

The Underground Structure of Northern Atera Fault System deduced from a Refraction / Reflection seismic survey

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1. OUTLINE

A detailed seismic experiment with the use of vibrator and explosive sources was performed across the ATERA fault system in 2000. Among the data with the experiment, those from the northern part of ATERA fault system were reexamined to elucidate the horizontal and vertical ranges of crushed zone associated with the fault system.

2. ATERA FAULT SYSTEM

The ATERA fault system consists of some active faults between northern part of Kashimo village and Gero town. According to the strip map of GSI(1973), the most active faults are KOWACHI, YUGAMINE and GERO faults. They are parallel in the area. But the southern extensions of YUGAMINE and GERO faults are not clear. Although we have revealed a low velocity zone between GERO and KOWACHI(or YUGAMINE) fault, last year, the horizontal and vertical ranges of low velocity zone were left unclear.

3. DATA-SETS

We have now three independent data-sets; (1) results from the horizontal tomography using two parallel observation lines, (2) time-terms obtained from explosive refraction experiments, and (3) side reflections appeared on the original records of a reflection survey in the northern area.

4. CONCLUSION

(1) Velocities of the basement as low as 4km/sec are verified in the area of ATERA fault system. The depth of the basement is about 500m.

(2) The YUGAMINE fault seems to extend towards OGO area.

(3) Side reflections observed in the reflection survey in 2000 seems originated from the underground fault scarps. The high velocity contrast between the low-velocity zone and the surrounding area strongly suggests the pull-apart structure in the ATERA fault system.