SUB COURSE D : SHIP NAVIGATION SAFETY AND RISK ASSESSMENT OF SHIP COLLISION

Geographically, Indonesia is a country with a very strategic location. It is located between two continents and oceans which make Indonesian water territory is used for international shipping route which enables movement of goods for interisland as well as for world's commodity trading between East Asia, Europe, and Middle East countries. The shipping route will take the shortest distance when their fleets sail through the sea water inside the archipelagic country of Indonesia. This makes international shipping route in Indonesia becomes denser and potentially induces catastrophic ship collision since international shipping mostly uses relative big size of ships.

In CommTECH Camp Insight 2019, this course will introduce the participants about the nature of ship traffic in a sea water, such as in an open sea, strait or channel, as well as in a port etc. Some busy area in Indonesia sea water, such as in The Madura Strait, Lombok Strait and Sunda Strait will be introduced as well. In a busy area of ship traffic, there is high possibility of ship collision. This course will introduce some types of ship collision, such as Crossing Collision, Overtaking Collision, Head on Collision and Grounding Collision. These types of ship collision are important to know in order to estimate the number of collision in a period of time.

After knowing type of collision, student will be introduced how to carry out a risk assessment of ship collision including estimation of the frequency of ship collision and its consequences if it is occurred which may cause environmental pollution or the consequence on the marine installation such as subsea pipeline. In order to increase the safety of ship navigation, Automatic Identification System (AIS) is used to monitor the movement of ship. AIS have to be installed in all the merchant ship as to send the information to the onshore AIS station. This course will bring the students to see the AIS monitoring room in Institut Teknologi Sepuluh Nopember (ITS).

This monitoring room is a real time monitoring of ship operating at sea. This is located at The Nasdec Building in ITS.

Moreover, this course will introduce the system in AISITS (Automatic Identification System Institut teknologi Sepuluh Nopember) that has been developed. AISITS has some systems to increase the safety of ship navigation and the safety of marine installation. The system of AISITS are Subsea Pipeline Early Warning System, Ship Inspection System and Realtime Ship Tracking System. Students will have chance to operate these systems by theirself to gain a memorable experience in understanding the effort to increase the safety of ship and marine installation.

Level : Bachelors, Masters or Doctoral degree with or without specific background in Marine Safety

Lecturer : 1. AAB. Dinariyana Dwi DP., ST., MES., Ph. D.

2. Dr. Eng. Dhimas Widhi Handani, ST., M.Sc.

Synopsis of The course:

Topic 1: Introduction to marine traffic safety

This topic will introduce about the nature of ship navigation on a shipping route and why the ship traffic in an area that need to be taken as an important issues related to the safety will also been discussed. Some specific discussion will be carried out regarding some busy ship traffic area in Indonesia sea water territory, such as Sunda Strait, Madura Strait and Lombok Strait. These Straits are some important places that become a way for ship to navigate through the channel to reach her destination safely, so that some analysis on ship safety from the event of collision needs to be carried out in these areas of Indonesia sea water territory.

Topic 2: Type of ship collision

A high density of ship traffic could induce an event of ship collision. A ship collision could involve one, two or more ships. There are three type of collision which are influenced by the direction shipping route. These three types of collision are Head on Collision, Overtaking Collision and Crossing Collision. One type collision which involve only one ship is a Grounding Collision. This topic will discuss these all types of collision with some examples of some area that has a history of those types of collision.

Subtopic 3: Risk Assessment of ship collision

The risk assessment of ship collision is divided into two main parts. They are frequency analysis and consequence analysis. Frequency analysis is an effort to estimate the number of collision during some period of time. The lecture will introduce some method that can be used for estimating the frequency of ship collision. While the consequence analysis in an effort to know how the effect if the ship collision happened. This risk analysis will also slightly discuss for the case in marine installation, such as subsea pipeline, offshore installation etc. In the end, risk representation could be determined by some risk guideline or standard.

Subtopic 4: Monitoring of ship and offshore installation using AIS

In order to avoid ship collision and increase the marine traffic safety, some devices are installed onboard ship. One of them is Automatic Identification System (AIS). International Maritime Organization (IMO) obligated all merchant ship with Gross tonnage more than 300 GT to install AIS. AIS transponder in ship sends some important ship informations to AIS receiver in other ships or in AIS based stations which located onshore. This course introduces the utilization of AIS for monitoring of ship traffic as well as offshore installation. The student will get information on how the AIS work and the application of AIS to increase the ship traffic safety to avoid ship collision.

Subtopic 5: AISITS as a system to improve the maritime safety

Institut Teknologi Sepuluh Nopember (ITS) developed an AIS based system for monitoring the ship traffic. This system is called as Automatic Identification System Institut Teknologi Sepuluh Nopember (AISITS). Students will be introduced about the system in AISITS, i.e. Realtime Ship Tracking, Subsea gas pipeline monitoring system and Ship Inspection System. In this course, the student will visit the AISITS monitoring room which is located in NASDEC building. The students have chance to see how the system works and they can operate the system. The student can see the realtime position of ships by using AISITS which covers some channels and ports in Indonesia and some location overseas. The coverage area that can be monitored by the students are Madura Strait, Sunda Strait, Singapore Strait, Tanjung Priok sea area, Balongan sea area, Cilacap, Semarang, Indramayu and Cirebon sea area.

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