

## Subsurface structures revealed by high resolution seismic reflection studies in the Ogura area, Hokudan Town, Awaji Island, Japan.

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The surface ruptures associated with the 1995-Hyogo-ken Nanbu Earthquake indicate that the main segment of the Nojima fault extends to its Ogura segment in the south Ogura area, Hokudan Town, and that the Ogura fault (Awata et al. 1996) occurs along the straightforward extension of the Nojima fault through the Ogura area. Considering the results of geological mappings by Mizuno et al. (1990) and Arai (1998), the Ogura fault connects geologically with the Mizukoshi flexure, whereas the Ogura segment of the Nojima fault with the Asano fault. The Toshima fault (Arai, 1998) is bifurcated from the Asano fault at the southwest Ogura and merged into the Ogura fault at Toshima. These faults mentioned above constitute a fault system forming a horse in the Ogura area. Within the horse, considerably complicated geological structures have been produced with the development of the fault system. This means that the Ogura area must be the key to the solution of the history of the fault system. Although many geophysical explorations (TASP etc.), were conducted with borehole drilling works (Kaibo etc.) in the Ogura area since the earthquake (Hirata et al. 1996, Ito et al. 1996, Koreishi et al. 1996, Suzuki et al. 1996, Takahashi et al. 1996, Ando et al. 1998, Kurashimo et al. 1998, Sato et al. 1998, etc.), the complicated structures in the horse had not been revealed with the resolution sufficient to precise geologic analyses. Thus, we made the following two kinds of high resolution seismic reflection studies; 3-D and super-straight alignment (SSA) profilings.

Main results are summarized as follows:

(1) The Ogura fault dips about 76 degrees SE. This attitude corresponds to the 500 m borehole data (Murata et al., 1998), and to the surficial ones of the Nojima fault. This indicates that the Nojima and the Ogura faults form a single fault beneath the ground. The Ogura fault has a reverse slip sense. Its vertical displacement reaches 200 m.

(2) The Ogura segment of the Nojima fault dips about 60 degrees NW. The segment has a normal slip sense. Its vertical displacement reaches 70 m or more. Considering the TK-1 and 2 profiles (Hirata et al., 1996), the segment splays from the SE dipping Ogura fault.

(3) Although the dipping direction of the Toshima fault is still unknown, it is sure that the west side block uplifts about 100 m to the east side.

(4) The top of the Cretaceous basement exhibits a listric form whose flat floor inclines about 20 degrees NW.

(5) The sedimentary cover which consists mainly of the Osaka group within the horse is considerably folded in an asymmetrical synclinal form whose axis plunges at 13 degrees NE.

This means that the strong shortening occurs with the development of the present fault system. These results will provide the basic information on solving the history of the fault system.