February 29, 2012

Tokyo Electric Power Company

Report of the items to be reflected in the seismic safety analysis of the nuclear power plants, etc. (Interim Report) based on the knowledge of ground motion obtained from Tohoku-Chihou-Taiheiyou-Oki Earthquake in 2011 [Outline]

Per the directive received on January 27, 2012 (January 26, 2012 NISA NO.1) regarding the items to be reflected in the seismic safety analysis of the nuclear power plants, etc. (Interim Report) based on the knowledge of ground motion obtained from Tohoku-Chihou-Taiheiyou-Oki Earthquake in 2011, in a study of the active faults within the inland crust, as for those faults whose elongation exceeded 5km and of which we have denied its interrelation, we have examined a possibility of interrelation by taking into account the geography and structure formation process (tectonics) and the stress situation. The outline of the analysis results is as follows:

1. Kashiwazaki Kariwa Nuclear Power Station

Figure 1 shows the active faults surrounding the Kashiwazaki Kariwa NPS grounds that we have to take into consideration when designing as well as those we have added this time in terms of interrelation.

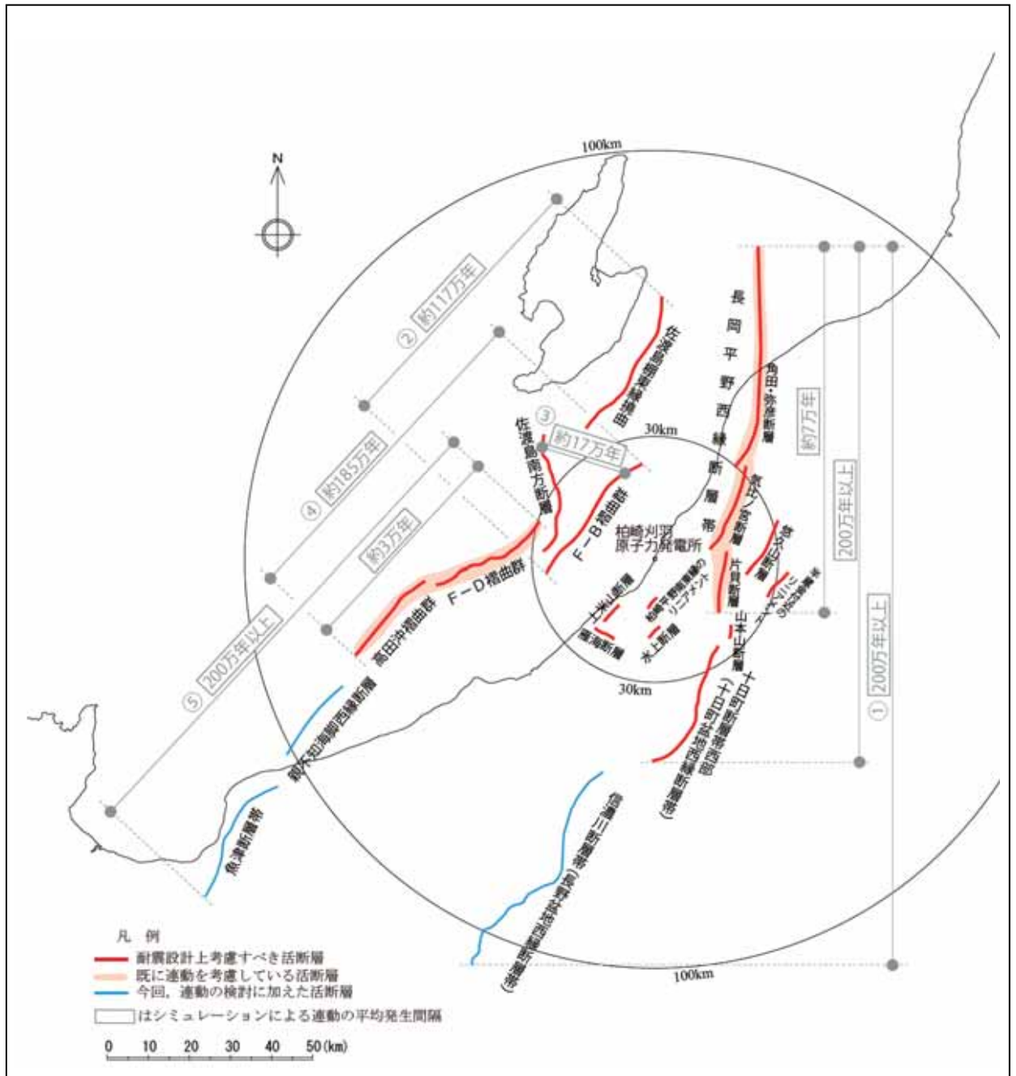

Fig-1 The Active Faults Surrounding Kashiwazaki Kariwa NPS

By considering the distribution condition and influence on the grounds, we covered the following active faults (Nagaoka Heiya Western Boundary Fault Zone, F-D Folded Group and Takadaoki Folded Group) ranging on the extension of the fault zone that we have already taken into account its interrelation. Thoey are Tokamachi Faul Zone West (Tokamachi Basin Seien Fault Zone), Shinanogawa Fault Zone (Nagano Basin Western Boundary Fault Zone), Oyashirazu Offshore Fukuzai Reverse Fault (Oyashirazu Spur Western Boundary Fault) reported in the literature, and Uotsu Fault Zone, and the consideration of geography and structure formation process (tectonics) and the stress situation were carried out as well as interaction simulation (Figs 2 and 3). As a result, we evaluated there is little possibility that those active fault could renter relate each other. (Table-1)

