FATIGUE ANALYSIS OF SSP (SEVAN STABILIZED PLATFORM) MOORING SYSTEM INFLUENCED BY RANDOM WAVE

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Abstract

Sevan Stabilized Platform (SSP) is a floating structure with a cylindrical hull structure which has some variety according to function. This concept will use as a drilling rig (drilling platform) or production platform and FPSO (Floating Production Storage Offloading). This structure claimed has a higher stability of the ship-shaped structure. A more stable structure would have a quieter motion characteristics. In this final project, analyzed fatigue in mooring systems that work on the structure. Because the mooring system is one of important part in a floating building. Analysis of fatigue on SSP mooring system is done by first analyzing the structure offset with a load of random waves. The maximum offsets resulting from the study amounted to 40.9 yards to z direction. Offset is still within the allowable limit of 5% - 8% of the water depth is 30 to 48 meters. After analyzing the movement of the SSP with MOSES software, we can analyze the tension that occurs in mooring systems due to movement of the structure with ORCAFLEX software. The maximum tension generated amount to 331.95 kN. With a minimum breaking load of 897 kN, the maximum tension is still within safe limits with a safety factor of 1.74. Cyclical load in the form of tension on the mooring system will certainly lead to fatigue. From the fatigue analysis with spectral analysis method, it is known that there are 2 mooring line which has the most critical age, Namely mooring mooring 2a and 2d, each with age 15:07 years and 16.22tahun, still below the standard of design service life of 20 years.

Key word : Fatigue, SSP, Random Wave.