

Study about Digital Detector on Bureau Classification of Indonesia: A Case Study of Self-unloading Vessel Bought from China

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ABSTRACT

The mandated ship classification that was used in this study's descriptive techniques and literature data was done for safety reasons and served as one of the metrics for determining whether or not sailing was worthwhile. The technical specifications and calculations of hull construction, stability, electrical machinery, and the supporting systems of the vessel operating systems, such as boilers, steering system, and others, are more the emphasis of classification standards. In the implementation of the principle of sabotage (Presidential Instruction Number 5 in 2005) about the empowerment of the cruise industry nationwide, the Government issued new rules for the shipping industry operating in Indonesia the fulfilment of class acceptance requirements for foreign vessels that have been purchased and operating in the Indonesian territory becomes an important concern, so that all ships sailing within the territory of Indonesia have been registered in the Indonesian Classification Bureau, its consequences are to be classed in the domestic ship classification and in this case is the Bureau Classification of Indonesia (BKI). Due to the fact that this study involves foreign ships bought in China, it is necessary to complete a classification at the Indonesian Classification Bureau (BKI) and meet the requirements for finished shipbuilding class acceptance procedures before BKI issues a Temporary Classification Certification and Temporary Load Line Certificate for foreign ships that are bought and later operated in Indonesian waters.

Keywords: Digital detector; Indonesian flag vessel; electrical machinery; steering system.

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1. INTRODUCTION

The introduction of the sabotage principle increased the number of national fleets where the need for institutions to play a part in ship classifications linked to safety and security in shipping [1]. And in accordance with Minister of transportation regulation no. KM. 20 of year 2006 about obligation for every ship to have an Indonesian flag to enter class in Bureau Classifications of Indonesia (BKI), that says that the Indonesian flag vessel and a measure of length between a line front and back 20 meters or more, and dirty tonnage of GT 100 or more, and that is driven by of propulsion main 250 PK or more, must be classed in Bureau Classification of Indonesia [2,3]. In article 3 no. 17 of 2008 law, it is written that shipping is provided in order to streamline the movement of people and / or goods through the waters by prioritizing and protecting transport in the waters in order to facilitate national economic activities and to create the competitiveness by developing the national water transport industry [4].

With this rule, the Government continues to strive, lift, and strengthen the role of the national fleet. This is evidenced by the application of the sabotage principle with the aim of seeking to raise / generate national shipping due to deterioration and its small role in foreign transportation (only around 3%) and domestic transportation (only around 46%), while the rest is transported by foreign ships. This shows that foreign ships dominate both domestic transportation and foreign sea transportation. Therefore, the fulfillment of class acceptance requirements for foreign vessels that have been purchased and operating in the Indonesian territory becomes an important concern, so that all ships sailing within the territory of Indonesia have been registered in the Indonesian Classification Bureau [5]. According to Law no. 24 of 2007 on Disaster Management on the Republic of Indonesia, disaster is an event or series of events that threaten and disrupt the life and livelihood of the community caused by both natural factors and / or non-internal factors and human factors resulting in the occurrence of human lives, environmental damage, property loss, and psychological effects [6].

Classification activities are the classification of ships in accordance with the construction of the hull, machinery, and electricity of the ship in order to provide an assessment of the feasibility of a ship to sail. The ship owner's operational requirements need to be established during preliminary designing, which then allows the development of a basic specification such as deadweight, speed, range, capacity, stability, and freeboard [7,8]. The ship is technically bound by a number of regulations which the purpose is to maintain the level of reliability of the ship's sea and it is expected that the ship will be in a condition of a reasonable level of safety in accordance with the technical limitations of the ship's operation [9].

One component of the maritime network and a partner in ship safety is ship classification. Other parties with an interest in ensuring ship safety include ship owners, ship crews, shipyards, flag states, port states, guarantors (insurance), financial institutions, and charters [10].