Table-**1** Results of study on interrelation of active faults around Kashiwazaki Kariwa NPS

	Fault※	Geography and Structure Formation Process	Stress Condition
①	・Nagaoka Heiya Western Boundary Fault Zone ・Tokamachi Basin Fault Zone West ・Shinanogawa Fault Zone	Lineament between Nagaoka Heiya Western Boundary Fault Zone and Tokamachi Basin Fault Zone West was illegible and geological structure for the two is different.	Simulation results indicate the average occurrence interval for interrelation to be more than 2 million years .
②	・Sadoshima Shelf Eastern Boundary Flexure ・F–B Folded Group ・Sadoshima Southern Fault	Response towards downslip of fault plane and gravitational anomaly are different in three faults.	Simulation results indicate the average occurrence interval for interrelation to be approximately 1.17 thousand years. In addition, stress is released around F-B Folded Group due to the Niigata-Chuetsu-Oki Earthquake.
③	・F–B Folded Group ・Sadoshima Southern Fault	Response towards fold structure related to fault as well as strike and gravitational anomaly are different in in both faults.	Simulation results indicate the average occurrence interval for interrelation to be approximately 170 thousand years. In addition, stress is released around F-B Folded Group due to the Niigata-Chuetsu-Oki Earthquake.
④	・F–B Folded Group ・Sadoshima Southern Fault ・F–D Folded Group + Takadaoki Folded Group	Three faults are different in fold related to fault as well as presumed deep fault plane structure. Therefore, fold structure and gravitational anomaly are not in series.	Simulation results indicate the average occurrence interval for interrelation to be approximately 1.85 million years. In addition, stress is released around F-B Folded Group due to the Niigata-Chuetsu-Oki Earthquake.
⑤	・F–D Folded Group + Takadaoki Folded Group ・Oyashirazu Offshore Western Boundary Fault ・Uotsu Fault Zone	Response towards fold structure and gravitational anomaly are different in Takadaoki Folded Group and Oyashirazu Offshore Western Boundary Fault.	Simulation results indicate the average occurrence interval for interrelation to be more than 2 million years.

