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NUCLEAR SAFETY CALLED INTO QUESTION

A court ruling issued in late March concerning a power reactor in Ishikawa Prefecture has proved both rare and astounding. Saying that there is a problem with the earthquake-resistance design of the reactor, the court ordered a halt to the operation of the nuclear-power station - the first ruling ordering such a halt from among 30 lawsuits filed by citizens concerned about the safety of nuclear-power stations. As the power company involved has appealed the ruling, the reactor continues to operate. But the ruling could greatly affect the nation's energy policy and power industry. If it is upheld by the Supreme Court, it will call into question the safety foundation upon which the nation's 55 power reactors are built and could lead to their temporary closure. They currently supply about one-third of the nation's electric power.

A total of 135 citizens from 17 prefectures, most of them residents of Ishikawa and Toyama prefectures, filed a lawsuit against the operator of the No. 2 reactor at Hokuriku Electric Power Co.'s Shika nuclear-power station in Ishikawa Prefecture in August 1999, shortly after construction of the reactor began. The 1,358-megawatt, advanced boiling-water type reactor is the nation's 55th nuclear-power reactor and the second largest in output. The plaintiffs contended that the reactor, whose design is based on the quake-resistance design guidelines drawn up in September 1978 by the then Atomic Energy Commission, is vulnerable to damage in a large quake. The March 24 ruling came just nine days after the reactor began operation.

In the trial, the power company explained that the reactor was designed to withstand a magnitude 6.5 earthquake whose focus is just below the reactor, the largest earthquake predicted to hit the area. But the ruling contended the scale and intensity of the largest earthquake assumed in the reactor design is too small.

The ruling in part mentioned an earthquake with a magnitude 7.2 that occurred off Miyagi Prefecture on Aug. 16, 2005, and its effect on Tohoku Electric Power Co.'s Onagawa nuclear-power station in the same prefecture. Three reactors there automatically shut down because vibrations at the site were larger than had been factored into the quake-resistance design. The ruling said that the calculation method to determine possible vibrations for use in a reactor design was inadequate.

In part of their argument, the plaintiffs said that the Shika reactor design failed to take into account the activity of the 44-km Ochigata fault line in Ishikawa Prefecture and east of the nuclear-power station. In March 2005, the government's Earthquake Research Committee said that there is a 2-percent probability that an earthquake with a magnitude of 7.6 could occur within 30 years if the entire fault line shifted. The power company said that the committee's approach is different from that employed by the reactor's designers.

It also said that there is no need to suppose that the whole fault line would shift. But the ruling said that the committee's prediction is tenable and should be taken into consideration in the reactor design.

The ruling concluded: "There is a possibility that earthquake vibrations beyond the power company's expectations can occur, causing an accident at the nuclear-power station and exposing residents to radiation." It said that in the event of a large quake, radioactive material exceeding the permitted levels would be released and would seriously affect the lives and health of local residents. It even said that plaintiffs living in Kumamoto Prefecture, about 700 km from the nuclear-power station, could be exposed to radiation far exceeding the permitted levels.

The basis of the state's current quake-resistance design guidelines for nuclear-power stations is that they must be built on bedrock located away from active fault lines and be designed to safely withstand the estimated largest possible earthquake that could take place in the area. The significance of the ruling is that it has cast doubt on the adequacy of the guidelines. The 1995 Hanshin earthquake, which devastated Kobe, has heightened the people's concern about the safety of nuclear-power stations. The ruling pointed out that earthquakes with a magnitude of 6.5 or more have occurred even in places where the existence of active fault lines was not confirmed, including an earthquake with a magnitude of 7.3 that occurred in western Tottori Prefecture in October 2000.

The Nuclear Safety Commission started work to revise the quake-resistance design guidelines in July 2001 but has not yet reached a conclusion. Since Japan is a quake-prone country, it is imperative that it finishes the revision work as soon as possible, taking into account the latest seismological studies and other scientific findings. Japan's nuclear reactors are aging, with 11 more than 30 years old. This makes the safe operation of nuclear-power stations all the more important.