

# **CARGO SAFETY RULES AND REGULATIONS APPLICABLE FOR RO-RO VESSELS**

A case study on how Höegh Autoliners comply with the applicable  
cargo safety rules and regulations



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# 1 Introduction

## 1.1 Purpose of the thesis

The purpose of this thesis is two-folded; (i) to describe what cargo safety rules and regulations are applicable for ro-ro vessels based on Norwegian legislation; and (ii) to make a normative case study on how Höegh Autoliners<sup>1</sup> ensure compliance of the relevant applicable cargo safety rules and regulations.

Ro-ro vessels can be defined as roll on roll off vessels, which basically means that all cargo with wheels can be loaded. This ensures an efficient and fast cargo operation. Furthermore, the general understanding of a ro-ro vessel is by many associated with transportation of cars. This understanding is misleading as a modern ro-ro vessel can transport any cargo as long as it is within the capacity limitations of the vessels, i.e. length, width, height and weight. This means that potential cargo can be everything from cars, buses, trucks, yachts, trains, generators, transformers to heavy boxes and crates. In addition to the different types of cargo, there are different types of ro-ro vessels.<sup>2</sup>

The main characteristics of these vessels are the high freeboard, relatively low draft (compared to the rest of the hull and structure), stern ramp (for loading and discharging) and up to a two digit number of decks. Consequently, this particular type of vessel is vulnerable in regards to stability and external forces as wind and sea. These factors will naturally directly influence the cargo which is loaded on board in addition to the cargo-handling operations. It is imperative that the cargo is properly secured in order to ensure safety for crew, vessel and to avoid damage to the cargo. Cargo breaking loose in a cargo hold of a ro-ro vessel can in a worst case scenario cause the vessel to sink. Considering

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<sup>1</sup> "Höegh Autoliners" is used as a term throughout the thesis and should be understood as the ro-ro group of Leif Höegh & Co., i.e. the parent company of the business area ro-ro transportation

<sup>2</sup> Cf. Chapter 2.1.2 below

human lives, potential asset values and possible environmental effects at stake, it is crucial to follow the applicable cargo safety rules and regulations concerning cargo securing and stowage.

The vast amount of different type of cargo, i.e. anything that has wheels, or no wheels (can be placed on a device with wheels, e.g. roll-trailer<sup>3</sup>), means that these types of vessels can in theory carry a very wide range of cargo. Furthermore, as a consequence of the ro-ro vessels flexibility it can also carry dangerous goods in packaged form. Carrying dangerous goods implies stringent rules and regulations in the process before and under the carriage.

As elaborated above, a number of rules and regulations will potentially come into force. Relevant questions in the context of the ro-ro business are; what cargo safety rules and regulations apply concerning a typical ro-ro vessel given the vast number of cargo types? What are the legal sources for these rules and regulations based on Norwegian legislation?

Recognizing the above challenges related to; (i) the potential cargo types; (ii) the special characteristics of a ro-ro vessel; and (iii) the cargo operations, and furthermore the potential number of rules and regulation that may come into force, a case study on of how a ro-ro deepwater operator ensures compliance to these rules and regulations is of particular interest. Höegh Autoliners, one of the biggest global operators and pioneers in the ro-ro shipping segment is the company which will be studied in this thesis. Höegh Autoliners is a truly international company where the operated vessels follows different trade patterns and carries different cargo mixes. Another important aspect is the fact that the organisation operates owned vessels and in-chartered vessels. The above leads us to the question: How does Höegh Autoliners ensure compliance with the applicable cargo safety rules and regulations?

