conference in Tokyo, TEPCO President Naomi Hirose also vowed to ensure the safety of the upcoming process to remove fuel from the spent fuel pool of the severely damaged No. 4 unit. The work is expected to start in mid-November.

« This decommissioning work will continue for 30 to 40 years and it is the company's highest priority to improve labor conditions and to enable workers to maintain their sense of responsibility, » Hirose said.

To reinforce its management of the radioactive water buildup at the Fukushima plant, Hirose said TEPCO is on the path to increasing the number of staff in charge of the matter to a total of 320 from the initial 100.

Following a string of radiation leaks and other problems, the Nuclear Regulation Authority recently urged TEPCO to take « drastic » steps to improve the situation, including the working environment that remains poor even though more than two years have passed since the nuclear crisis began in March 2011.

TEPCO is apparently eager to show the NRA that it can properly manage the Fukushima plant at a time when the utility is seeking to restart an idled nuclear power plant in Niigata Prefecture to turn around its struggling business.

A senior NRA official told reporters earlier that it will decide whether to go ahead with the safety assessment of the Kashiwazaki-Kariwa plant by seeing how the situation at the Fukushima plant improves.

The safety of reactors has to be confirmed by the NRA before they can be restarted.

Meanwhile, sources close to the matter said Friday that TEPCO plans to shift to a holding company system in fiscal 2016 at the earliest to ensure its survival when competition increases under planned drastic electricity sector reform in Japan.

In April this year, TEPCO installed in-house firms respectively in charge of thermal power generation, power grid and retail businesses. The in-house companies are likely to become subsidiaries under the holding company.

TEPCO may create more subsidiaries, including one in charge of decommissioning the Fukushima plant.

The government is pushing for a plan to separate regional utilities' power generation and transmission businesses as part of the power system reform expected to start from 2015.

TEPCO also plans to scrap all of its 10 branch offices and assign around 1,000 of the employees who have been working at the offices for reconstruction activities in Fukushima Prefecture, according to the sources.

**Kyodo News**, November 9, 2013

<http://mainichi.jp/english/english/newsselect/news/20131109p2a00m0na001000c.html>



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## **Work environment improvements planned for Fukushima plant**

Tokyo Electric Power Co. (TEPCO)'s headquarters in charge of handling contaminated water and contaminated water storage tanks at the Fukushima No. 1 Nuclear Power Plant announced safety measures on Nov. 8 that include improvements to the working environment at the crippled plant to raise worker morale.

The chairman of the Nuclear Regulation Authority (NRA), Shunichi Tanaka, had sought fundamental improvements at the plant in a meeting with TEPCO President Naomi Hirose after repeated leaks of contaminated water occurred at the facility in October due to human error.

Motivation for the improvements came from the NRA halting safety inspections on the No. 6 and 7 reactors at TEPCO's Kashiwazaki-Kariwa Nuclear Power Plant — which are necessary if those reactors are to be restarted — because of insufficient measures at the Fukushima plant to prevent radioactive water leaks. Reactivation of the Kashiwazaki-Kariwa plant is a top priority for TEPCO for it to rebuild its finances.

The company plans to seek loans from financial institutions at the end of December. To secure the loans it is required to give an estimate of when the plant will be reactivated, as funds from the Kashiwazaki-Kariwa plant are required to improve its finances. If the safety evaluations of the plant's reactors remain suspended, financial institutions may not be willing to grant TEPCO the loans.

« If we do not quickly come out with some convincing measures (to stop water leaks), the reactivation (of the Kashiwazaki-Kariwa plant) will be pushed further back, » said Hirose.

According to the announcement of the new safety measures, the areas people can work in without needing to wear a full-face mask to protect against radiation will be doubled from their current amount to cover two-thirds of the plant's premises by decontaminating the plant. By fiscal 2014 or 2015, TEPCO plans to expand these areas to cover everywhere except around the No. 1 through 4 reactors.

TEPCO will also make a new, eight-story rest area capable of accommodating around 1,200 people, according to the measures, as the current rest area located on the premises is too small. Construction on the new rest area is to start as early as December next year. To improve the food available to workers at the plant, a meal preparation center that can provide 3,000 meals a day is to be completed by the end of fiscal 2014.

