

Study Concerning Linkage between Active Faults in Vicinity of Hamaoka Nuclear Power Station (Overview of Report)

NISA issued a directive on January 27, 2012, requiring Chubu Electric Power to study and report the possibility of linkage between inland crust active faults, etc. where those faults are physically separated by approximately 5 km or more and of which it has previously been concluded that no linkage exists. The new study was to consider the topography and geological structure formation process (tectonics), state of stress, and so on.

Chubu Electric Power previously evaluated the possibility of linkage between active faults, taking tectonics, etc. into account, and did not come to the conclusion that such linkage does not exist simply on the basis that the active faults are physically separated by approximately 5 km or more. However, upon receiving the directive, we conducted a new study on the possibility of such linkage.

(1) Extracting study areas

We selected major active faults where activity would have to be considered for seismic design purposes, based on results of geological surveys, etc. in land and sea areas in the vicinity of the Hamaoka Nuclear Power Station premises.

The new study on possible linkage considered the state of the national government's deliberations on seismic safety evaluation and similarities in geology and geological structure, including active fault direction, distribution, etc. As a result, of those active faults shown in the figure on the right, the combinations of active faults shown in the table on the right were selected.

Moreover, the geological structure formation process (tectonics), etc. had already been taken into account for the fault zone at the eastern edge of the Negoya Spur and the fault zone at the eastern edge of the Senoumi Bank, and the evaluation found these were linked to interplate earthquakes as a group of active faults related to the outer ridge, and furthermore the evaluation of the fault zone in the eastern part of the Senoumi Basin and the fault zone in the western part of the Senoumi Basin were found to be structures related to these.

(2) Results of study on possible linkage

The active faults shown in the table on the right are all characterized by markedly deformed strata deposited during a period starting before the Pliocene Epoch (several millions of years ago) and ending after the Late Pleistocene Epoch (approximately 130,000 years ago).

If two subject active faults were found to be linked, it is conceivable that any strata between these two would contain some vestige of stratum deformation as above, and a detailed study was done using marine acoustic exploration records, but no vestiges analogous to linkage were found even in the underground depths. Based on this and other factors, we concluded that there was no need to consider linkage in combinations of active faults shown in the table on the right that were newly studied this time.

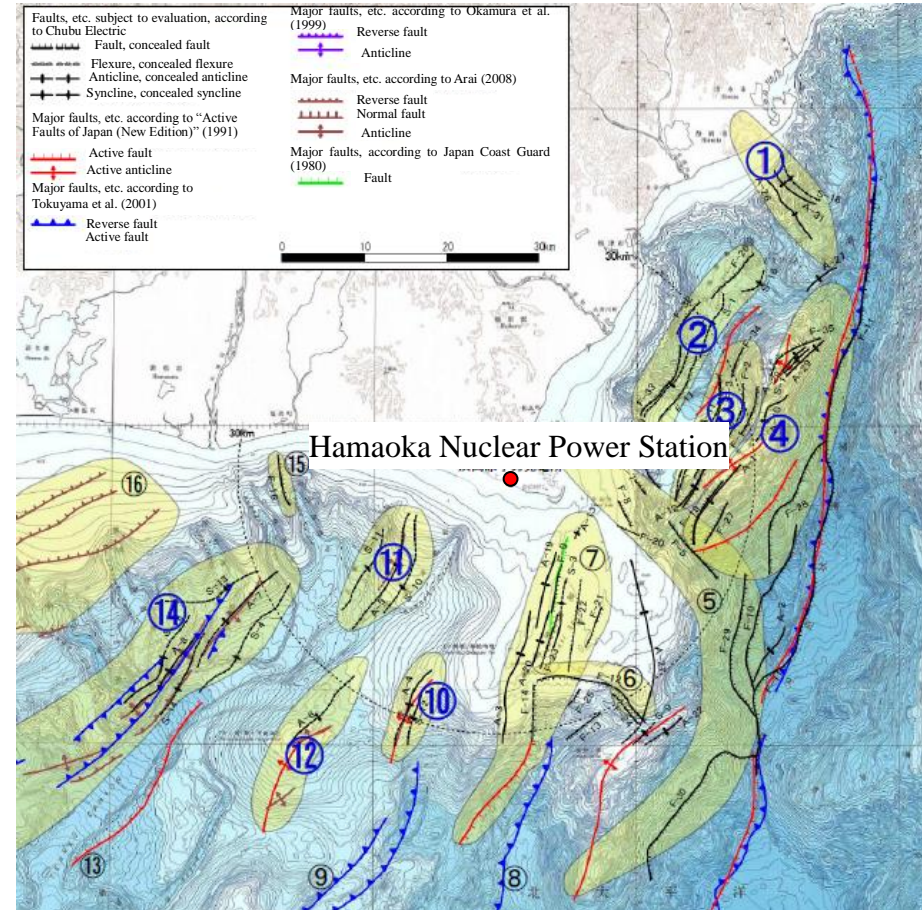
(3) General evaluation

The active fault evaluation that Chubu Electric Power previously conducted in its seismic safety evaluation already considered geological structures, tectonics, etc., and in those cases where faults were judged to be simultaneously active, they were treated as a single earthquake source fault for the sake of evaluation.

We have now redone the study on active fault linkage, taking geological structures, tectonics, etc. into account, regardless of distance between faults (i.e., whether or not they are approximately 5 km or more apart), with the results showing that there are no combinations of active faults that would newly require consideration of whether they are linked.

Chubu Electric Power will continue to gather information on active fault linkage, and any new knowledge will be properly reflected in future evaluations.

Figure: Major active faults in sea areas in vicinity of Hamaoka Nuclear Power Station



No.	Name of active fault
①	Fault zone at eastern edge of Negoya Spur
②	Fault zone in western part of Senoumi Basin
③	Fault zone in eastern part of Senoumi Basin
④	Fault zone at eastern edge of Senoumi Bank
⑤	Fault zone in eastern part of Omaezaki Spur (including faults related to tectonic geography of Omaezaki Terrace)
⑥	F-12
⑦	Fault zone in western part of Omaezaki Spur
⑧	Tokai Fault System
⑨	Odaiba Fault System
⑩	A-4
⑪	A-5
⑫	A-6
⑬	Fault following Tenryu Canyon
⑭	Enshu Fault System
⑮	F-16
⑯	Hamamatsu Offshore Normal Fault Group

Table: Combinations of active faults looked at in new study of possible linkage

	Combination of active faults	Results of study this time
Cases where it was previously reported that there was a conclusion of no linkage during past national government deliberations on seismic safety evaluations	• Enshu Fault Series (⑭) and fault A-5 (⑪)	No need to consider linkage
Cases newly extracted as having similarities in geological structure	• Fault A-5 (⑪) and fault A-6 (⑫) • Fault A-6 (⑫) and fault A-4 (⑩) • Fault A-5 (⑪) and fault A-4 (⑩)	No need to consider linkage
(Reference: Not subject to study this time) Cases where linkage already considered, taking tectonics, etc. into account	• Fault zone at eastern edge of Negoya Spur (①), fault zone at eastern edge of Senoumi Bank (②), fault zone in eastern part of Senoumi Basin (③), fault zone in western part of Senoumi Basin (④)	(These were not subject to study this time because they were already considered)