ABSTRACT

KORSUES LUMBAN GAOL. Measuring Acoustic Backscattering Strength of Seabed Around Seribu Islands Using Split Beam Echosounder. Supervised by HENRY M. MANIK.

The purpose of this research is to compute the backscattering strength of the seabed by measuring volume backscattering strength (SV), bottom surface backscattering strength (SS), and the echo level (EL) from seabed using split beam echosounder. The research was conducted from 29th January to 3rd February 2011, around the Seribu Islands: Pramuka island, Panggang island, Karya island and Semak Daun island, North Jakarta.

Acquisition of acoustic data was conducted using the SIMRAD EY 60 instrument. Acoustic data obtained from 9 stations simultaneously with sediment sampling. Acoustic processing data was conducted by Rick Towler program with Matlab based. The SV and SS were analyzed Manik et al, model by using.

Sediment sampling station consisted of 9 stations: Pramuka island there are 1 station (Station 1), Karya island there are 2 stations (Station 2, and Station 3), Panggang island there are 3 stations (Station 4, Station 7, Station 9), and Semak Daun island there are 3 stations (Station 5, Station 6, Station 8). Sediment classified based on the sediment texture. Seabed surface sediments were separated into 3 types, they are: sand, mud, and clay. This analysis showed that the location of the 9 stations observation is dominated by sand fraction with the percentage of 80.85%. Mud and clay fractions had the average percentage value of 18.32% and 0.83%, respectively. The backscattering value (SV) of sand substrate ranged -10.62 to -18.51 dB with the average of -13.91 dB, and the muddy sand substrate ranged from -16.58 to -25.42 dB with the average -20.57 dB.

The value of SS for the sand substrate ranged from -20.70 to -28.58 dB with the average value of -23.98 dB. Muddy sand substrate has a value of SS in the range of -26.64 to -35.49 dB with the average SS of -30.64 dB, from this research, the classification of seabed type using hydroacoustic technology was possible.

Keywords: volume backscattering strength, bottom surface backscattering strength, echo level, hydroacoustic technology.