

### III. 3.5 kHz ECHO SOUNDER PROFILING SURVEY

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The reflected signals were processed by a Raytheon CESP II (Correlation Echo Sounder Processor), and displayed on a Raytheon Universal Graphic Recorder operated at a two seconds sweep. The pulse length was fifty milliseconds.

#### Results of observations

##### 1) *Western and Northern Kyushu* (Fig. III-1)

Semi-opaque layers widely cover the Tunghai Shelf, where reflectors are not detected.

Danjo Basin is covered with stratified layers overlain by a thin transparent layer and its maximum penetration is about 80 m. Stratified layers occur at water depths greater than 500 m. The thickness of the stratified layers decreases to the western marginal slope of Danjo Basin and stratified layers disappear in it.

Opaque layers are observed in the submarine canyon in the northern margin of the Okinawa Trough.

The area from the northwest coast of Kyushu to Tsushima Strait is covered with opaque layers. Submarine topography is irregular in Tsushima Strait and its undulation is about 10 m to 40 m.

##### 2) *North of San-in*

###### a. Continental Shelf and Continental Slope (Fig. III-2)

Three acoustic patterns are distinguished in the continental shelf off San-in. They are (1) a stratified layer having a maximum penetration of about 110 m, (2) an opaque layer, and (3) an opaque layer overlain by a thin transparent layer which has a thickness of 10 m to 20 m. A comparison of acoustic patterns with preliminary results of the cored or dredged materials indicates that the stratified layer corresponds to the silty clay and pumice which were dredged at Station 761. The opaque layer corresponds to the sandstones which were dredged or cored at Stations 754 to 758, and the opaque layer overlain by a thin transparent layer corresponds to the alternation of medium sand and mud which is cored at Station 753.

Stratified layers are observed in L.21 to L.28. Exposure of the acoustic basement is observed on the shelf margin in L.22 to L.23. In the outer area of the exposure, stratified layers gradually dip towards the outer shelf and they are slightly folded in the inner area of the exposure. In L.26 to L.28, the slightly folded layers are not observed, where the width of the continental slope is narrower. The stratified layers are truncated by the sea floor, apparently by wave cut.

The opaque layer and the opaque layer overlain by a thin transparent layer are observed on the continental shelf along the north coast of San-in. The transparent layer extends to the coast.