※ Flexure and fold included

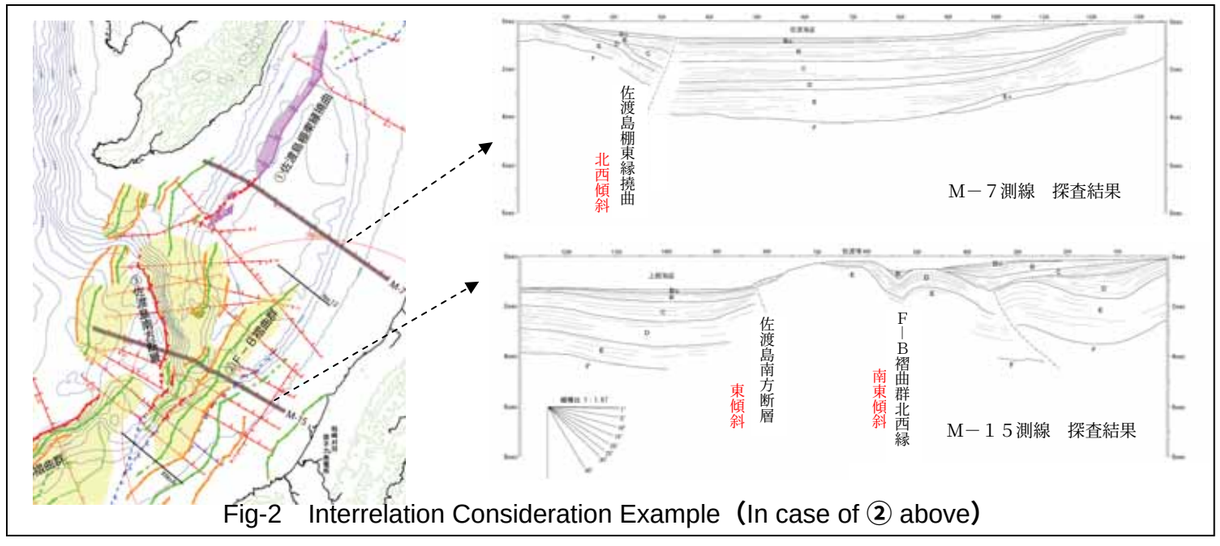

Fig-2 Interrelation Consideration Example（In case of ② above）

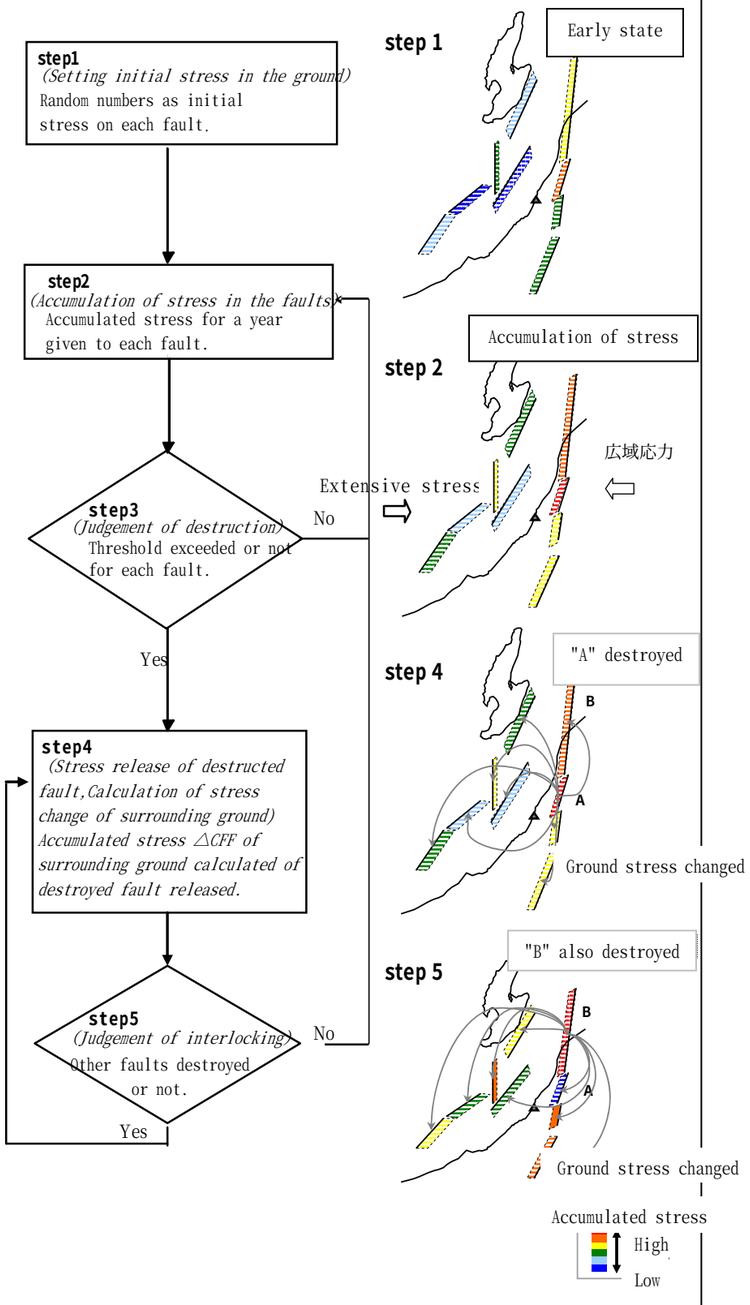

Fig-3 Outline of the simulation regarding the interaction of the stress of the faults

2. Fukushima Daiichi and Fukushima Daini Nuclear Power Stations

Concerning the area around Fukushima Daiichi Nuclear Power Plant and Fukushima Daini Nuclear Power Plant, we concluded that the faults s hown in the figure 4 should be considered as active faults in earthquake resistant design, based on seismic surveys etc. Mainly because these faults do not have such mutual tectonic association as when linearly distributed, we concluded that there was no necessity to take into account interlocking of these faults.

On April 11, 2011, Fukushima Hamadohri Earthquake (M7.0) broke out and earthquake faults appeared in Itozawa fault and Yunotake fault. The earthquake had no impact on both power plants.

