

A Regression Analysis Study of the Applicability of Side Scan Sonar based Safety Inspection of Underwater Structures

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Abstract : This study developed an electric jig for underwater structure inspection in order to solve the problem of the application of side scan sonar to underwater inspection, and analyzed correlations of empirical data in order to enhance sonar data resolution. For the application of tow-typed sonar to underwater structure inspection, an electric jig was developed. In fact, it was difficult to inspect a cross-section at the time of inspection with tow-typed equipment. With the development of the electric jig for underwater structure inspection, it was possible to shorten an inspection time over 20%, compared to conventional tow-typed side scan sonar, and to inspect a proper cross-section through accurate angle control. The indoor test conducted to enhance sonar data resolution proved that a water depth, the distance from an underwater structure, and a filming angle influenced a resolution and data quality. Based on the data accumulated through field experience, multiple regression analysis was conducted on correlations between three variables. As a result, the relational equation of sonar operation according to a water depth was drawn.

Keywords : underwater structure, SONAR, safety inspection, resolution

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