

ABSTRAK

Industri galangan kapal memiliki peran penting dalam menjaga kelancaran transportasi laut, khususnya bagi negara kepulauan seperti Indonesia yang sangat bergantung pada kesiapan armada. Dalam praktiknya, proses *docking repair* sering mengalami keterlambatan yang memengaruhi efisiensi waktu, biaya operasional, dan jadwal pelayaran. Kondisi tersebut juga terjadi di PT Dukuh Raya Shipyard, sehingga perlu dilakukan kajian untuk mengidentifikasi sumber keterlambatan dan menentukan prioritas perbaikan. Penelitian ini bertujuan menganalisis faktor penyebab keterlambatan, menilai potensi risiko teknis yang berpengaruh terhadap durasi pekerjaan, serta menetapkan prioritas perbaikan pada lingkup pekerjaan *replating*, perpipaan, dan pengecatan. Penelitian menggunakan pendekatan deskriptif kualitatif melalui diskusi kelompok dan wawancara dengan manajemen serta divisi teknis. Analisis dilakukan dengan *Cause and Effect Diagram* (CED) untuk mengidentifikasi penyebab masalah, sedangkan penentuan risiko serta prioritas perbaikannya dianalisis melalui *Failure Mode and Effect Analysis* (FMEA) dengan parameter *Risk Priority Number* (RPN). Penelitian dilaksanakan di galangan kapal PT Dukuh Raya Shipyard, Lembar, Lombok Barat, NTB.

Hasil CED menunjukkan bahwa keterlambatan terutama dipengaruhi oleh kondisi peralatan yang belum optimal, ketidakkonsistenan penerapan *Work Procedure Standard* (WPS) dan *Technical Data Sheet* (TDS), perencanaan material yang belum terintegrasi dengan jadwal, serta kendala lingkungan pada area terbuka dan confined space. Sementara itu, FMEA mengidentifikasi beberapa risiko dengan nilai RPN tinggi, termasuk kavitas yang tidak terdeteksi pada pelat lambung, sambungan las yang tidak sempurna, ketidaksesuaian prosedur *pressure test*, serta gangguan cuaca yang berdampak pada kualitas pengecatan. Berdasarkan tingkat risiko tersebut, prioritas perbaikan difokuskan pada mode kegagalan yang memiliki pengaruh terbesar terhadap keterlambatan agar efektivitas *proses docking repair* dapat meningkat.

Kata kunci: *Docking Repair*, Manajemen Risiko, *Cause and Effect Diagram*, *Failure Mode and Effect Analysis*, Efisiensi Waktu.

ABSTRACT

The shipyard industry plays an essential role in supporting the continuity of maritime transportation, particularly in an archipelagic country such as Indonesia, where vessel readiness is crucial for mobility and logistics. In practice, docking repair activities frequently experience delays that affect time efficiency, operational costs, and sailing schedules. This situation also occurs at PT Dukuh Raya Shipyard, indicating the need for a comprehensive assessment to identify the sources of delays and determine the areas that require improvement. This study aims to analyze the factors contributing to delays, assess technical risks that influence work duration, and establish improvement priorities within the scopes of replating, piping, and painting. The research employs a descriptive qualitative approach through group discussions and interviews with management and technical personnel. Delay factors were examined using the Cause and Effect Diagram (CED), while risk assessment and improvement priorities were analyzed through Failure Mode and Effect Analysis (FMEA) using the Risk Priority Number (RPN). The study was conducted at PT Dukuh Raya Shipyard, located in Lembar, West Lombok, NTB.

The CED analysis shows that delays are primarily influenced by suboptimal equipment conditions, inconsistent implementation of the Work Procedure Standard (WPS) and Technical Data Sheet (TDS), material planning that is not fully aligned with the work schedule, and environmental constraints in both open areas and confined spaces. Meanwhile, the FMEA identifies several risks with high RPN values, including undetected cavitation on hull plates, weak welding joints, non-compliant pressure-testing procedures, and weather-related disruptions that affect coating quality. Based on the level of risk, improvement efforts should prioritize failure modes that have the greatest impact on delays to enhance the overall effectiveness of the docking repair process.

Keywords: Docking Repair, Risk Management, Cause and Effect Diagram, Failure Mode and Effect Analysis, Time Efficiency.