

ABSTRACT

Offshore structures are large platforms that provide the necessary facilities and equipment for exploration and production at sea. Generally, these structures are designed to withstand environmental loads such as waves, currents, wind, earthquakes and daily operational forces. Inspection procedures must be performed in an effective way to reduce the risk of fatigue and failure of these structures. This thesis will discuss international and national codes & regulations concerning inspections of offshore structures, as well as the different types of underwater non-destructive testing inspections that must be carried out at sea. Moreover, this thesis will elaborate on the marine growth development, inspection and cleaning of the underwater offshore structure. It will also present the correct implementation, inspection and monitoring of the corrosion prevention system fitted on these structures. In addition, we will develop a strategy for an effective underwater inspection, allowing a better understanding of the risk levels during the expected service life of the structure. Finally, we will discuss what risks the divers frequently face, the access limitations and the role of automation in this sector. The aim of this thesis is to study different inspection and maintenance systems to develop an efficient methodology that will keep fixed offshore structures safely out of dry-dock.