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Desain dan analisa seafastening platform jacket diatas barge saat transportasi ke lapangan migas lepas pantai = Design and analysis seafastening of jacket platform on barge while transported to oil and gas offshore fields

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Abstrak

Platform Jacket yang telah difabrikasi di darat akan dibawa/ ditransportasi ke site dengan menggunakan kapal tongkang (barge) untuk di-install di lapangan migas. Selama proses transportasi diperlukan suatu pengikatan struktur jacket ke deck barge agar struktur Jacket tetap stabil diatas barge. Sistem pengikatan yang disebut seafastening ini harus di desain kuat untuk menerima beban yang diakibatkan oleh pergerakan (motion) kapal, yakni tiga gerakan translasional (surge, sway, heave) dan tiga gerakan rotasional (pitch, roll dan yawn). Gerakan-gerakan ini menimbulkan percepatan pada barge yang berakibat timbulnya gaya tambahan pada struktur diatasnya dan hal ini mempengaruhi tegangan pada seafastening. Perangkat lunak Multi Operational Structural Computer System (MOSES) dipergunakan sebagai alat bantu untuk permodelan Barge dan Jacket, serta perhitungan karakteristik Response Amplitude Operator (RAO) yang diakibatkan oleh beban lingkungan. Selanjutnya untuk menghitung tegangan yang terjadi pada seafastening, digunakan perangkat lunak Structural Analysis Computer System (SACS) dengan pembebanan berupa beban mati, beban angin dan beban inersia yang diakibatkan oleh motion kapal tongkang/ Barge. Besarnya tegangan harus memenuhi kriteria Unity Check (UC).

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Platform Jacket which fabricated in yard will be transported to the site with barge for installation. During the transport process, strong fastening system from jacket to deck barge is required so that the Jacket Structure remains stable on Barge. Fastening system that called seafastening must be in strong designs to accept the load caused by the movement of the barge, three translational motion (surge, sway, heave) and three rotational movement (pitch, roll and yawn). These movements cause the acceleration of the barge which result in the emergence additional force on the structure above, and this influences the stress at seafastening. Multi Operational Structural Engineering Simulator (MOSES) software is used as a tool for modeling of Barge and Jacket, as well as the calculation of the characteristics Response Amplitude Operator (RAO) caused by environmental. Furthermore, to calculate the stress that occurs in seafastening, software Structural Analysis Computer System (SACS) is used, with the loads on a construction during seafastening is dead load of the structure, wind load and innertia load caused by the motion of barge / Barge. The magnitude of the stress of seafastening must meet the criteria of Unity Check (UC).