Legal basis for ship classification activities:

1.1 Law No. 17 of year 2008 Concerning Shipping, Articles 124 and 129

1.1.1 Article 124 explains

- Every vessel procurement, construction, and construction including its equipment and operation of ships in Indonesian waters must meet ship safety requirements.
- The ship safety requirements as referred to in paragraph above include: material, construction, building, machinery and electricity, stability, arrangement and supporting equipment and radio, and ship electronics.

1.1.2 Article 129 explains

- Ships, based on certain types and sizes, must be classified into classification bodies for the purposes of ship safety requirements.
- National classification bodies or recognized foreign classification bodies can be appointed to carry out ship inspection and testing to meet ship safety requirements.
- Recognition and appointment of the classification body as referred to in paragraph above is carried out by the Minister.
- The designated classification body as referred to in the paragraph above must report its activities to the Minister.

1.2 Government Regulations no. 51 year 2002 about Shipbuilding [11]. The Third Part of the Classification, Article 59 Says that

- Need for a requirement, the ship based on the type and some measure, must be classified on a board of classification.
- The national classification or board foreign classification recognized may be appointed to implement inspection and examination on the ship for the type and some measure related to compliance the requirement of ship safety.
- Appointment and recognition of classifications as stated in paragraph above is carried out by the minister,
- Minister can use the results of the investigation in the process of issuing certificates of ship safety.
- Classification board conducting activities which are pertaining to ship safety be obliged to submit report their activities to the Minister.
- Further provisions on the type and size of vessel which should be classified, the manners of the uses of the testing and be done by the board of the classification who their classification and reporting as stated in paragraph above arranged a decision of the Minister.

1.3 Minister of Transportation Regulation no. KM 20, 2nd May 2006 about Obligation for a Ship which have Flag of Indonesia to use Bureau Classifications of Indonesia Class

A ship classification issue is the responsibility of the vessel owners using the Indonesian flag based on transportation ministerial decree stating that the number of vessels that must be classed follow the conditions: long > 20 m, the tonnage GT > 100 cubic meters, the driving force of the machine > 100 PK, that performs international shipping. Scope classifications for a ship includes: the hull of a ship, machine installation, electricity installation, anchor equipment, conditioning in which the installation are permanently attached and is part of the ship, every item of gear and use that in wore the operation of ships, the constructional system and material that determine the type of a ship.

Ship seaworthy according to law 19 year 2008 is a state of a ship fulfilling the requirements ship safety, pollution prevention waters of a ship, ship's crew, loading, health and welfare the crew, and passengers and the legal status of a ship to sail in certain aquatic. Technical regulations are rules agency classifications and government regulation the state administration which is usually adoption of the international convention as Safety of Live at Sea (SOLAS), Marine Pollution Prevention (MARPOL), International Convention on Collision Regulation (COLREG), and many more international conventions adopted in the convention. So, we need the supervision by a government or institution classifications vessel appointed both national and international to implementing ship classification.

When the ships operate, they will also do a survey and audits on the implementation of all safety rules that needed to be fulfilled as everyone should can assure a stay in conditions unseaworthy (seaworthiness).

2. METHODS

This research used the descriptive methods with the literature data from mandatory ship classification is done for the sake of safety, as one of the tools to measure the worth or not to sail.

3. RESULTS AND DISCUSSION

3.1 Data of the Ship

A ship previously named Yue Jian Hang 03 from China, was made in 1997 with the classification China Classification Society (CCS), after it was bought in Indonesia, that name was changed into MV. MSE 42.

