

## VI. SONO-BUOY REFRACTION MEASUREMENT

*Eiichi Honza, Kensaku Tamaki and Kiyokazu Nishimura*

A few sono-buoy refraction measurements were carried out in the basins of the Okhotsk Sea and Japan Sea (SB5, SB6 and SB7). The surveyed method was the same one with that during the former cruise. Two air guns were used for the shooting source with 240 cubic inches air chamber in total and with high pressure of approximately 1800 psi. OKI OC-01 type sono-buoy and JRC NRE-8A type receiving system were used for telemetering and receiving devices. The measured results are shown in Figs. VI-1, 2 and 3 and the computed results are shown in Table VI-1.

The refraction results are well correlated to the reflection results. Boundaries in velocities are correlated to the boundaries of the layers in reflection profiles.

A velocity of 1.9 km/sec with 2.54 km thick (approximately 2.7 sec) is distinguished in the refraction result of the upper most horizontal layer in the Kuril Basin. The layer is divided in two subunits of the upper stratified layer and the lower transparent layer. However, two layers were not distinguished in the refraction result. The second layer has a velocity with 4.1 km/sec and is observed in the reflection profiling result approximately in the same horizon as the depth in the refraction result.

The upper layers in the mid-slope basin off the northeastern Hokkaido is suggested to be 1.8 km/sec velocity with 0.79 km thick (0.89 sec in the reflection profile). The second layer has 2.3 km/sec velocity with 1.25 km thick (1.1 sec in the reflection profile). The third layer has 4.2 km/sec velocity. The upper layers thin out toward eastern high in the margin of the basin where the lower layer is uplifted.

The upper layers in the Tartary Trough suggest the velocity of 1.7 km/sec with 1.59 km thick (1.9 sec in reflection profile). The second layer has velocity of 3.6 with 1.72 km thick (0.95 sec in reflection profile). The result suggests a little difference compared with that in the Kuril Basin.

Table VI-1 Structure sections computed from sono-buoy data.

St.	Lat.	Long.	h1	h2	h3	v1	v2	v3	v4
SB5	46°16.3'	146°05.1'	3.34	2.54		1.5	1.9	4.1	
	46°22.4'	146°20.4'							
SB6	45°16.1'	144°07.5'	0.91	0.79	1.25	1.5	1.8	2.3	4.2
	45°29.6'	144°08.5'							
SB7	45°00.8'	138°23.3'	2.19	1.59	1.72	1.5	1.7	3.6	5.7
	45°12.4'	138°34.1'							

