JACKET DESIGN UNDER SEISMIC LOADING

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Abstract

The development of offshore industry is highly dependent during the development of oil and gas industry. The increase in oil and gas prices in 1973 has encouraged the growth of offshore industry, including efforts to find oil fields and new gas in deeper waters with the sea conditions are increasingly fierce. Thus, the increase in world oil prices have a way to encourage increased activity off the coast, and of course also increase offshore buildings need a new sea. Offshore oil field will be found in relatively smaller capacity in the future (marginal field) as in the fields of oil and gas in Southeast Asia, located in the deeper waters, or mineral reserves do not quite economical if excavated with existing technology. To solve this problem, the building must be operated effectively, such as the types of floating platforms, flexible platforms or underwater installations.

Jacket is a structure used in offshore construction. In the calculations, the force of an earthquake is one important aspect that must be considered in planning of jacket structure. Jacket serves to protect the pile to remain in position, support the deck and protecting conductors and supporting sub-structures such as boat landing, barge bumpers and others. The main element jacket structure is as follows:

- Foot jacket / chord
- Braces (center, horizontal and diagonal)
- Joint meeting between the jacket legs and braces
Jacket developed for operation in shallow sea and the sea was basically a thick, soft and muddy. After the jacket is placed in the desired position, pile is inserted through the building leg with hammer to the hard soil layers and then deck can be installed and welded.

In this Final Project, I design a jacket. Seismic and fatigue analysis will be calculated to show the performance of jacket structure. The jacket has 4 (four) legs or we can mention it, tetra pod jacket. Structural analysis is run using software SACS 5.2 (Structure Analysis Computer System 5.2).

Keywords: Offshore structure, Jacket, seismic analysis, fatigue analysis, CQC (Complete Quadratic Combination), SRSS (Square Root of The Sum of The Squares), API RP2A-WSD 2000, SACS 5.2.