

INTISARI

Survei hidrografi merupakan salah satu kegiatan esensial yang dilakukan dalam proses instalasi benda atau teknologi dasar laut khususnya peletakan kabel fiber optik dasar laut. Survei hidrografi pada penelitian dilaksanakan di Kapal Riset Baruna Jaya IV di wilayah perairan Cilacap, Jawa Tengah. Akuisisi data SSS dilakukan menggunakan *towed fish* jenis Edgetech 4200FS, akuisisi data SBP dilakukan menggunakan SBP *mounted* jenis Orectech 3010, dan pengambilan sampel sedimen menggunakan *gravity corer* model Kullenberg. Penelitian yang dilakukan bertujuan untuk menyusun peta geomorfologi dasar laut dan melakukan identifikasi tingkat bahaya dari geomorfologi dasar laut sebagai dasar peninjauan rencana jalur peletakan kabel fiber optik yang aman.

Pengolahan dan analisis difokuskan pada data hasil rekaman *side scan sonar*. Pengolahan data rekaman *side scan sonar* meliputi proses koreksi geomtrik dan radiometrik citra sehingga dihasilkan citra mosaik permukaan dasar laut. Analisis dan interpretasi geomorfologi dasar laut pada citra *side scan sonar* dilakukan secara kualitatif dengan mengidentifikasi gelap-terang (rona) yang dipengaruhi oleh intensitas hambur balik (*backscatter*) dan material penyusun geomorfologi. Semakin tinggi intensitas hambur balik dan semakin padat material penyusun geomorfologi, maka semakin terang rona yang dimiliki geomorfologi tersebut pada citra *side scan sonar*. Peta geomorfologi dasar laut kemudian disusun dari hasil digitasi satuan geomorfologi yang dibagi berdasarkan sistem klasifikasi dua bagian (*two-part classification*) yang meliputi klasifikasi morfologi dan geomorfologi.

Peta geomorfologi dasar laut KP 48 – 53 menunjukkan terdapat geomorfologi dasar laut yang umum dijumpai pada paparan benua, yaitu *bedform* berupa riak pasir (*ripple*) yang terbentuk melalui arus pasang-surut dan indikasi geomorfologi yang terbentuk melalui aktivitas lepasan fluida (*fluid-escape feature*), yaitu kawah letupan (*pockmark*). Identifikasi potensi bahaya geomorfologi dasar laut terbagi menjadi tiga kategori: geomorfologi dasar laut kategori bahaya 1 memiliki potensi bahaya terendah, kategori bahaya 2 memiliki potensi bahaya sedang (riak pasir), dan kategori bahaya 3 memiliki potensi bahaya tertinggi (kawah letupan). Peta perubahan rencana jalur kabel fiber optik dasar laut menunjukkan bahwa rencana jalur kabel yang melewati kawah letupan pada KP 53 perlu digeser ke arah barat dengan koridor jarak aman selebar 50 m.

Kata kunci: geomorfologi dasar laut, *side scan sonar*, jalur kabel fiber optik

ABSTRACT

Hydrographic survey is one of the essential activities carried out in the process of installing seabed objects or technology, especially laying seabed fiber optic cables. The hydrographic survey in the study was carried out on the Baruna Jaya IV Research Vessel in the waters of Cilacap, Central Java. SSS data acquisition was carried out using Edgetech 4200FS towed fish, SBP data acquisition was carried out using Orectech 3010 mounted SBP, and sediment sampling using the Kullenberg gravity corer model. This research aims to compile a geomorphological map of the seabed and identify the level of danger from the geomorphology of the seabed as a basis for reviewing the plan for a safe fiber optic cable laying route.

Processing and analysis focused on the recorded side scan sonar data. Side scan sonar recording data processing includes the process of geometric and radiometric correction of the image so that a mosaic image of the sea floor is produced. The analysis and interpretation of seabed geomorphology on side scan sonar images was carried out qualitatively by identifying the dark and light (hue) influenced by the intensity of backscatter and geomorphological constituent materials. The higher the backscatter intensity and the denser the geomorphological constituent material, the brighter the geomorphological hue in the side scan sonar image. The geomorphological map of the seabed is then compiled from the digitized results of the geomorphological units which are divided based on a two-part classification system which includes morphological and geomorphological classifications.

The geomorphological map of the seabed KP 48 – 53 shows that the geomorphology identified along the research line are seabed geomorphology commonly found on continental shelves, namely bedform in the form of ripples of sand (sand ripple) formed by tidal currents and geomorphological indications formed through fluid-escape feature, namely the eruption crater (pockmark). The identification of potential geomorphological hazards of the seabed is divided into three categories: geomorphological seabed hazard category 1 has the lowest hazard potential, hazard category 2 has moderate hazard potential (sand ripple), and hazard category 3 has the highest hazard potential (pockmark). The map of route change recommendation for the seabed fiber optic cable route shows that the plan for the cable route that passes through the eruption crater at KP 53 needs to be shifted to the west with a safe distance corridor of 50 m.

Keywords: *seabed geomorphology, side scan sonar, fiber optic cable lines*