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<sup>3</sup> Definition of roll-trailer: CSS Code p.10

## 1.2 Demarcation of the thesis

This thesis will focus on the cargo safety rules and regulations for ro-ro vessels in international trade. The starting point is cargo safety rules for ro-ro vessels based on Norwegian law, i.e. The Ship Safety and Security Act of 2007<sup>4</sup>. Furthermore, as an extension of the relevant Sections in this Act, applicable regulations can be found in Excerpts from the Norwegian Passenger and Cargo Ship Legislation<sup>5</sup>, etc. These regulations incorporate the applicable international maritime safety legislation, i.e. The International Convention for the Safety of Life at Sea (SOLAS)<sup>6</sup>, Code of Safe Practice for Cargo Stowage and Securing (CSS)<sup>7</sup> Code and The International Maritime Dangerous Goods (IMDG) Code<sup>8</sup> literally or by reference. Furthermore, the thesis will also elaborate about the international rules and regulations that are applicable according the references made in the Norwegian legislation.

The scope of this thesis is to look at what cargo safety rules and regulations apply for the above mentioned type of vessel. Safety in this context is the safety of the crew, vessel, cargo and the environment. Public authorities have the duty to ensure minimum standards in order to safeguard everything concerning the public interest. These are expressed through national rules and regulations with the purpose of minimising the risk for the crew, vessel and environment.<sup>9</sup> Furthermore, Norway has ratified several international conventions and is therefore bound to incorporate applicable international rules into the national legislation.

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<sup>4</sup> Act of 16 February 2007 No. 09 relating to Ship Safety and Security

<sup>5</sup> The Norwegian Maritime Directorate

(URL:[http://www.sjofartsdir.no/en/Legislation\\_and\\_International\\_Relations/Translated\\_Norwegian\\_legislation/GULBOKA/Acts/](http://www.sjofartsdir.no/en/Legislation_and_International_Relations/Translated_Norwegian_legislation/GULBOKA/Acts/))

<sup>6</sup> 1 November 1974 The International Convention for the Safety of Life at Sea

<sup>7</sup> Resolution A.714(17) adopted on 6 November 1991, as amended Code of Safe Practice of Cargo Stowage and Securing

<sup>8</sup> Resolution MSC.122(75) adopted on 24 May 2002 The International Maritime Dangerous Goods (IMDG) Code

<sup>9</sup> Falkanger, Bull, Brautaset (2010) p.71

In Norwegian law, the Ship Safety and Security Act forms the basis for ship safety. Consequently, cargo safety rules can be found in this Act. Section 12, “*Cargo and Ballast*”, will be the starting point of the thesis as it concerns three areas of imperative importance for a ro-ro vessel in relation to cargo safety; (i) the vessel being loaded and ballasted in a safe manner; (ii) the cargo-handling operations; and (iii) the handling of dangerous goods.

### 1.3 Sources and method

#### 1.3.1 The Ship Safety and Security Act of 2007

The starting point concerning ship safety in Norwegian legislation is the Ship Safety and Security Act of 2007. This Act replaced the Seaworthiness Act of 1903. The basis behind the replacement of the Seaworthiness Act of 1903 was because of the immense technical improvements having taken place during the years. Additionally, a different regulatory landscape internationally, with International Maritime Organisation (IMO) and European Union (EU) as the main legislative forces in maritime safety matters required a different approach. Hence, New Norwegian maritime safety legislation was introduced. A broader scope compared to the previous Seaworthiness Act of 1903 was given. The purpose of The Ship Safety and Security Act of 2007 is to “...*safeguard life, health, property and environment...*”<sup>10</sup>. In order to achieve this, a number of different measures are mentioned; (i) facilitation of ship safety management; (ii) prevention of pollution from ships; (iii) ensure good working conditions and environment onboard; and (iv) a public supervision of ships regime. The Ship Safety and Security Act of 2007 is supplemented and based upon an extensive number of regulations<sup>11</sup>. These regulations are mainly focused on the safety, security and pollution aspect of the ship. Additionally, an important supplement to the Act are the preparatory works which will give a better understanding and explanation of the intention, reasoning and scope of the different sections.