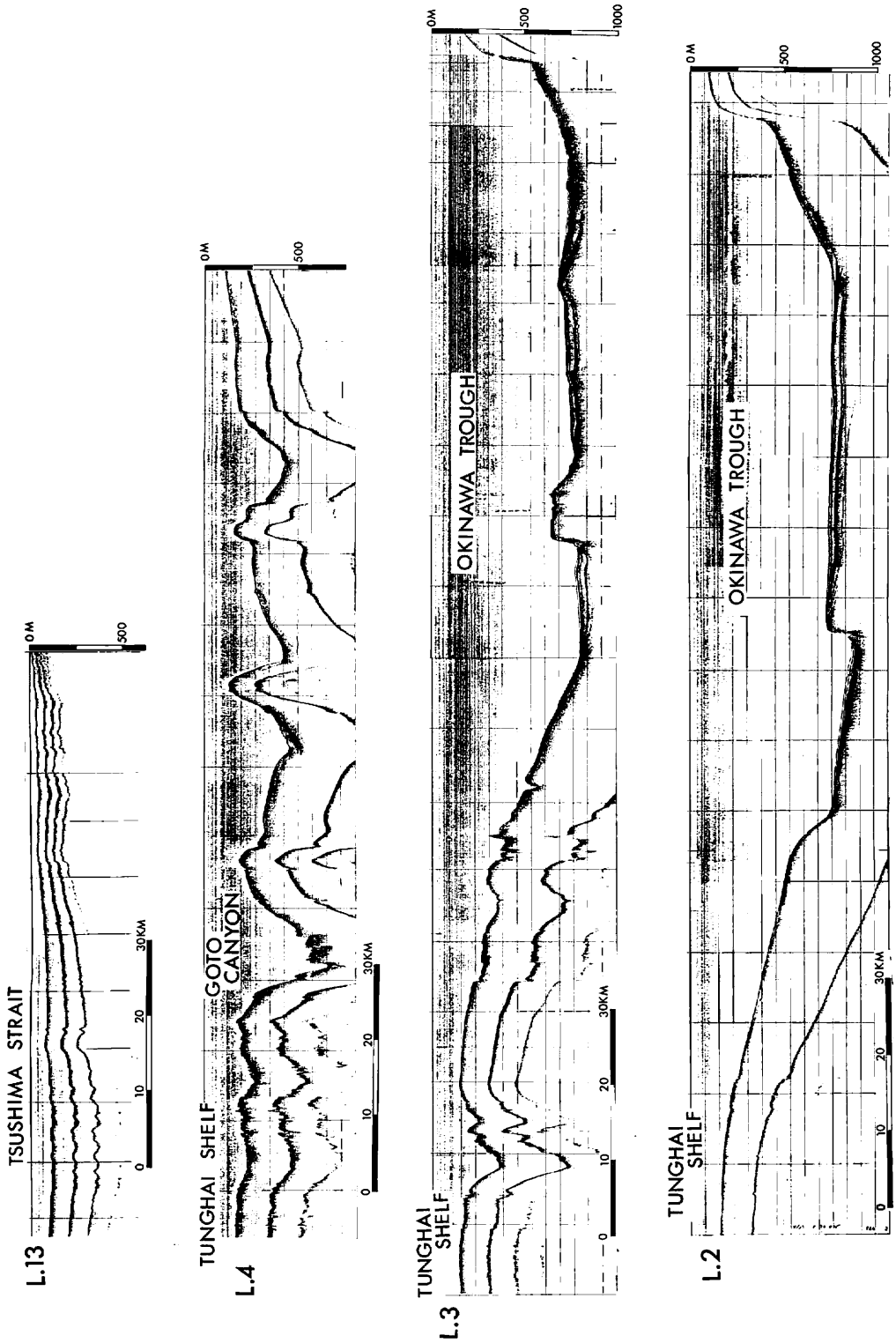


Fig. III-1 3.5 kHz Echo Sounder profiling records off the Western and Northern Kyushu. Vertical scale is presented in water depth.

