

## HUMAN-INDUCED VIOLATION OF IMO REGULATIONS ON EMISSION

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### ABSTRACT

Marine industry had many challenges before, in 2020 one of these biggest challenges will come to the surface, (IMO) new regulations of NO<sub>x</sub> & SO<sub>x</sub> emissions substances from combustion of marine fuels will be monitored and restricted in respect of the atmosphere. The aim of this paper is to study the performance of the marine main diesel engine at various load conditions and emissions percentages at each load condition, to ensure they remain with-in environmentally safe/permisible levels, the main diesel engine variable injection timing (VIT) is set up so that there is no change in injection timing at low loads (40%MCR), this is to avoid frequent changes of pump lead during maneuvering, the start of injection advanced above 40% load. Therefore, in this study the main diesel engine parameters considered are from 40% to 84% load rating. This research study was carried out using a simulator the TRANSA Tech Sim/ERS 5000 with MAN B&W 6S50MC-C diesel engine product tanker as case study. Therefore, the operation of the ships main diesel engine performance does not take into account conditions of its operating environment in the real sea conditions. Even though the TRANSA Tech Sim/ERS 5000 could simulate some of the conditions experienced at sea due to time constraint, this research study was carried out assuming perfect sea condition conditions such as high tides, wind resistance against and along the ships sailing path, hull fouling and hull deformation resistance

**KEYWORDS:** Emission, Simulator, IMO, NO<sub>x</sub>, SO<sub>x</sub>, ECA

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