Rancang Bangun dan Operasi Sistem Oil Spill Recovery Equipment untuk Meningkatkan Efisiensi Penanggulangan Tumpahan Minyak di Blok Offshore Southeast Sumatra = Design and Operation of the Oil Spill Recovery Equipment System to Increase the Efficiency of Oil Spill Management in the Southeast Sumatra Offshore Block

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Abstrak

Indonesia, dengan kekayaan 60 cekungan sedimen, memiliki sejarah panjang dalam industri minyak dan gas. Blok Minyak Lepas Pantai Tenggara Sumatera (OSES) merupakan wilayah kerja migas yang memberikan kontribusi signifikan terhadap produksi minyak dan gas bumi. Sistem OSRE Oil Boom dikembangkan sebagai solusi inovatif untuk mengatasi tumpahan minyak di laut, khususnya di wilayah Blok OSES. Sistem ini terdiri dari boom dan jib-arm pada kapal untuk menampung dan mengarahkan minyak ke tempat penampungan. Pengembangan Sistem OSRE Oil Boom didasarkan pada penggabungan observasi lapangan, Finite Element Analysis (FEA), diagram Ishikawa, dan penilaian risiko. Analisis menunjukkan bahwa keberadaan oil boom secara signifikan meningkatkan hambatan dan daya kapal. Struktur sling, jib-arm, dan rangka OSES telah diuji dan terbukti aman serta mampu menahan beban oil boom di laut. Aspek-aspek Etika Insinyur dan K3L telah terpenuhi dengan baik. Analisis K3L mengidentifikasi enam (6) potensi utama risiko kecelakaan kerja yang dapat terjadi pada kegiatan operasional OSRE. Diharapkan, pengembangan Sistem OSRE Oil Boom dapat meningkatkan efisiensi dan efektivitas penanganan tumpahan minyak di laut, serta meminimalisir dampak negatif terhadap lingkungan.

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Indonesia, blessed with 60 sedimentary basins, boasts a rich history in the oil and gas industry. The Southeast Sumatra Offshore Oil Block (OSES) is a key contributor to the country's oil and gas production. The OSRE Oil Boom System has been developed as an innovative solution to address offshore oil spills, particularly in the OSES Block region. This system comprises a boom and jib-arm on a vessel to collect and direct oil to a containment reservoir. The development of the OSRE Oil Boom System is grounded in a combination of field observations, Finite Element Analysis (FEA), Ishikawa diagrams, and risk assessment. Analysis indicates that the presence of the oil boom significantly enhances the vessel's resistance and power. The sling structure, jib-arm, and OSES frame have undergone rigorous testing and have been proven to be safe and capable of withstanding the oil boom's load at sea. Ethical Engineering and OHS aspects have been thoroughly addressed. OHS analysis has identified six (6) primary potential occupational accident risks during OSRE operational activities. The development of the OSRE Oil Boom System is anticipated to enhance the efficiency and effectiveness of offshore oil spill management, while minimizing negative environmental impacts.