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<sup>10</sup> Ship Safety and Security Act 2007, Section 1

<sup>11</sup> Falkanger, Bull, Brautaset (2010) p.71-74

The Act is divided into 11 chapters. Chapter 1 concerns introductory provisions and consists of 3 Sections. Purpose, scope and territorial extent are clarified respectively in the 3 sections.

Chapter 2 deals with the shipping company's duty and safety management. Noteworthy and of particular importance is the definition of the shipping company in this context. The shipping company in regards to this act is the company stated in the Safety Management Certificate the ship shall possess. The legal definition of a shipping company in the Act stems from the definition of company set forth in the ISM code<sup>12</sup>. Thus, the understanding is that the company responsible for the technical management of the vessel is considered the shipping company. In many cases this is not the actual shipowner of the vessel. This particular definition is of central importance as it clearly states which entity holds the legal responsibility. Furthermore, this mirrors the modern operation and organisation model of today's shipping industry, i.e. where most of the shipping companies have a clearly defined focus area such as; (i) commercial operation (ship operator, not necessarily owner of the ship); or (ii) technical management (Ship Management); or (iii) shipowner ( actual owner of the ship).<sup>13</sup> According to the Ship Safety and Security Act the liable company is the Ship Management Company, i.e. the company stated in the Safety Management Certificate of the vessel.<sup>14</sup>

Chapter 3 is about the technical and operational safety of the vessel. Important features in this chapter are the requirements expressed from the design stage to the operation and maintenance stage. This includes navigation, cargo and ballast operation. Additionally, specific administrative requirements such as certificates, manning, watchkeeping, health and qualification are elaborated. The chapter ends with the obligations of the master and other persons working onboard.

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<sup>12</sup> Falkanger, Bull, Brautaset (2010), p.76

<sup>13</sup> NOU 2005: På rett kjøp, p.99

<sup>14</sup> Pettersen, Bull (2010), p.119-130



Chapter 4 concerns personal safety. The chapter spans from safety equipment to working hours. Other areas covered are requirements for the living areas, catering standards, medical standards in addition to establishment of a working environment committee and election of a safety representative. The final two sections concern the obligations of the master and other persons working onboard in relation to chapter 4.

Chapter 5 deals with environmental safety. Firstly, it points to prohibition against pollution while the ship is under operation. Secondly, that the ship shall be designed, constructed and equipped in order to avoid pollution. Furthermore, an emergency response system is required. It also addresses that the ship shall deliver harmful substances to reception facilities. A section is also reserved to how to dispose the ship itself when its life cycle is ended. The final two sections concern the obligations of the master and other persons working onboard in relation to chapter 5.

Chapter 6 is about protective security measures. The requirements concern preventive actions against attacks on ships and the extent of use of force the ship can engage.

Chapter 7 concerns supervision. The chapter starts with supervisory authority and the possibility to enter into agreement with Classification Societies related to delegation of authority. Additionally, the chapter focuses on supervision of the safety management system, of the ships (Norwegian and foreign ships). Further, the duty to assist in the supervision is elaborated and finally the chapter explains about the fees involved in connection with the supervisions.

Chapter 8 deals with administrative measures. It concerns measures if a breach of any of the regulations or statutes are not complied with. The different measures elaborated in the chapter are coercive fines, withdrawal of certificates, prohibition of a ship to depart and lastly; stopping and boarding of ships under way and refusal of access to Norwegian territorial waters.

Chapter 9 concerns administrative sanctions. Violation fines can be imposed by the supervisory authorities. The chapter furthermore explains when the fines are imposed on the shipping company. Lastly, it explains about the collection of the violation fines.<sup>15</sup>

Chapter 10 constitutes criminal liability. The chapter specifies different breaches, i.e. in respect of Safety Management Systems and the company's duties regarding technical and operational safety. Further, it specifies the breaches and potential consequences for the master and other persons working on board.

Chapter 11 is a chapter addressing other provisions which have not been covered in the Act. It starts with a section addressing the secrecy of marine insurers. Further a specification on when and how it enters into force. Lastly, it addresses transitional provisions and its relation to other acts concerning possible repeal or amendments.

