ABSTRACT

In the development of the world recently, oil and gas become one of primary resources of economics matter in many states. Oil and gas are extracted from drilling process by using sophisticated technologies. Oil and gas inside the earth are relatively limited in deep seas, making the operability of a fixed structure become less economical compared to floating structure which is easy to be relocated from one to another. Semi-submersible is a floating body which is different from another conventional ships. This structure has platform or deck with several configurations, such as foursquare, triangles and many angles. In this offshore structure both fixed and floating, ultimate strength analysis is important to be considered. In this research, Ultimate strength analysis of semi-submersible structure specifically in pontoon joint and column by raising H-significant in extreme condition of natuna sea up to structure failure was done. By using A36 steel, the result shows the structure failure occurred when H-significant was raised 46 times in extreme condition. Maximum stress is 472.32 Mpa in pontoon joint and column area. In summary, stress obtained in A36 steel which exceeds the ultimate strength is 460 Mpa and ultimate failure occurred.

Keywords: analysis ultimate, semi-submersible, pontoon joint and column, extreme condition