SHIP PARTICULAR MV.MSE 42

NAME OF SHIP	: MSE 42 (EX.TITAN 42)
TYPE OF SHIP	: BULK CARRIER WITH CONVEYOR & SUCTION /SELF UN-LOADING VESSEL
OWNER & OPERATOR	: PT.NUSANTARA TERMINAL TERPADU FLAG : INDONESIA
SHIP CLASS	: BIRO KLASIFIKASI INDONESIA (BKI) PORT OF REGISTRY : JAKARTA
TANDA SELAR	: GT. 1393 NO.3743 / Ba
IMO NUMBER	: 8664474
CALL SIGN	: JZOR
DWT	: 2796 T
GRT / NRT	: 1393 GT / 784 GT
LENGTH (LBP)	: 64.80 METER
LENGTH (LOA)	: 67.80 METER
BREADTH	: 14.60 METER
DEPTH	: 3.98 METER
TOTAL CREW	: 9 CREWS INCLUDE MASTER
SHIP YARD	: BAIMIAO DOCKYARD, FUNCHENG CITY QINGYUAN Y
EAR BUILD	: 2007
LAUNCHING DATE	: 26 SEPTEMBER 2007
KEEL LAYING DATE	: 04 MARCH 2007
MAIN ENGINE	: CUMMINS KTA 19-M 375 KW /1744 RPM 2 UNITS (502 HP x2)
AUXILIARY ENGINE	: MARINE GENSET TFX-280S4-H 90 KW X 2 UNITS
PROPELLER	: 3 BLADE MANGANESE BRONZE FIXED PROPELLER DIAMETER 1854 MM X 2 UNITS
MARINE GEARBOX	: 2 UNITS RATIO 6 : 1
RUDDER & BLADE	: RUDDER STOCK STREAMLINE x 2 SETS
STEERING GEAR	: STERN RUDDER ELECTRO HYDROULIC STEERING HAIKEWEI YD-1-50/20
SHAFT	: DIAMETER 140 MM
OWS	: HUAN SHUI CYF-0.25 CAPACITY 0.25 M3/H
ANCHOR WINDLASS	: 1 UNIT RCQMJ-26A DAYA 11 KW AT THE BOW, 1 UNIT ELEKTRIK DAYA 7,5 KW AT THE STERN
ANCHOR	: 2 UNITS 800 KG DOUBLE FLUKE AT THE BOW, 1 UNIT J S 270 KG DOUBLE FLUKE AT THE STERN
COMMUNICATION	: ICOM VHF-RT FM TRANCEIVER, SSB RADIO MARINE TYPE
NAVIGATION	: MAGNETIC COMPASS CPT-130 D, NAVIGATION RADAR MR-1000R11, CLINOMETER QB55-200, SEARCHLIGHT CTGQ ³
DECK EQUIPMENT	: ECHO SOUNDER DS606A, LIFE RAFT 6 PERSONS

FRESH WATER TANK	: CAPACITY 24,99 m ³
FUEL OIL TANK	: CAPACITY 41,113 m ²
BOTTOM PLATE	: 10 MM
KEEL PLATE	: 10 MM
MAIN DECK PLATE	: 10 MM
SIDE SHELL PLATE	: 10 MM
BULKHEAD PLATE	: 10 MM

HATCH

GRAIN CAPACITY	: 1650 CBM OF SAND
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CONVEYOR

DISCHARGE CAPACITY	: 1000 CBM PER-HOURS
LENGTH OF BOOM	: 28 METER
ANGLE OF ELEVATION	: 30 DEGREE
BREADTH OF BELT	: 120 CM
THICKNES OF BELT	: 150 MM
MAXIMUM HEIGHT	: APPROXIMATELY 12 METER FROM WATER LINE
ENGINE CONVEYOR	: 150 KW (200 HP)
GENSET CONVEYOR	: 115 KW (154 HP)

SUCTION PIPE

SUCTION CAPACITY	: 800 CBM PER-HOURS
LENGTH OF PIPE	: 25 METER
MAXIMUM DEPTH	: APPROXIMATELY 12 METER FROM WATER LINE
ENGINE SUCTION	: 600 KW (804 HP)

3.2 The Shipbuilding Classified Procedure that had Already been Prepared in BKI

The owner submits a request for classification and application for a survey to the nearest branch of BKI. Send supporting documents and images (3) as follows:

3.2.1 Foreign-flagged vessels

- 1969 Measurement Certificate Tonnage, Bill of Sale / Nationality registry, Certificate Builder.
IMO Number
- Copy of the previous class certificate.