Section 12 of the Ship Safety and Security Act concerns the vessel being loaded and ballasted. Second paragraph states that The Ministry can issue relevant rules with provisions related to cargo and ballast. Hence, The Ministry is given legal authority to make amendments, i.e. the Norwegian Maritime Directorate (NMD) to make amendments related to typical areas of interest and significance concerning cargo and ballast.

### 1.3.2 Regulations from the Norwegian Maritime Directorate

In many of the sections in the Ship Safety and Security Act it is explicitly mentioned that The Ministry may issue additional regulations. The main reason for this is the vast amount of special rules and regulations concerning ship categories and types. The different ship categories and types will often be subject to different risks depending on its purpose and operation. In addition, vessels engaged in international trade are subject to international conventions and codes which are referred to in the regulations which again are referred to in the Ship Safety and Security Act (The Ministry may issue additional regulations). The

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<sup>15</sup> Ship Safety and Security Act of 2007

Ministry of Trade is the authority concerning the Ship and Safety Act. However, The Ministry has delegated this authority to the Norwegian Maritime Directorate (NMD). This means that the Norwegian Maritime Directorate determines and establishes the relevant regulations. These regulations are in many instances based on the International conventions and codes. The regulations which are based on the international conventions and codes are therefore implemented by reference or incorporated word for word in the provisions of the regulation.<sup>16</sup>

The background for NMD's reference to the international rules stems from the view that global rules shall be the standard also for Norwegian law in this context. By implementing global rules, uniformity is achieved. This view is something which is logical in a maritime context given its global and international nature. Furthermore, many of the regulative inclusions in Norwegian law are mandatory due to signed treaties and agreements. This also explains EU legislative rules becoming increasingly important. This is manifested in the maritime sector due to EU taking a more active approach in maritime matters. A proven interest in maritime safety from EU is the establishment of European Maritime Safety Agency (EMSA). Norway as a member of the Economic European Agreement (EEA) is bound by EU law. Hence, the expressed importance of EU standpoints in relation to maritime safety matters.<sup>17</sup>

The NMD administers a comprehensive set of rules and regulations concerning maritime safety. The constant evolution of technology and new knowledge in relevant fields, impacts the rules and regulations. The result is increased complexity and volume in relation to maritime safety legislation.

An important source for the promulgated regulations in the Ship Safety and Security Act is the annual publication of the NMD's publication "*Excerpts from the Norwegian Passenger and Cargo Ship Legislation, etc.*" Despite its large content it does not cover all the ratified

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<sup>16</sup> NOU2005: På rett kjøp, p.30

<sup>17</sup> NOU2005: På rett kjøp, p.30

regulations with full quotations. Instead where the international regulations are not implemented literally, it refers to the relevant international maritime Conventions and Codes.<sup>18</sup> The main areas of focus are safety at sea, environment and seafarers rights and duties. The 2010 version of the publication counts approximately 1400 pages.

In addition to the laws and regulations found in “*Excerpts from the Norwegian Passenger and Cargo Ship Legislation, etc*”, there are extensive rules and regulations on an international level which also applies.

The relevant provisions concerning cargo safety can be found in two regulations; (i) Regulation of 29 June 2006 No. 785 concerning the carriage of cargoes on cargo ships and barges; and (ii) Regulation of 8 December 2009 No. 1481 concerning the carriage of dangerous cargoes on Norwegian ships. In addition, Regulation of 17 January 1978 No. 4 concerning loading and discharge arrangements on ships may in first instance seem relevant. However, this regulation does not apply on ro-ro vessels in a cargo handling context. This is evidenced in § 2 letter e) and d) of the Regulation whereas the definitions does not mention the loading and discharge arrangement on a ro-ro ship, i.e. loading and discharge ramp (stern or side ramp).<sup>19</sup> The two applicable Regulations have incorporated international rules and regulations in verbatim and/or by reference. Another important note in this regard is the constant development of international regulation in terms of amendments and which will consequently affect Norwegian Law.