Currently, the planning of work at the plant is done at the Fukushima No. 2 Nuclear Power Plant around 10 kilometers south, as there is no room at the Fukushima No. 1 plant for desk work. The new measures would provide a new building for such work within the Fukushima No. 1 plant grounds and aim for better efficiency. Additionally, 220 more workers are to be added to manage contaminated water and contaminated water storage tanks, with the extra manpower coming from locations such as the Kashiwazaki-Kariwa plant and thermal power plants.

Decommissioning of the Fukushima No. 1 reactors is expected to take 30 to 40 years, and to accommodate this, a central supervisory room will be made to combine what are currently divided, supervisory functions. Temporary-use generators set up as backup power sources will be replaced

with more permanent ones.

To prevent radioactive rain water from flowing out over barriers set up around contaminated water storage tanks, as happened in October, the barriers will be made higher. To reduce the danger of the contaminated water in case it leaks, TEPCO will aim to speed up the start of full-scale operation of the plant's Advanced Liquid Processing System, which can remove 62 types of radioactive material from water, as well as make the system more reliable.

*Mainichi Shimbun*, November 9, 2013

<http://mainichi.jp/english/english/newsselect/news/20131109p2a00m0na006000c.html>

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## **Compensation fund**

### **Nuke crisis compensation fund to get capital boost, expanded responsibilities**

The government is planning to inject as much as 5 trillion yen in additional capital into the Nuclear Damage Liability Facilitation Fund (NDF) and transforming the compensation body into a funding portal for a broad array of nuclear crisis-related costs, it was learned on Nov. 8.

Under the proposal, designed to increase the monies available for compensation and decontamination included in an « accelerated Fukushima disaster recovery » plan now under consideration by the government and ruling parties, the maximum public funding available to the NDF would jump from the present 5 trillion yen to 8-10 trillion yen.

Using 5 trillion yen worth of interest-free loans that the government issued to the NDF, the fund is currently loaning funds to Fukushima No. 1 nuclear plant operator Tokyo Electric Power Co. (TEPCO), primarily as a capital base to pay disaster compensation. The NDF is supposed to ask the government to exchange bonds for cash to extend loans to TEPCO.

Both compensation payments and decontamination costs, however, are now expected to cost significantly more than had originally been estimated, and the government is set to allow TEPCO to broaden its use of NDF loans to cover cleanup and other disaster-related costs. In turn, the government plans to issue more interest-free bonds to the NDF to bring up its funding.

The government is furthermore considering including expanded compensation for Fukushima residents affected by the nuclear crisis in the accelerated recovery bill. The increase would be intended to guarantee sufficient support funding for both residents moving quickly back into areas evacuated in the wake of the plant meltdowns, and the relocation costs of residents of badly contaminated « difficult to return » areas. These compensation payments were originally expected to total some 3.8 trillion yen, but many expect that figure to rise to 5-6 trillion yen.

The government also plans to provide the estimated 2 trillion yen-plus for decontamination via the NDF. The government is covering the cleanup costs for the time being and will demand to be reimbursed by TEPCO later — a setup designed to prevent the near-term concentration of the decontamination costs from plunging the utility in a state of capital deficit.

Related to the cleanup operations, the government is also considering channeling funds through the

NDF to support creating mid-term storage sites for contaminated soil. Building the sites is expected to cost about 1 trillion yen, which would be drawn from proceeds of an increased « new power source development » tax levied on electricity bills. Collecting the funds within a short period, however, could cause power bills to spike, prompting the move to use NDF capital to cover disposal site construction in the short-term. The funds would then be recovered over many years from power source development tax receipts.

All this extra capital for the NDF will require the government to issue 3-5 trillion yen more in interest-free bonds to the NDF, though this figure will remain uncertain as long as the total cost of decontamination is unknown. A concrete estimate of the cleanup costs is likely to be long in coming, and the government is considering boosting debt issuances in stages as required.

Broadly speaking, the nuclear disaster response policy funnels funds to TEPCO in the form of government loans via the NDF, which the government would then recover over the long-term — ultimately placing the burden of cleanup and recovery on TEPCO and the electric power industry as a whole. In concrete terms, the NDF will repay the debts to the government using general contributions paid by the 11 nuclear power producers in Japan and special contributions extended by TEPCO.

*Mainichi Shimbun*, November 9, 2013

<http://mainichi.jp/english/english/newsselect/news/20131109p2a00m0na009000c.html>

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