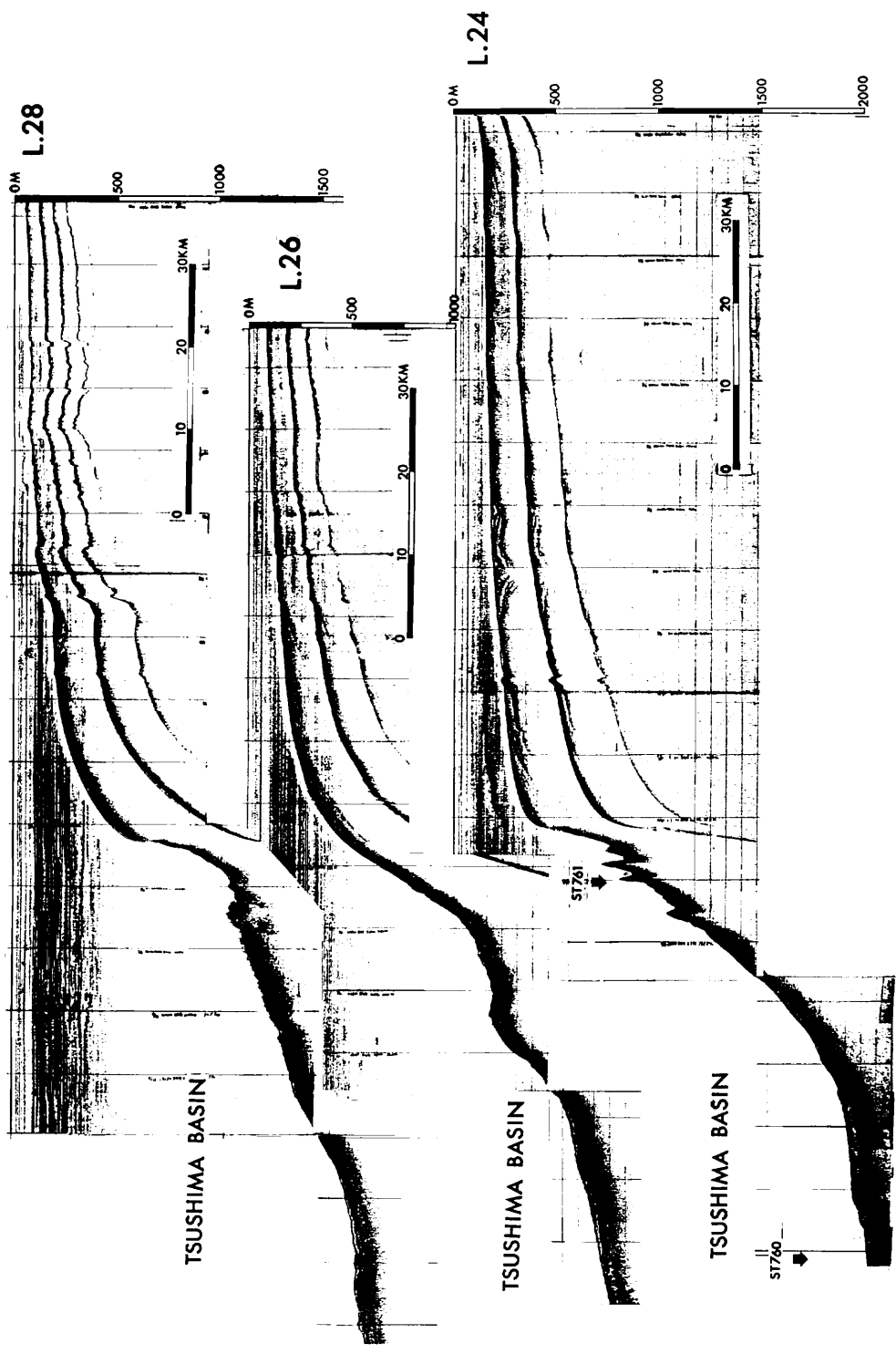


Fig. III-2(A) 3.5 kHz Echo Sounder profiling records of the continental shelf and continental slope off the North of San-in. Vertical scale is presented in water depth.