### 1.3.3 International rules and regulations concerning cargo safety

As seen in the previous chapters, a number of rules and regulations in the Norwegian legislation concerning ship safety are based on the international maritime safety legislation. The most important source of the international maritime legislation stems from IMO (Inter-Governmental Maritime Consultive Organisation)<sup>20</sup>. IMO is an independent United Nation

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<sup>18</sup> Falkanger, Bull, Brautaset (2010) p.71

<sup>19</sup> Regulation of 17 January 1978 No. 4 concerning loading and discharge arrangements on ships

<sup>20</sup> The founding name was IMCO (Inter-Governmental Maritime Consultive Organisation). In 1982 the name was changed to IMO (International Maritime Organisation)

organisation headquartered in London, UK. It was established in 1948 stemming from the establishment of the United Nations. One of the purposes of the organisation is stated in Article 1 (a) Convention on the IMO (hereinafter “the convention”)<sup>21</sup>:

*“To provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships”*

The convention was made effective in 1958. The first and most important task of IMO was to amend SOLAS. This is the most important and central Convention concerning maritime safety. From the adoption of the SOLAS convention, several other Conventions and Codes have been developed during the years. These developments have been initiated based on major accidents and disasters involving safety, pollution and security aspects in the latest years. Key issues in IMO’s agenda today are (i) the piracy problem in the Gulf of Aden; (ii) the reduction of greenhouse gas emissions from vessels; (iii) safety at sea and improving conditions for the seafarer.<sup>22</sup>

The strategy for IMO in the following years up to 2015 is stated in resolution A.1011(26):

*“The mission of the International Maritime Organization (IMO) as a United Nations specialized agency is to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation. This will be accomplished by adopting the highest practicable standards of maritime safety and security, efficiency of navigation and prevention and control of pollution from ships, as well as through consideration of the*

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<sup>21</sup> (IMO) Convention on the International Maritime Organisation, Geneva 6 March 1948 (URL: [http://www.jus.uio.no/english/services/library/treaties/14/14-01/imo\\_consolidated.xml](http://www.jus.uio.no/english/services/library/treaties/14/14-01/imo_consolidated.xml))

<sup>22</sup> IMO (URL: <http://www.imo.org/About/HistoryOfIMO/Pages/Default.aspx>)

*related legal matters and effective implementation of IMO's instruments with a view to their universal and uniform application.*"<sup>23</sup>

Norway as an important maritime nation<sup>24</sup> through its history and its significant fleet is playing an active role in IMO and other shipping safety organisations. This strategy is in order to promote the Norwegian interest and point of view on the matters being discussed in these venues. Furthermore, the Norwegian ambition is to be a nation that leads the way by example. This is made through setting high standards in terms of safety and environmental matters. The Norwegian Maritime Directorate plays a vital role as it has been delegated authority from the Ministry concerning rules and regulations related to maritime safety. Furthermore, one of the important roles of the Directorate is to ensure that the Norwegian rules and regulations concerning maritime safety are aligned with international rules.<sup>25</sup>

SOLAS with amendments forms the basis of the cargo securing rules in connection of the safety of the crew, vessel and cargo. Chapter VI and VII of the convention concerns Carriage of Goods and Carriage of Dangerous Goods respectively.

In relation to Regulation 785/2006 and Regulation 1481/2009, where the former concerns carriage of cargo on board cargo vessels and the latter is about carriage of dangerous cargoes on Norwegian ships, both regulations refer to Conventions and Codes which stems from the IMO legislative framework. SOLAS is the Convention both regulations refer to.

