Seismic reflection survey in the eastern part of the Sendai plain

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1.Introduction

A seismic reflection survey was carried out in the eastern part of the Sendai plain. The main purpose of the survey is to obtain the precise information about the basement structure which may consist of the Triassic formation called Rifu-formation.

A deep well of 1200 meters in depth is located near the east end of the seismic line.

We clarified the subsurface structure using these seismic and well data.

2.Data acquisition and processing

The seismic line and well location are shown in Fig.2. The length of the seismic line is about 6km. The following parameters were used for the survey, seismic source: one vibrator, average shot interval : 100m, receiver interval: 25m, recording channels : 242ch.

The two dimensional data processing along the seismic line was done based on conventional CDP(CMP) stacking method.

At the well location, basement rock consists of the Triassic formation is identified at the depth of 250 meters. Moreover, P and S wave velocity structures in the well are known.

3.Results

The resultant migrated depth section is shown with the geologic column and P and S wave velocity structures at the well in Fig.2.

In the seismic section, any large fault or monoclinal flexure that may indicate the great structural variation can not be seen clearly.

Considering from the interval velocity derived from the reflection analysis, seismic pattern, and the well data, horizon B corresponds to the upper boundary of the basement. The horizon dips eastward gently, reaches the depth of 600 meters at the east part of the seismic line and suddenly rises up in the east-end of the line and reaches the depth of 200 meters.

Horizon A is located at the depth of 300 meters at the west-end of the line and it rises eastward gently and reaches the depth of 100 meters at the east end ofthe line. From the comparison with well data, horizon A may correspond to a boundary around the boundary between the Quarternary and the Tertiary.

Fig. 1 観測井と反射法測線位置

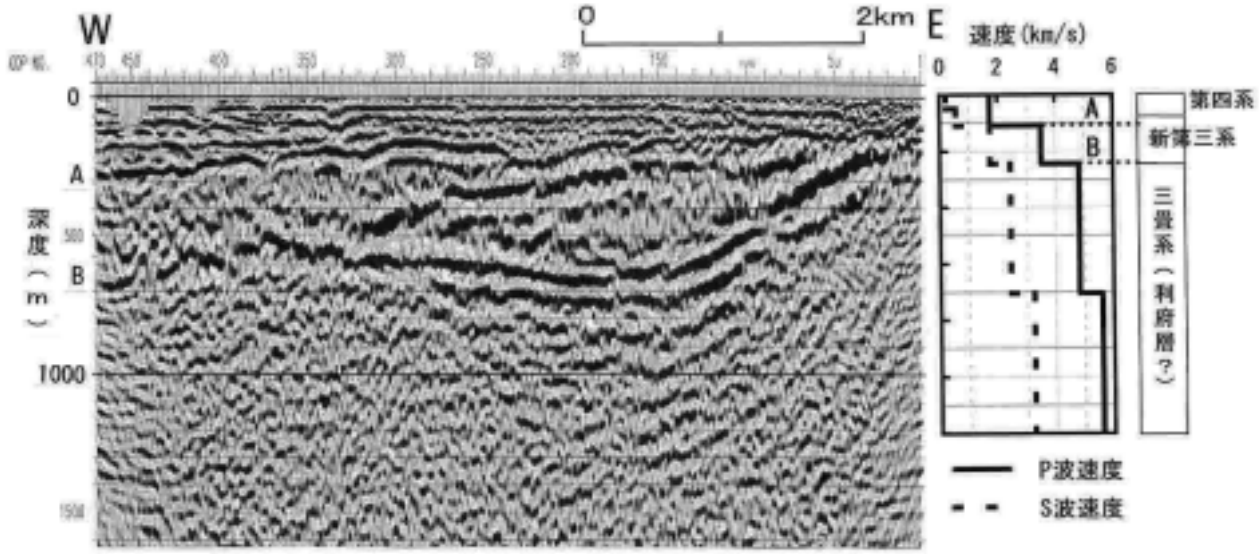

Fig. 2 マイグレーション深度記録と観測井の地質層序とVp, Vs速度構造