3.2.2 Hull

- General Arrangements, Capacity Plans, Hydrostatic Curves and Cross Curves, loading manuals for ships larger or equal to 65 m, Midship section, Longitudinal and Transverse Bulkheads, Profile and Deck, Shell Expansion, Engine and Steam Foundations, Stem and stern frames, Rudder and rudder stock, Hatch Covers, Fore and Aft End Structures

- Loading Instrument (if any) user manual and test conditions

3.2.3 Machine

- Machinery Arrangements, Intermediate Thrust and Screw shafts, Stern Tube and Glands, Propellers, Main Engines, Propulsion Gears and clutch systems, Compressed air piping systems, Starting Air Receivers, Main Boilers, Super heaters, Economizers and Steam Piping, Fuel Oil Burning Systems, Water Cooling and Lubricating Oil Systems, Turbines, Bilge and Ballast Piping Diagrams, Fire Fighting Systems, Fuel Oil and Starting Air Systems, Air and Sounding Pipes Systems, Wiring Diagrams, Calculation Electric Power Balances, Steering Gear Systems, Piping Systems and Arrangements.
- Torsional Vibration Calculations for ships less than 2 years old.

3.2.4 Carry out surveys on the dock with the scope of the inspection in accordance with the fourth class update survey (measurement of plate thickness, overhaul of all machine installations, removal of propeller shafts, etc.).

- Survey items carried out are in accordance with the class renewal survey that is adjusted to the age of the ship.
- After all surveys were completed, a sea trial was held.

If the results of the sea trial are satisfactory, then the ship is issued a class certificate in letters arising. Temporary class certificates are valid for a maximum of 1 year, hull certificates arise (ILLC 1966) valid for 3 months' maximum of 5 months. Ships that have had an internationally recognized foreign classification, BKI can continue the inspection in the framework of class acceptance according to the ship's status survey by carrying out certain checks of the hull, machinery installation and electricity. After the vessel meets the requirements of the BKI, the classification certificate can be issued and the same provisions will apply, such as vessels built under the supervision of BKI.

1. The BKI Surveyor issues a one-year Temporary Classification Certificate and a Temporary Load Line Certificate that is valid for three months.
- Results obtained in the field: There are Provisional Classification Certificates and Temporary Load Line Certificates from the MSE-42 vessel.

3.3 Flag Chance Procedure to RI's flag

Application for Service Notes to the Director of Shipping and Shipping of the Directorate General of Sea Transportation by attaching the following documents:

- Deletion certificate
- Bill of Sale (legalized by a Notary)

- Certificate Builder
- Protocol and Delivery Certificate
- General Arrangement (drawing)
- Class Certificate
- Ship Registry. Results obtained in the field: There are already Sea Letters and International Measurement Letters, along with a Flag Replacement Letter, Change of Name, Measurement, Inspection and Call Sign of the Ship and Letter of Approval of Ship Picture.

3.4 Repairs Done in the Class Fulfilment

Based on the recommendations from BKI surveyors, there are several things that must be met in the form of repairing parts of the ship and to fulfill the requirements, repairs are carried out according to recommendations from BKI.

- Results obtained in the field: There is a recommendation from BKI in the form of improvements that must be made.

4. CONCLUSION

The Minister of Transportation Regulation No. KM.20 / 2006 which regulates the Indonesian Classification Institution, with the subjects of this research is foreign vessels purchased from China, in the case of foreign vessel classifications purchased and then operated in the territory of Indonesia, it is obligatory to carry out a classification in the Classification Bureau of Indonesia (BKI) and fulfill the requirements for finished shipbuilding class acceptance procedures, and then BKI issued a Temporary Classification Certification and Temporary Load Line Certificate. Foreign vessels are also required to change flags by registering with the Directorate General of Sea Transportation, Ministry of Transportation and obtaining Sea Letters and International Measurement Letters, along with Flag Replacement Letters, Change of Name, Measurement, Inspection and Call Sign Ship and Ship Approval Letter. The subject of the study was MSE 42 vessel, there were many things that had to be repaired in terms of class fulfilment of BKI, the results of this study had obtained data on repairs and now the ship had been operating in Bengkulu island.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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