Chapter VI, Carriage of cargoes in SOLAS is related to Regulation 785/2009. Chapter VI refer to the CSS Code<sup>26</sup>. The CSS Code stems from a request from the Maritime Safety Committee (MSC)<sup>27</sup> and applies to all cargo carried on board vessels other than solid and liquid bulk cargoes and timber stowed on deck. The focus is on cargo which has been

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<sup>23</sup> IMO (URL: <http://www.imo.org/About/HistoryOfIMO/Pages/Default.aspx>)

<sup>24</sup> Bakka jr. (2008) p.11

<sup>25</sup> Sjøfartsdirektoratet (URL: <http://www.sjofartsdir.no/no/Regelverk2/>)

<sup>26</sup> Cf. Chapter 1.2

<sup>27</sup> Highest technical body of IMO (URL: <http://www.imo.org/About/Pages/Structure.aspx#3>)

proved to be difficult to secure. The purpose of this Code is to prevent casualties, injuries and loss of life. The code itself is pragmatic in its approach containing several illustrations to demonstrate proper lashing and securing of cargo. The Code is not mandatory in its full extent, but the MSC have recommended all member countries to include the practices and guidelines set forth in the Code into the respective national regulations.

Chapter VII, Carriage of dangerous goods in SOLAS is related to Regulation 1481/2009. Chapter VII refers to the IMDG Code<sup>28</sup>. The IMDG Code applies to vessels<sup>29</sup> which are covered under the SOLAS Convention and which are carrying dangerous goods as defined in regulation 1 of part A of chapter VII of that Convention. This Code is of particular importance as there are strict rules concerning the handling of these goods in addition to its possible hazardous nature.

There is however an important difference in the mentioned Codes. The IMDG Code is mandatory<sup>30</sup>, whereas the CSS Code is a guideline (Except Sub-Chapter 1.9 of CSS which is mandatory)<sup>31</sup>.

#### 1.3.4 Method and content

As mentioned above, the purpose of this thesis is two-folded; (i) to describe what cargo safety rules and regulations are applicable for ro-ro vessels based on Norwegian legislation; and (ii) to make a case study on how Höegh Autoliners ensure compliance of the relevant applicable cargo safety rules and regulations. The thesis will thus question if the normative framework of the ro-ro industry is feasible from a practical point of view, with particular focus on Höegh Autoliners.

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<sup>28</sup> Cf. Chapter 1.2

<sup>29</sup> Definition of vessel in this context can be found in IMDG Code Chapter 1.1.1.2

<sup>30</sup> SOLAS Chapter VII, Reg. 1

<sup>31</sup> SOLAS Chapter VI, Reg. 2

A presentation of the ro-ro industry, the Company's structure and cargo handling routines and standards will make up Chapter 2. Furthermore, Chapter 3, 4 and 5 will discuss Section 12 in the Ship Safety and Security Act with basis on the terms "*loaded and ballasted*", "*cargo-handling operations*" and "*dangerous goods*" respectively. The discussions will start with the Ship Safety and Security Act, including relevant implemented international provisions, and end with a discussion on how Höegh Autoliners comply with the provisions discussed in the respective chapters.

Finally, chapter 6 will present a conclusion as to what applicable cargo safety rules and regulations for ro-ro vessels applies and whether Höegh Autoliners is in compliance with the mandatory legislation concerning cargo safety.



## 2 Presentation of the Ro-Ro Industry and Höegh Autoliners

### 2.1 Ro-Ro industry

#### 2.1.1 The Ro-Ro market

The ro-ro market is well established and consists of mainly six significant worldwide players involved in deep sea ro-ro shipping. A natural categorisation can be made based on geography, political and commercial factors. Four out of six ro-ro players in the market is based in the Far East. Nippon Yusen Kaisha (NYK), Mitsui O.S.K. Lines (MOL), and Kawasaki Kisen Kaisha (K-Line) are based in Japan having its base cargo from the Japanese car manufacturers. EUKOR, is based in South Korea and is a product of the transportation needs of the Hyundai and KIA brands. The other two significant players are both based in Oslo; Wallenius Wilhelmsen Logistics (WWL - Joint Venture between Wallenius Lines and Wilhelm Wilhelmsen Group) and Höegh Autoliners.<sup>32</sup> All the above mentioned players can be categorised as being both operators and shipowners.<sup>33</sup>

