FIRE RISK ASSESSMENT ANALYSIS FOR PASSENGER SHIP (CASE STUDY FERRY SHIP DESIGN 5000 GT OWNED BY DITJEN PERHUBUNGAN DARAT)

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Abstract

Twenty five ship accident were caused by fire was occurred in 2011 happened 25 times. Nine accident were contributed by passanger ship. Based on Komisi Nasional dan Keselamatan Transportasi (KNKT) database the fire location were located mostly at vehicle deck and engine room. Therefore, it is necessary to mitigate the ship accident caused by fire. This paper discusses about analysis of fire risk assessment at design of ferry 5000GT that owned by Ditjen Perhubungan Darat. This ship has 6 deck assembly, 3 vehicle decks and 2 passanger decks with maximum capacity until 820 passangers. The analysis process were done by 5 steps such as Designing of fire and safety plan arrangement early, hazard identification, evacuation identification, risk evaluation and finally analysis of evaluation and solution. PHA method was conducted for hazard identification. Evacuation route evaluation were done by agent based medelling program and efectivity of automatic fire fighting equipment were done by Fire dynamic simulator (FDS) program. The result of the simulation show that evacuation route from fire and safety plan arrangement could be accepted with evacuation time 550 s. Simulation result of automatic fire extinguishers show that the usage of automatic fire
extinguishers was effectively working for extinguish the fire since the fire growth could not reach fully developed stage.

**Keywords:** Ship, fire, risk, evacuation, HRR, FDS