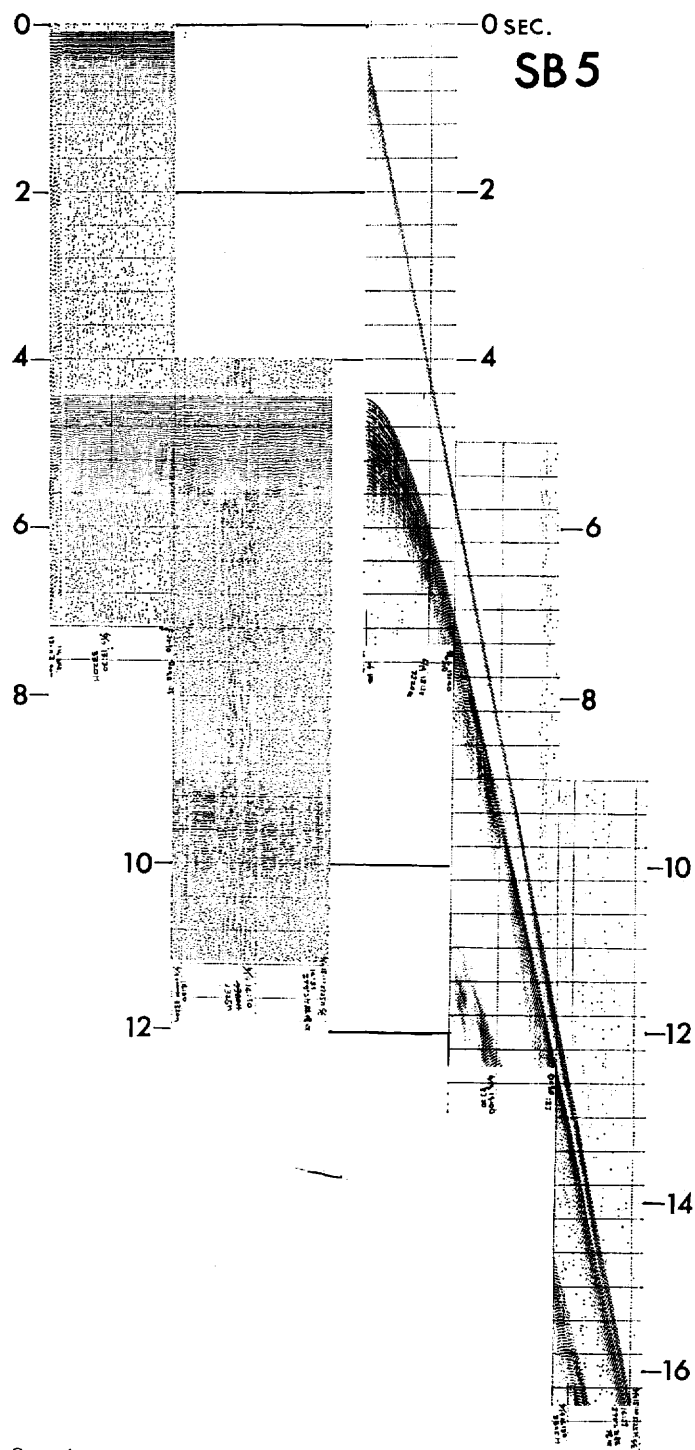


Fig. VI-1 Sono-buoy refraction result (right side, 15~35 Hz and reflection profile (left side) in the Kuril Basin (SB5).

