

Subsurface structure revealed by seismic reflection surveys between the Tone Canal and eastern Saitama city (part2)

Kazuo Yamaguchi[1]; Takanobu Yokokura[2]; Naomi Kano[2]; Akiko Tanaka[3]; Toshiki Ohtaki[4]; Shinobu Ito[3]

[1] AIST,GSJ,Institute of Geology and Geoinformation; [2] Institute of Geology and Geoinformation, GSJ, AIST; [3] Geological Survey of Japan, AIST; [4] Institute of Geology and Geoinformation, AIST

We conducted 24km long seismic reflection surveys between Kashiwa city, Chiba Prefecture and Saitama city, Saitama Prefecture to reveal the sedimentary layers and basement shape. The surveys were divided into four parts from east to west, and we had reported the results of three parts (Yamaguchi et al., 2003, 2004). Here we show the results of the fourth part at Higashioosawa and Kitakoshigaya, Koshigaya city, Saitama Prefecture.

The main survey parameters are as follows. Seismic source: one 17ton vibrator (Y2400) or one minivib (T15000), interval of source/receiver point: 10m, number of receiver point: 331(fixed spread), number of source point: 373(including offset shots), sweep frequency: 8-70Hz, sweep length: 16s, number of sweeps/point: 8. Three fourths of receiver points were along quiet back streets and flood plain and one fourth was along a noisy main street. The vibrator was operated in low output and a minivib were used instead of the vibrator, because of densely population and soft ground condition. Inline offset sources were shot in larger power at Masubayasi and Kitaushirodani adjacent to Higashioosawa and Kitakoshigaya, respectively.

All of the seismic data were edited and sorted along a 24km long CMP line. Conventional processing was applied to the data and a CMP stacked section was obtained. At the Higashioosawa and Kitakoshigaya part, reflectors are clear from several tens ms to 1.4s in two way time. Not only they almost continue to reflectors in the adjacent parts, but also amplitudes of the reflectors are similar to those of the adjacent parts. Events between 1.5s and 1.7s are possibly reflectors and seem to continue eastward. But they are undefined. The stacking velocities in this part range from 1.5km/s and 2.2km/s. An offset shot with a hundred vertical stack at Kitaushirodani shows 1.6km/s, 2.5km/s and 5.1km/s apparent refraction velocities. The third velocity closely corresponds to the basement velocity (Tokyo-to, 2003) 14km to the south of the current line. The quality of seismic section was not so poor for the low output of seismic source along the receiver points. This is perhaps due to calm receiver positions.

Sedimentary layers are clearly imaged along all the survey line and basement top to the east of Masubayashi. Reflectors show apparent discontinuities at the edges of each survey part. The whole seismic line probably crosses the Median Tectonic Line and southern extension of the Ayasegawa fault. We will apply noise editing and residual statics in detail and discuss the subsurface structure.