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## Agency drafts new safeguards for reactors that may delay restarts

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### THE ASAHI SHIMBUN

New standards being drafted by the Nuclear Regulation Authority (NRA) call for strict new safety measures that could delay the restart of idled reactors and place a heavy financial burden on operating companies for the cost of retrofitting plants.

The wide-ranging measures would deal with some of the failings encountered during the 2011 disaster at the Fukushima No. 1 nuclear plant, such as difficulty venting over-pressured reactors, a lack of back-up power sources, and a control room that eventually became unusable.

Broadly, the measures would require utilities to prepare each reactor for a serious accident arising from an earthquake or tsunami, as well as a fire, plane crash or terrorist attack.

The measures would become legally binding, whereas compliance with similar measures in the past was voluntary.

The new standards would apply to all of Japan's 50 functional reactors, 48 of which have remained idle since 2012. Those reactors that fail to meet the new requirements would be ineligible, in principle, for restarts.

Implementing all new measures could require several years of work, so a grace period is envisaged to allow operators to resume power generation before they have completed all retrofitting work.

But people familiar with the plans said such exceptions would be granted only for certain items of equipment, suggesting significant delays in restarting reactors would nevertheless be likely.

The standards envisage a scenario like that of 2011, when a double-whammy quake and tsunami previously billed as improbable struck northeastern Japan.

To ensure continued electricity supply to the cooling systems of reactors, the plan would mandate installation of multiple power sources adjacent to each reactor. Plant operators would need to be in a position to deploy several fire trucks and power-supply vehicles at each reactor building. And the generators, pumps and storage tanks of the cooling systems would need to be located on high ground to guard against the risk from flooding.

To guard against the release of radioactive materials in an accident, filtered venting equipment would need to be installed at reactor cores so that operators can lower the pressure inside without blasting particles into the atmosphere.

At each plant, operating companies would need to construct buildings capable of withstanding an earthquake, tsunami or radioactive contamination to serve as an emergency disaster response center.

The new standards also call for additional mechanisms to cool the reactor core in the event that the central control room is destroyed by an event such as an airplane crash. One measure would mandate the construction of a second, back-up control room off-site. Another would require the replacement of vulnerable electric cables at the plant with flame-resistant ones.

## LONG DELAY

The new safety standards will be combined with separate proposals compiled Jan. 29 by a panel of experts acting under the NRA to prepare for an earthquake or tsunami. Officials would now open the proposals to consultation and aim to adopt them formally in July.

Once the standards become law, the agency will receive applications from electric power companies for reactor restarts and will inspect the safety measures at each site.

The new standards could prove to be especially burdensome for operators of boiling water reactors, such as those at the Fukushima No. 1 plant. Such reactors have a particularly small containment vessel, meaning they are vulnerable to a rapid rise in internal pressure in the event of a meltdown.

For that reason, the new standards call for the installation of two separate mechanisms to vent pressure through a system fitted with a filter to catch escaping radioactive materials.

Sources said the agency will require that at least one such venting equipment be already in place when electric power companies submit requests for permission to resume the reactor's operation.

The NRA brought up the question of requiring two independent mechanisms during consultations with representatives of electric power companies. They responded by saying such redundancy was unnecessary, but the agency over-ruled them.

Of Japan's 50 nuclear reactors, 26 are boiling water reactors and none so far possesses filtered venting equipment of the kind the rules would require.

Hokuriku Electric Power Co. and Chugoku Electric Power Co. have announced plans to fit such devices at their Shika and Shimane plants, respectively, but the timetable for installation foresees completion in fiscal 2015. An official with Chubu Electric Power Co. said there is a lag of two to three years between deciding to invest in such equipment and its actual installation.

It is likely that Japan's boiling water reactors will remain idle for some time yet if the agency decides to mandate such equipment when the new safety standards formally take effect in July. One of the NRA commissioners, Toyoshi Fuketa, said he did not think operators of such reactors would be submitting applications to resume operations in July.

By contrast, a pressurized water reactor has a larger containment vessel and therefore a less urgent need to ease the contents in the event of an accident. Such reactors would likely receive a grace period for the installation of filtered venting equipment.

A decision has yet to be made on whether a grace period will be granted for implementing other required measures, such as creating quake-resistant emergency response centers and secondary, off-site reactor control rooms.

Only seven nuclear plants currently possess buildings that could be used as the former. Those that don't could find that constructing a center comprises the costliest part of the new requirements, approaching the cost of building up seawalls to protect against tsunami waves.

Kansai Electric Power Co. has estimated it would need to spend 285 billion yen (\$3.1 billion) in medium- to long-term safety measures for the 11 reactors at its three nuclear plants. Chubu Electric has said it would need to spend about 150 billion yen on anti-tsunami measures alone at its Hamaoka plant.

And because some nuclear plants have separately been identified as sitting on or near active faults, only a few reactors operated by Shikoku Electric Power Co. and Kyushu Electric Power Co. are expected to file applications to resume operations in July.

### **HEAVY COST**

The new safety standards would place a heavy financial burden on electric power companies because it may cost several tens of billions of yen to make even one reactor comply.

"It could mean that some electric power companies will face excess liabilities as early as next year," said an executive at a financial institution with loans in the sector.

Although five electric power companies operate boiling water reactors, the two utilities that will be especially hard-hit by the new standards are Tokyo Electric Power Co., the operator of the Fukushima No. 1 plant, and Tohoku Electric Power Co., which has been recording large losses ever since the disaster.

TEPCO's corporate recovery plan includes the envisaged resumption of power generation at the seven reactors at its Kashiwazaki-Kariwa plant in Niigata Prefecture from April 2013, a move which it believes will return the company to profitability in fiscal 2013.

However, work to install filtered venting equipment has begun only at one of the plant's reactors. Any delay would force the utility to revise its recovery plan.

It may consider pushing up the prices for electricity it sells to users but would likely face huge resistance. It could also prompt some customers to argue that the company should instead be placed under legal bankruptcy protection.

The outlook for Tohoku Electric is equally bleak.

Serving the region hit hardest by the quake and tsunami, the power company has sustained huge losses since 2011. It has said it will try to cope by raising household electric rates by 10 percent this summer.

But it may now need to consider an even greater price hike to meet the cost of reactor upgrades, further burdening local disaster victims as they try to rebuild their lives and the local economy.

### **TOUGH DECISION FOR ABE**

During questioning in the Diet on Jan. 31, Prime Minister Shinzo Abe spoke of his government's readiness to do everything necessary to improve nuclear safety. He also suggested it would allow those reactors that meet the new standards to restart.

"We will make every effort to ensure an energy supply so there are no problems in the daily lives of the people and for the economy," Abe said.

But recognizing the need to retain public confidence, the Abe administration intends to respect whatever decisions are made by the NRA.

People close to Abe have said any decision on resumption of operations could only come after the adoption of the new safety standards.

However, the Abe administration could face a dilemma if the new safety standards significantly raise the bar for reactor restarts.

Some within the ruling Liberal Democratic Party have spoken of the need to pressure the NRA.

"It should be overseen by a Lower House special committee responsible for nuclear energy," said one participant at a Jan. 29 meeting of LDP executives.

Pressure of the opposing kind continues to be applied by the weekly Friday night anti-nuclear protests outside the prime minister's official residence.

And if the electricity supply reaches capacity this summer despite efforts to conserve energy, the Abe administration may find itself in the position of having to make a political decision about resuming operations at nuclear reactors.

"We will consider various alternatives from now on, as we prepare for the summer," said Chief Cabinet Secretary Yoshihide Suga at a Jan. 31 news conference.

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