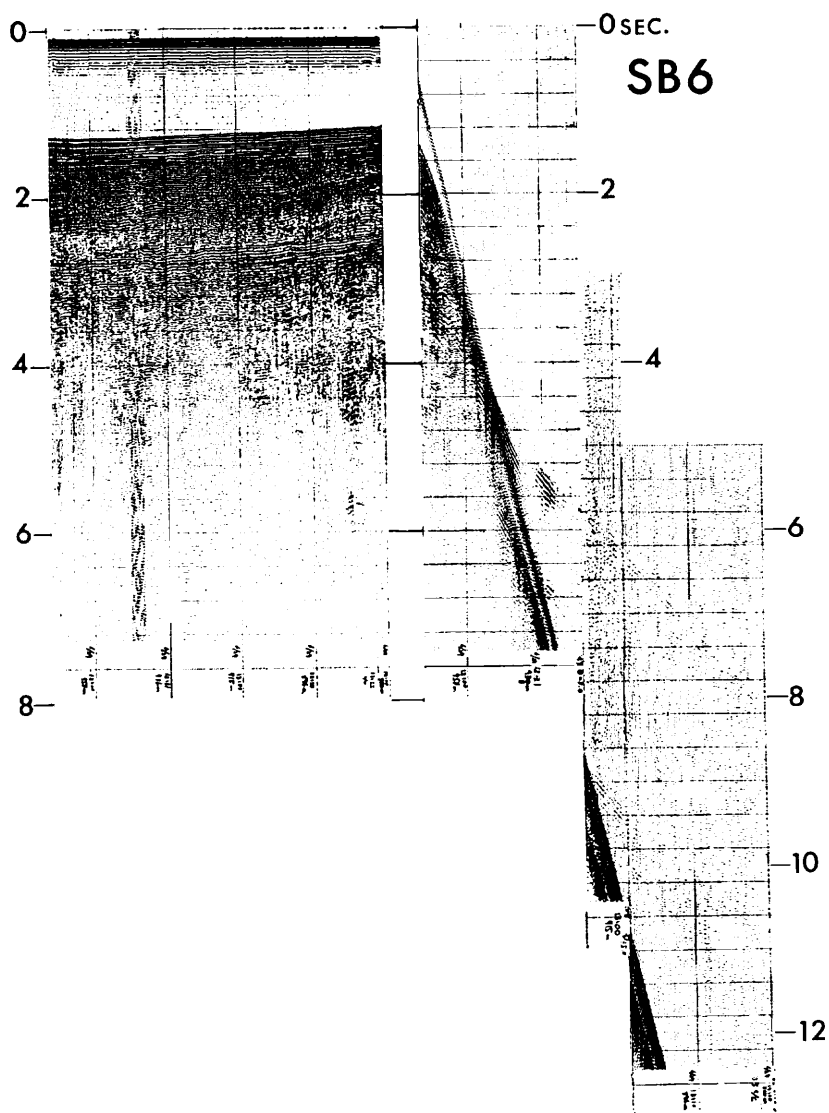


Fig. VI-2 Sono-buoy refraction result (right side, 15~35 Hz) and reflection profile (left side) in the mid-slope basin off the NE Hokkaido (SB6).

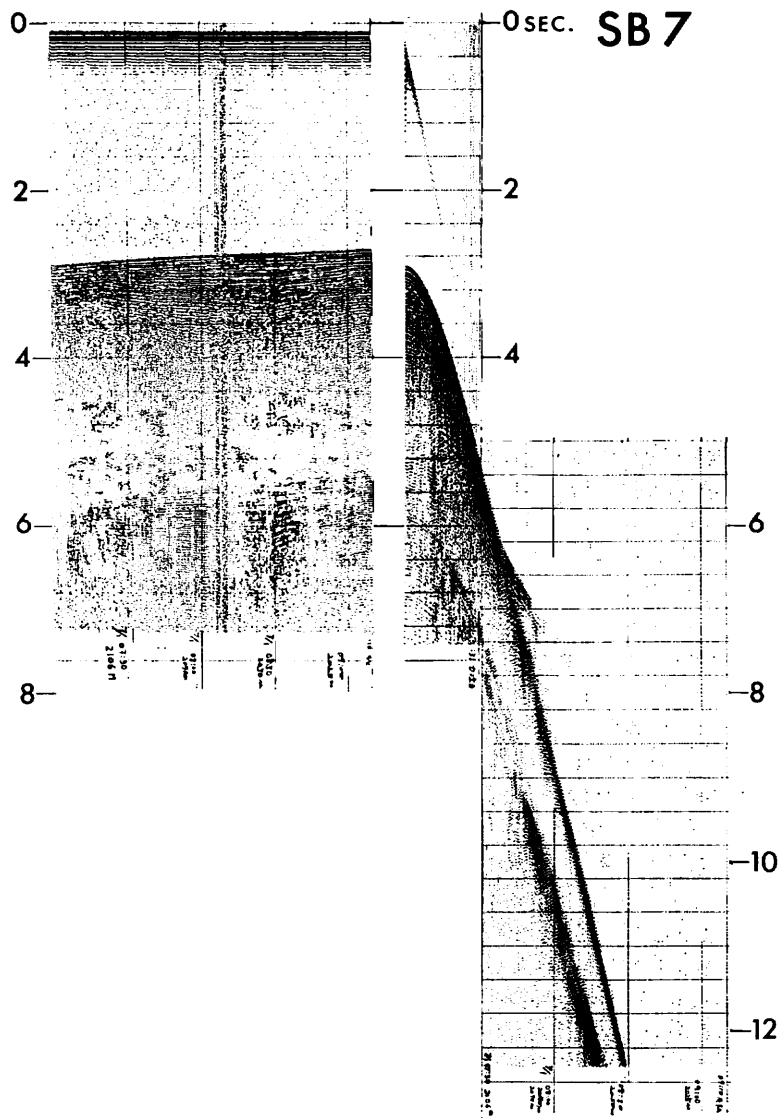


Fig. VI-3 Sono-buoy refraction result (right side, 15~35 Hz) and reflection profile (left side) in the Tartary Trough (SB7).