

Restart Nuke Plants after Implementation of Safety Measures

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The Fukushima Daiichi Nuclear Power Station of Tokyo Electric Power Co. has plunged into an unprecedented accident where four nuclear reactors' troubles have coincided. On March 11, the station lost its external power source due to the earthquake but promptly started up an emergency diesel power generator to allow an emergency core cooling system to normally cool reactors. However tsunami waves as high as 15 meters followed, flooding the emergency diesel power generator in the first basement of the turbine building. The station thus lost all alternating-current power sources, leading to a seriously dangerous situation.

The No. 1 reactor generated hydrogen with its core damaged shortly past the midnight of March 11, leading to a core meltdown. Hydrogen and radioactive substances leaked from the reactor due to excessive pressure on the reactor container. Then, a hydrogen explosion and a subsequent fire allowed radioactive substances to be released out of the reactor building, exerting a grave impact on its vicinity. The dispersion of rubble contaminated with radioactive substances through the hydrogen explosion of the No. 1 reactor made it difficult to deal with troubles of the Nos. 2 and 3 reactors. If the No. 1 reactor's accident had been solved, water hoses could have been set up promptly to prevent the troubles of the Nos. 2 to 4 reactors.

Accident causes were composite

Various factors have been responsible for the Fukushima Daiichi nuclear plant accident. First, the earthquake destroyed a power transmission tower and a power access system at the plant site, leading the plant to lose its external power source. Second, the emergency diesel power generator was left vulnerable to tsunami. Third, a mobilized mobile power source vehicle was useless as its voltage and plugs failed to meet specification of the power plant. Fourth, the No. 1 reactor's emergency condenser, designed to cool vapor and generate water to be returned to the core, failed to work sufficiently. Fifth, the control panel sent false signals to halt the emergency condenser as the battery was discharged amid the loss of all alternating-current power sources. As a result, the reactor's water level declined, leading the core to be damaged and melt down.

Safety measures' effectiveness has been demonstrated

Learning precious lessons from the accident, the Nuclear and Industrial Safety Agency instructed electric power companies to take emergency safety measures. Stress tests on nuclear reactors in Europe have been based on information from Japan on the Fukushima accident. I checked the details of the European stress tests and found that they assimilate the instructions by the Japanese agency. Specifically, the instructions have called for (1) improving the quake resistance of transmission towers and cables, and power access systems at nuclear power plant sites, (2) securing the water-tightness

of buildings containing emergency diesel power generators, power panels and the like to prevent sea water from flooding these buildings, (3) deploying mobile power source vehicles and conducting their power and water supply exercises, (4) diversifying and accelerating cooling and water supply means to secure cooling of reactor cores, and (5) setting up batteries at higher-altitude points and enhancing their charging functions.

These measures' effectiveness has been demonstrated as cooling of reactor cores has been secured at the Onagawa, Fukushima Daini and Tokai Daini nuclear plants that were also hit by tsunami. The government should explain these facts and measures to the people in an easy-to-understand manner. But it has failed to do so.

News media has focused on applauding such renewable energy sources as solar power and wind power, misleading the people to overestimate these renewable energy sources. Although Germany has increased renewable energy sources' share of electricity generation to 18%, solar power's share has been no more than 2%. Even its 10-year-old full-fledged feed-in tariff system for power companies' purchases of all electricity generated with renewable energy sources has made such limited achievements.

Nuclear plants at which emergency safety measures have been taken should enter into operation immediately. As a matter of course, reactors that have undergone long test operation should shift to commercial operation. Japan should not generate new risks such as heat stroke, large-scale blackouts and a decline in its external economic competitiveness.

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