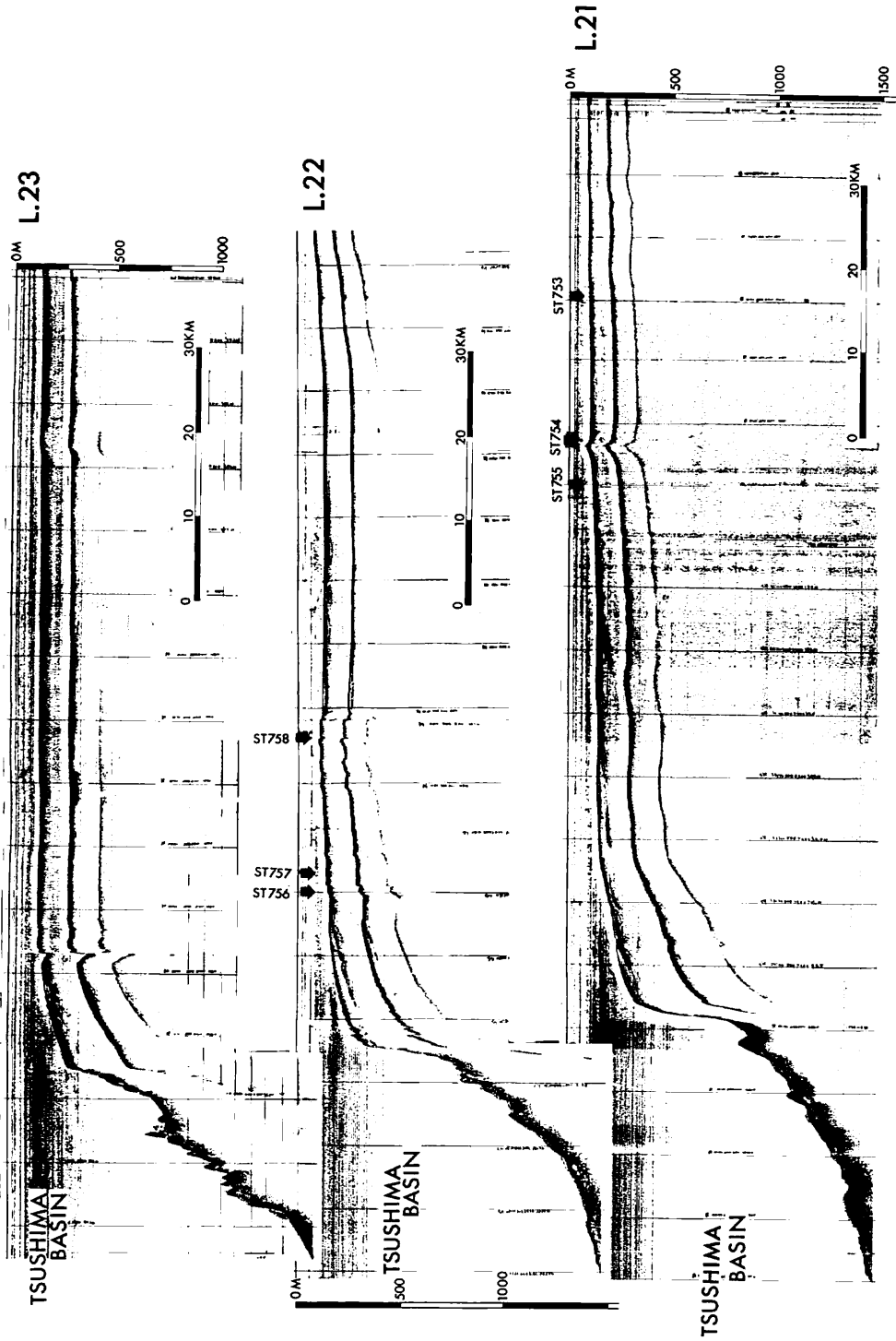


Fig. III-2(B) 3.5 kHz Echo Sounding profiling records of the continental shelf and continental slope off the North of San-in. Vertical scale is presented in water depth.

