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Outlook and Challenges for Nuclear Power Generation in 2018

<Summary>

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Japanese topics: Safety assessment for the existing nuclear plants, restart, operational lifetime extension application

1. The number of restarted nuclear power plants in Japan stood at five as of December 2017. The Nuclear Regulation Authority (NRA) issued license for Units 3 and 4 of the Genkai Nuclear Power Station in February 2017 and for Units 3 and 4 of the Ohi Nuclear Power Station in May 2017. The four plants are in the final examination stage toward their restart.
2. On November 30, Kyushu Electric Power Co. and Kansai Electric Power Co. announced revisions to pre-operation tests for Genkai Units 3 and 4 and Ohi Units 3 and 4, respectively, indicating that Ohi Unit 4 and Genkai Units 3 and 4 will be restarted in FY2018. Given that nuclear power plant operators and regulators are careful about the first restart of nuclear plants in several years, restart schedules could be revised in the future.
3. While even plants granted licensing, permissions are in the abovementioned conditions, it is uncertain when the 13 plants now under safety examinations will be restarted with the examinations completed. In addition to Ohi Units 3 and 4 and Genkai Units 3 and 4, no nuclear plant is planned to be restarted within FY2018. The maximum number of restarted nuclear plants at the end of FY2018 may be nine. The nine include Unit 3 of the Ikata Nuclear Power Station that restarted commercial operation in September 2016 and was ordered by the Hiroshima High Court in December 2017 to suspend operation. We must understand that a judicial decision could affect the restart of nuclear plants.
4. In November 2017, the Japan Atomic Power Company filed an application with the NRA for extending the lifetime of the Tokai No. 2 Power Station for 20 years. This is Japan's first boiling-water reactor subjected to a lifetime extension application. In the United States, numerous similar reactors have been permitted to operate for 60 years. Whether the reactor could receive the lifetime extension permission by November 28,

2018, when its service will reach 40 years, will attract attention as a leading indicator of lifetime extension in Japan.

5. Watching pressure should be placed on the NRA's transparent, consistent safety assessment and the lifetime extension procedures, based on scientific grounds.
6. On July 28, 2017, the Agency for Natural Resources and Energy published a scientific characteristics map indicating regional scientific suitability for the geological disposal of high-level radioactive wastes. Since October 17, the Nuclear Waste Management Organization of Japan (NUMO) has sponsored prefectural meetings throughout Japan about the scientific characteristics map. In November 2016, it was unveiled that a business operator undertaking public relations services for such NUMO meetings told some students they would be paid for participating in such meetings. We hope that the inadequate meeting management problem will be solved to indicate how best to proceed with these meetings by mid-2018 when the prefectural meetings will be completed.

International topics: Struggling developed countries vs. China and Russia increasing global presence

7. In many U.S. states that have deregulated electricity systems, nuclear power plants have lost cost competitiveness on slack wholesale electricity prices and been shut down before the expiration of their service lives. In response to a sense of crisis about power supply as well as a system under consideration in some states to take into account zero-emission values, the Department of Energy (DOE) instructed the Federal Energy Regulatory Commission (FERC) on 29 September 2017 to support nuclear and coal power generation to preserve electricity systems' risk resistance. FERC, however, announced on January 8, 2018 that it terminated consideration of the DOE's September 29 proposal on grid reliability and resilience pricing, and will start a new proceeding to holistically examine the resilience of the bulk power system. FERC still places a priority on resilience. The new rules' impact on nuclear energy's market competitiveness is attracting attention.
8. In October 2017, the South Korean cabinet decided to resume the construction of Units 5 and 6 of the New Kori Nuclear Power Station and reduce South Korea's dependence on nuclear power generation over a long term by cancelling other new nuclear plant projects and accelerating the decommissioning of existing nuclear reactors. Attracting attention will be how the decision would be reflected in the third basic energy plan that are expected to be decided on in 2018.
9. China and Russia have continuously been expanding domestic and overseas nuclear plant construction. In 2017, such countries as Pakistan, Iran, and Bangladesh began to construct or operate nuclear plants under Russian or Chinese technical support.

Similar developments may come in 2018, when China is expected to commission its first Evolutional Pressurized Reactor (EPR, designed by French vendor, Framatome) at the Taishan Nuclear Power Station and its first AP-1000 reactor at the Sanmen Nuclear Power Station. Accurate analyses will be required on the situation in which nuclear plant projects led by Western industrial countries are struggling with delays while those supported by China and Russia are making progress.

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