

# Chairman's Statement on the Safety Impacts on the Kashiwazaki-Kariwa Nuclear Power Station due to the Niigataken Chuetsu-oki Earthquake in 2007

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Before anything else, I would like to extend my sincere condolence and deepest sympathy, on behalf of the Nuclear Safety Commission of Japan, to every victim and sufferer due to the Niigataken Chuetsu-oki Earthquake, 16 July, 2007. Although, meeting with the earthquake, the nuclear power plant safety of the Kashiwazaki-Kariwa Nuclear Power Station is basically ensured, while being steadily maintained, and in terms of nuclear accident and radiological protection, no serious situations have been observed there, the impacts on the power station are not insignificant, including the fires at its transformer facilities. The Nuclear Safety Commission is determined to take necessary actions to grasp the actual situation in-situ, to ensure the safety of all local and national residents and to account for the concerns at its earliest capacity.

The operator, TEPCO, disclosed, as of 17:00 hours of 18 July, 2007, 57 incidents of failures and troubles on site, including nine at Unit 1 (in maintenance mode), nine at Unit 2 (controlled shutdown in the started-up mode), eight at Unit 3 (controlled shutdown while being in operation), four at Unit 4 (same as Unit 3), four at Unit 5 (same as Unit 1), three at Unit 6 (same as Unit 1), five at Unit 7 (same as Unit 3), three at the switchyard, one at the solid waste storage, two at the administration buildings, and two others in the premise. These include some additional cases or cases with corrected information, which had not been included in the first announcement disclosed one day earlier as of 17:00 hours on 17 July, 2007. Although no snap decisions should be made in view of further possible fresh and corrected inputs, the information disclosed so far does not foretell any serious safety impacts on nuclear reactors concerned. One example is the cases of radioactivity releases or release possibilities, including the water puddles on the operating floors of each unit. The NSC shares the view, however, that all of these cases involve no concerns of environmental impacts externally. Still, the NSC is determined, for its accountability of these incidents, albeit not serious, to the nation, to express its position in due course, based upon the in-depth investigation reports to be prepared by the operator and the regulatory body.

Actually, at its extraordinary session on 17 July (a.m.), the NSC already requested the regulatory body, in view of its potential safety significance, its detail report on the cause investigation and recurrence prevention measures concerning the cases of the radioactive water release to the non-radiation-control areas. The NSC will conduct necessary investigation on the issue, considering the in-situ investigation results reported today by Deputy Chair Higashi and Commissioner Soda.

The regulatory body did not report on the fire case of the transformer to the aforementioned NSC extraordinary session, as the case was not categorized as a legally bound reporting incident. But the NSC decided, adhering to the special importance in accountability to the nation, to receive a direct report from the operator at its today's extraordinary session on the time-wise responses at the station, from the fire breakout to the extinguishment. The report, as well as the in-situ investigation results by Deputy Chair Higashi and Commissioner Soda, indicates the potential significance in emergency preparedness common to other nuclear power stations. The NSC will make earliest possible investigations so that the lessons learned could be fully used.

The Regulatory Guide for Reviewing Seismic Design of Nuclear Power Reactor Facilities was revised (to be called "the New Guide") in September last year (2006) and the so-called "Back-checks" are just underway by applying the New Guide to all existing nuclear power plants for confirming their integrity. The work is also in progress at the Kashiwazaki-Kariwa Nuclear Power Station. The planned schedule is to finish the necessary geological investigation by the end of March 2007 and complete all safety checks of all seven Units at the Station by the end of December 2008. Experiencing such a really great earthquake, the NSC extended its earnest suggestion, at its extraordinary session on 17 July, to the regulatory body to instruct the operator for advancing the work and showing soonest the evaluation results to the nation, as it will be the best way to answer the nation's seismic safety concerns. In the meantime, the preliminary analyses by the Japan Meteorological Agency and other bodies point out a possibility that the fault, which caused the earthquake, may be extended from off-coast into below and crossing the sub-ground underneath the plant sites. The NSC requests the operator to conduct earliest and additional investigation, as necessary, on that possibility as well.

The earthquake caused very strong ground motions. Nevertheless, the nuclear reactors in the operating mode were shut down under control. The most significant safety measures functioned, as intended in the design, of protecting high radiations in the reactors in the multiple-defense and multi-layered manners. Consequently the nuclear plant safety is maintained and this indicates the basic appropriateness of seismic regulation concepts including the relevant regulatory guides. However, the acceleration far exceeding the assumed values in the design was reported to have been experienced on the plant basemat. The NSC considers it crucially important to evaluate in detail, in line with the New Guide, the appropriateness of the assumptions in the original design, the necessity of improving the reliabilities of the analytical models used in the design, as well as the new knowledge not available at the time of the original design. The acceleration is certainly one of important indices in seismic safety, but the acceleration, even momentarily and locally exceeding the assumed values, does not immediately jeopardize the safety of structures and systems. Past

experiences at other nuclear power stations tell us that the later in-depth evaluations have confirmed the seismic safety, even if the acceleration had exceeded the assumed values at certain frequency bands. The NSC requests the operator(s) and the regulatory body to conduct such in-depth evaluation for this time earthquake as soon as possible.

The NSC is in a position that the appropriateness of the New Guide for individual facilities will be shown through the so-called back-checks. Its applicability to this time earthquake will also be checked in the process of such detail evaluations. It is not the time to contend the necessity of revising again the seismic regulatory guide. Nevertheless, the NSC has also in a position to avoid any prejudices. Especially in the seismic safety, the NSC prioritizes the open-mind and learning attitudes of placing primary importance in the scientific knowledge and facts in the regulation and examination processes. The NSC adheres to its philosophy on this occasion, too.

The New Guide requests the operators, as in its earlier version, to conduct the evaluations for the "Earthquake ground motions 'with' and 'without' the site specific epi-center." Extensive use of latest knowledge of seismology and seismic engineering is requested in these evaluations. In the evaluation of the ground motions 'without' the site specific epicenter, the epi-central earthquakes of specific magnitude of M6.5 are not assumed, contrary to the earlier version. Instead, the New Guide requests the operators to formulate the "Design Basis Earthquake Ground Motion (DBEGM)" appropriately by defining the response spectrum based on the observation results of the earthquakes, which are difficult in associating the epi-centers and the active faults, with due consideration to the site ground properties. The New Guide stipulates in its "Commentary" that, in formulating the DBEGM, "their appropriateness should be sufficiently confirmed, in addition to the satisfaction of the requirements phrased in the Guide, referring to the latest knowledge available at the time of respective individual safety examination cases." If I may put it in a qualitative way, the appropriateness of the New Guide to this time earthquake depends on whether such requirements with commentary suggestion given in the Guide are adequate. The NSC wants to make its prudent decision thereon, without prejudices, scrutinizing the detail analyses and evaluation results, and considering opinions of external experts.

Seismic safety is of highest concern of the nation, in particular that of nuclear facilities among others. The NSC considers it of particular importance to conduct soonest the necessary safety checks. But that does not excuse the rushed but low-quality evaluations by the operator(s) and the regulatory body. Earliest, as practical, evaluations are what the NSC requests to them. The NSC also seeks for the patience and understanding of the nation.