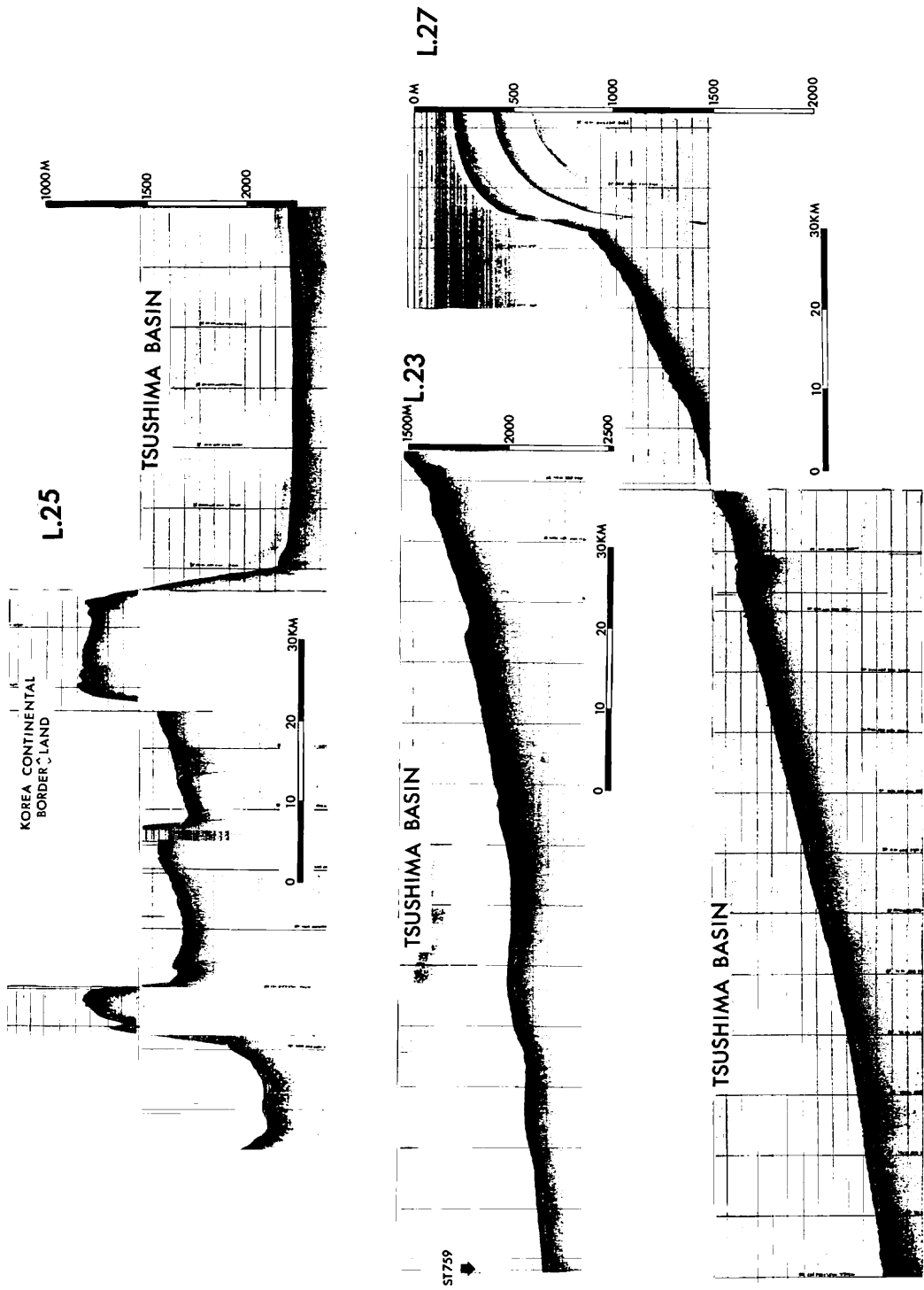


Fig. III-3 3.5 kHz Echo Sounder profiling records of the Tsushima Basin and the Korea Continental Borderland. Vertical scale is presented in water depth.

b. Tsushima Basin and Korea Continental Borderland (Fig. III-3)

The acoustic pattern of sediments in the Tsushima Basin is divided into three types, (1) a thick opaque layer overlain by a transparent layer which is occasionally absent, (2) a well stratified layer in which thin transparent layers and opaque layers alternate having a maximum penetration of about 75 m, (3) a weakly stratified layer whose acoustic pattern is not uniform but varies widely.

The thick opaque layer occurs widely in the southern area of the Tsushima Basin and may extend to the continental slope. The well stratified layer and the weakly stratified layer occur in the northern area of the Tsushima Basin. The well stratified layer is observed in the western half and the weakly stratified layer is observed in the eastern half.

In the Korea Continental Borderland, a well stratified layer is observed. It consists of an alternation of transparent layers and opaque layers.