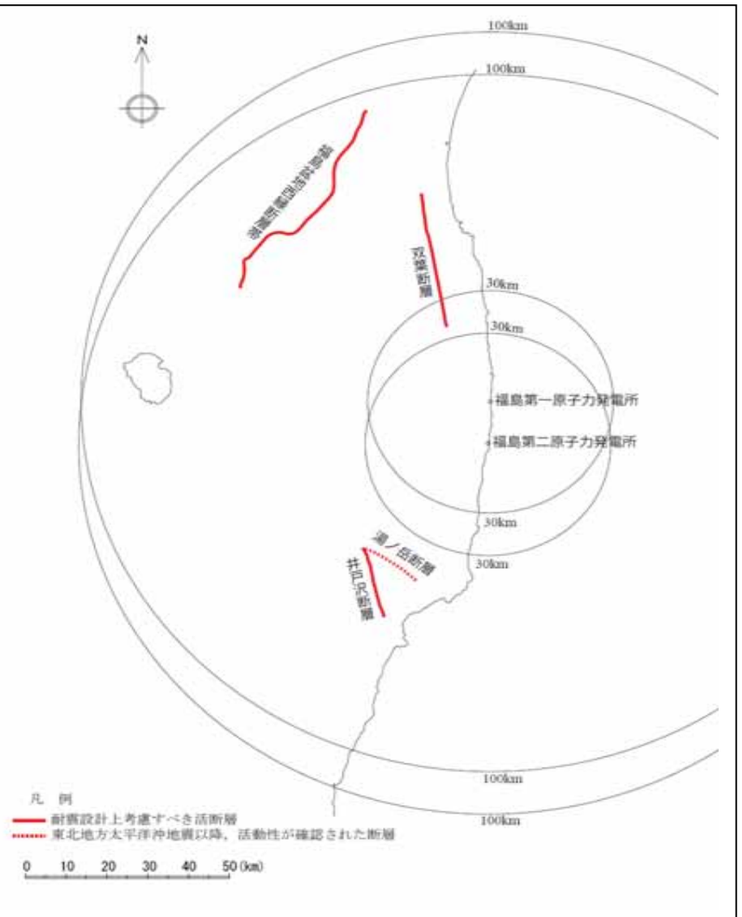

Fig-4 Distribution chart of the active faults around Fukushima Daiichi and Fukushima Daini Nuclear Power Plant

3. Higashi Dohri Nuclear Power Station

Concerning the area around Higashi Dohri Nuclear Power Plant, we concluded that the faults shown in the figure 5 should be considered as active faults in earthquake resistant design, based on seismic surveys etc. Mainly because these faults do not have such mutual tectonic association as when linearly distributed, we concluded that there was no necessity to take into account interlocking of these faults.

We will continue collecting information related to interlocking of active faults and properly take into account new insights.

End

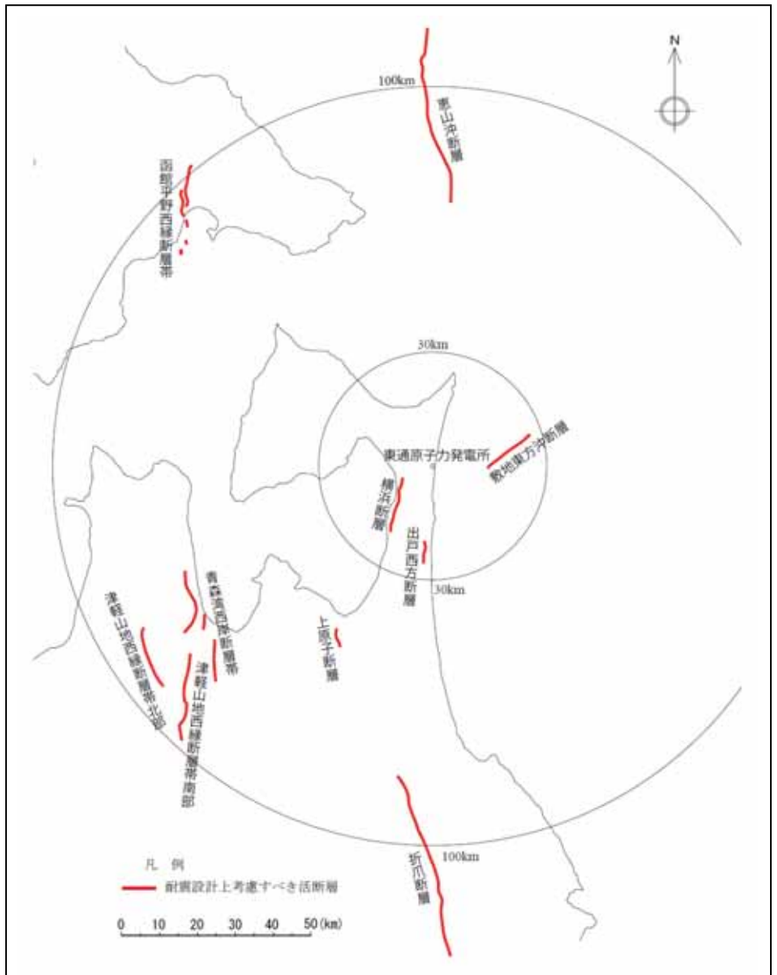

Fig-5 Distribution chart of the active faults around Higashi Dohri Nuclear Power Plant