

ABSTRAK

MUHAMMAD RISKY. Analisis Risiko Keterlambatan pada Proses Produksi *Oil barge* Ditinjau dari Peran *Project In Charge* Menggunakan Metode PFMEA dan FTA. Dibimbing oleh EKO PRAYETNO, S.T., M.Eng. dan FIRMAN APRIANSYAH, S.Si., M.T.

Penelitian ini bertujuan mengidentifikasi dan memprioritaskan risiko keterlambatan pada proses produksi *Oil barge*, menganalisis akar penyebab risiko prioritas, serta merumuskan mitigasi operasional bagi *Project In Charge*. Data diperoleh melalui observasi, wawancara, dan kuesioner kepada responden yang terlibat langsung dalam proses produksi kapal. Analisis dilakukan menggunakan *Process Failure Mode and Effect Analysis* untuk menilai *severity*, *occurrence*, dan *detection* serta menghitung *Risk Priority Number*, kemudian *Fault Tree Analysis* digunakan untuk menelusuri akar penyebab risiko prioritas. Hasil penelitian mengidentifikasi 23 mode kegagalan pada aspek engineering, pengadaan material, dan produksi. Empat risiko prioritas adalah keterlambatan kedatangan bahan material dengan RPN 341,3, perubahan desain 247,5, kekurangan tenaga kerja 226,9, dan keterlambatan kedatangan komponen 208,0. Analisis akar penyebab menunjukkan bahwa keterlambatan dipengaruhi oleh spesifikasi dan desain yang belum final, ketidaktepatan data teknis, kendala pemasok dan pengiriman, ketidaksiapan material atau komponen, perencanaan tenaga kerja yang kurang akurat, serta keterbatasan peralatan. Mitigasi diarahkan pada pengendalian perubahan desain, integrasi jadwal material dengan jadwal produksi, pemantauan pengadaan, pengaturan tenaga kerja, kesiapan peralatan, dan pelaporan progres harian. Penerapan PFMEA dan FTA membantu *Project In Charge* menetapkan prioritas pengendalian dan menekan potensi keterlambatan proyek.

Kata kunci: Keterlambatan Produksi, *Oil barge*, PFMEA, FTA, *Project In Charge*.

ABSTRACT

MUHAMMAD RISKY. Analysis of Delay Risks in the Oil barge Production Process from the Perspective of the Project in Charge Using PFMEA and FTA Methods. Supervised by EKO PRAYETNO, S.T., M.Eng. and FIRMAN APRIANSYAH, S.Si., M.T.

This study aims to identify and prioritize delay risks in the Oil barge production process, analyze the root causes of priority risks, and formulate operational mitigation measures for the Project In Charge. Data were obtained through observations, interviews, and questionnaires administered to respondents who were directly involved in the ship production process.. Process Failure Mode and Effect Analysis was applied to assess severity, occurrence, and detection and calculate the Risk Priority Number, followed by Fault Tree Analysis to trace the root causes of priority risks. The study identified 23 failure modes related to engineering, material procurement, and production. The four priority risks were late arrival of materials with an RPN of 316.9, design changes at 247.5, labor shortages at 226.9, and late arrival of components at 208.0. The root-cause analysis indicated that delays were influenced by incomplete specifications and designs, inaccurate technical data, supplier and delivery constraints, unavailable materials or components, inaccurate workforce planning, and limited equipment. Mitigation measures include design change control, integration of material and production schedules, procurement monitoring, workforce allocation, equipment readiness, and daily progress reporting. The combined application of PFMEA and FTA assists the Project In Charge in establishing control priorities and reducing potential project delays.

Keywords: Production Delay, Oil barge, PFMEA, FTA, Project In Charge.