

## VII. SONO-BUOY REFRACTION MEASUREMENTS

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A sono-buoy refraction measurement (Station SB8) was carried out in the Mogami Trough. Three, BOLT 1900C type air guns were used as a sound source with a total volume of 420 in<sup>3</sup> operated at a pressure of 1800 psi. The refracted wave was received and telemated by OKI OC-01 type sono-buoy and received by JRC NRE-8A type receiving system. Only one-way measurements were made. Ship speed was maintained 6 knots during going away from the buoy and 10 knots during approaching the buoy.

Profile records and calculated results, which are based on the assumption of horizontally layered model, are shown in Fig. VII-1 and Table VII-1. Unfortunately unexpected, rugged basement interrupted the refraction profile and this has made interpretation difficult. Nevertheless, four layers were deduced including one layer of assumed velocity. A 5.94 km/sec layer is markedly distinguished on the refraction records and the calculated velocity is considered reliable. The refraction wave of the 2.34 km/sec and the 4.11 km/sec layers were poorly developed and the values may have led to some erroneous interpretations. The 2.34 km/sec layer corresponds to the acoustic basement on the reflection records although the value appears to be too slow. MURAUCHI (1966) reported a 6.0 km/sec layer at the depth of 5 km below the sea surface at the continental shelf near Station SB8 by two-ship refraction results. The results, then at SB8 in the Mogami Trough, which show the 5.94 km/sec layer 3.26 km below the sea surface, suggest that the Mogami Trough is not a simple graben.

Table VII-1 Structure sections computed from sono-buoy data. Asterisk denotes assumed velocity.

St.	Lat.	Long.	h1	h2	h3	h4	v1	v2	v3	v4	v5
SB8	39°22.1'	139°26.6'	0.88	0.95	0.43	1.00	1.5	1.8*	2.34	4.11	5.94
	39°12.1'	139°20.6'									

### Reference

MURAUCHI, S. (1966) Explosion seismology, in Second progress report on the Upper Mantle Project of Japan (1965-1966): *Natl. Committee for UMP, Science Council of Japan*, p. 11-13.

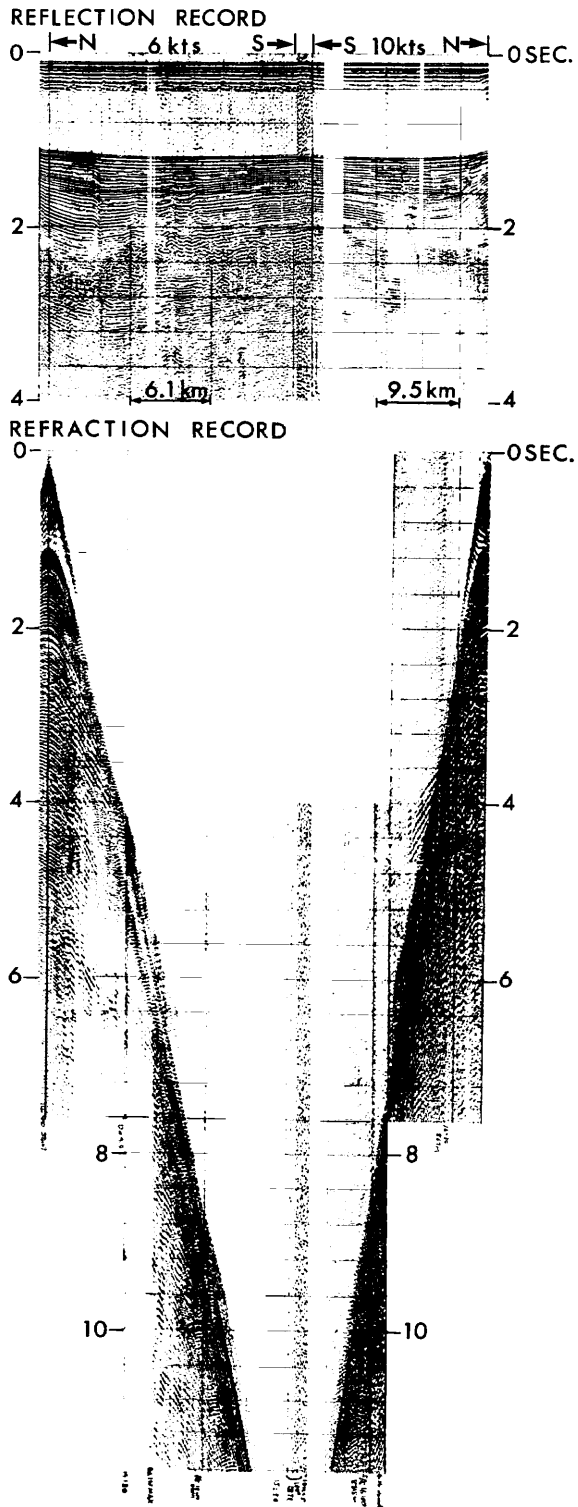


Fig. VII-1 Reflection record (20-60 Hz) and refraction record (6-40 Hz).