

## INTISARI

Perairan Teluk Lamong merupakan bagian dari Pelabuhan Tanjung Perak Surabaya. Pelabuhan ini termasuk kedalam salah satu pelabuhan tersibuk di Indonesia. Oleh karena itu, diperlukan studi mengenai kondisi dasar perairan dan bangunan infrastruktur bawah laut guna memberikan informasi mengenai keamanan jalur pelayaran dan pendaratan lego jangkar terhadap posisi infrastruktur bawah laut. Studi ini menyangkut kegiatan eksplorasi seperti pendeteksian dan penyapuan terhadap objek-objek didasar laut dan pengambilan *sample* sedimen menggunakan instrumen *side scan sonar* dan *van veen grab sampler*. Pendeteksian dan penyapuan dasar laut dalam kegiatan ini memerlukan survey perekaman dasar laut. Kegiatan ini bertujuan untuk mengidentifikasi kondisi objek kabel laut dan pipa laut pada kolam perairan Teluk Lamong, mengevaluasi aturan pemendaman kabel bawah laut dan pipa laut sesuai dengan Peraturan Menteri Perhubungan No. PM 129 Tahun 2016 tentang Alur Pelayaran di Laut dan Bangunan dan/atau Instalasi di Perairan terhadap kondisi kabel laut dan pipa laut, dan menganalisis jenis sedimen kolam perairan Teluk Lamong.

Tahapan pengolahan data *side scan sonar* meliputi tahapan *real time processing* dan *post processing*. *Real time processing* merupakan koreksi selama proses pencitraan berlangsung sedangkan *post processing* merupakan mempertajam pemahaman dari suatu objek melalui interpretasi. Kegiatan ini mengacu pada tahapan *post processing*. Pada tahapan ini menggunakan perangkat lunak *Sonar Wiz 7*. Diperlukan koreksi geometrik (*bottom tracking*, *slant-range*, dan *layback*) dan koreksi radiometrik (*Beam Angle Corretion*, *Automatic Gain Control*, *Empirical Gain Normalization*, *Time Varying Gain*) sehingga menghasilkan *mosaic* citra dasar laut dua dimensi terkoreksi. Citra dasar laut ini dapat diinterpretasi dengan prinsip interpretasi penginderaan jauh yaitu derajat kehitaman (*hue saturation*), ukuran (*size*) dan bentuk (*shape*) dari objek atau target. *Mosaic* citra *side scan sonar* ditampilkan terhadap Peta Laut Indonesia No. 84 dan Lembar Lukis Lapangan Teluk Lamong.

Hasil kegiatan ini berupa peta kabel laut dan pipa laut yang ditampilkan terhadap Lembar Lukis Lapangan Teluk Lamong. Target kabel laut yang terekam berada pada Lajur A dengan target kabel terdeteksi 2 (dua) jalur kabel. Sedangkan pipa laut berada pada Lajur B. Hasil pendeteksian ditampilkan terhadap Peta Laut Indonesia No. 84 untuk mengetahui posisi kabel laut dan pipa laut. Masing-masing target kabel laut dan pipa laut di lakukan analisis terhadap Peraturan Menteri Perhubungan No. PM 129 tahun 2016 mengenai aturan pemendaman bangunan bawah laut. Hasil analisis kabel laut dan pipa laut sudah memenuhi standar pemasangan meskipun berada pada kedalaman yang cukup dangkal. Kesesuaian ini dilihat berdasarkan diktum 2 (dua) aturan pemendaman bahwa pemendaman tidak berlaku untuk posisi bangunan bawah laut saling bersilangan.

Kata kunci : Teluk Lamong, *side scan sonar*, *van veen grab sampler*, kabel laut, pipa laut.

## ABSTRACT

Lamong Bay waters are part of the Port of Tanjung Perak Surabaya. This port is one of the busiest ports in Indonesia. Therefore, a study is needed on the condition of the bottom waters and underwater infrastructure buildings to provide information about the safety of the shipping lanes and the landing of the lego anchor on the position of the underwater infrastructure. This study involves exploration activities such as detection and sweeping of objects at the bottom of the sea and taking sediment samples using side scan sonar instrument and van veen grab sampler. Detection and sweeping of the seabed in this activity requires a seabed recording survey. This activity aims to identify the condition of objects of sea cables and pipelines in the waters of the Lamong Bay waters, evaluating the rules of immersion of submarine cables and pipeline in accordance with the Minister of Transportation Regulation Number PM 129 of 2016 concerning Shipping Lines at Sea and Buildings and / or Installations in Waters on the condition of sea cables and pipelines, and analyzing the type of sediment ponds in the Lamong Bay waters.

Stages of side scan sonar data processing include of real time processing and post processing. Real time processing is a correction during the imaging process while the post processing is to sharpen the understanding of an object through interpretation. This activity refers to the post processing stage. At this stage using Sonar Wiz 7 software. Geometric correction (bottom tracking, slant-range, and layback) and radiometric correction (Beam Angle Correction, Automatic Gain Control, Empirical Gain Normalization, Time Varying Gain) are needed to produce a mosaic two dimensions of seabed images corrected. This seabed image can be interpreted with the principle of remote sensing interpretation, namely the degree of blackness (hue saturation), size (size) and shape (shape) of the object or target. The side scan sonar mosaic image was placed on the Indonesian Nautical Chart Number 84 and the Lamong Bay Field Painting Sheet.

The results of this activity will be in the form of maps of sea cables and pipelines that are attached to the Lamong Bay Field Painting Sheet. The submarine cable target recorded is in Line A with the cable target detected 2 (two) cable lines. Where as the sea pipe is located at Lane B. The results of the inspection are to be placed on the Indonesian Nautical Chart Number 84 to determine the position of sea cables and pipeline. Each of the submarine cable and pipelines targets was analyzed by the Minister of Transportation's Regulation Number PM 129 of 2016 concerning the regulation of underwater building burial. The results of the submarine cable and pipeline analysis have met the installation standards even though they are at a shallow depth. This suitability is seen based on dictum 2 (two) burial rules that immersion does not apply to the position of the underwater buildings crossing each other.

**Keywords:** Lamong Bay, side scan sonar, van veen grab sampler, sea cables, pipelines.