The market differs on a certain extent from the traditional shipping markets which are known to be very cyclical. The ro-ro market is based on long contracts with well established car manufacturers. The ro-ro shipping segment is not considered to be complex considering the vessels. However, the number of units and different cargo types sets out a very challenging operational environment in terms of the supply chain and expertise of handling the cargo (securing the vast amount of cargo types).<sup>34</sup> A particular characteristic

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<sup>32</sup> Bakka jr. (2008) p.86

<sup>33</sup> The EU Report: Legal and Economic Analysis of Tramp Maritime Services (URL: [http://ec.europa.eu/competition/sectors/transport/reports/tramp\\_report.pdf](http://ec.europa.eu/competition/sectors/transport/reports/tramp_report.pdf)) p.220

<sup>34</sup> The EU Report: Legal and Economic Analysis of Tramp Maritime Services (URL: [http://ec.europa.eu/competition/sectors/transport/reports/tramp\\_report.pdf](http://ec.europa.eu/competition/sectors/transport/reports/tramp_report.pdf)) p.227

of this shipping segment is that the market players employ the vessels in a typical liner trade.

The main car manufacture Region is in the Far East with Japan and South Korea as the main car exporting countries. Further, the US and European countries of Germany, France and England are also significant car exporting countries. These Regions are of particular importance as cars are considered to be the base cargo for the ro-ro companies.

Additionally, these countries also plays an important role when it comes to High and Heavy cargo as they are all industrialised countries mainly exporting sophisticated cargo.

Emerging markets in the car manufacturing industry are the so-called BRIC countries (Brazil, Russia, India and China)<sup>35</sup>.

The total number of ro-ro vessels (including all ro-ro shipowners and operators) is of about six hundred and eleven vessels. The delivery of newbuildings for 2011 and 2012 is of approximately seventy eight (including all ro-ro shipowners and operators).<sup>36</sup>

The market outlook long term is positive given the emerging markets economic growth. In addition, a car has to be replaced as it has a certain lifespan. Hence, there will always be some degree of car transportation in order to replace old cars. The same accounts for other rolling cargo types such as trailers, excavators, and agricultural machinery. Emerging markets also have large infrastructure projects and hence need a lot of equipment to build and support these projects.<sup>37</sup>

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<sup>35</sup> Norwegian Car Carrier Annual Report 2010 (URL: <http://www.eidsiva.no/reports/134919/R/1511296/449506.pdf>) p.9

<sup>36</sup> Norwegian Car Carrier Annual Report 2010 (URL: <http://www.eidsiva.no/reports/134919/R/1511296/449506.pdf>) p.11

<sup>37</sup> Norwegian Car Carriers Annual Report 2010 (URL: <http://www.eidsiva.no/reports/134919/R/1511296/449506.pdf>) p.10

## 2.1.2 Type of vessels

The vessels can be categorised as pure car carriers (PCC), pure car and truck carriers (PCTC), large car and truck carriers (LCTC), roll on roll off vessels (RORO) and container ro-ro vessels (CONRO). The difference between these vessel categories is based on the different capacities and purpose in relation to the rolling cargo.

PCC vessels are usually as it is described only intended to load cars or pickups. These vessels tend to have a large number of fixed decks with height and weight restrictions. Loading ramps are typically of low capacity i.e. twenty metric tons.<sup>38</sup>

PCTC vessels are the developed and modernised version of PCC's and are considered to be very flexible vessels which can carry a large amount of different cargo types. Up to four hoistable decks makes the vessel extremely flexible, in addition to different heights and weight capacities able to carry heavy cargo. The loading ramps are able to carry weights up to hundred and fifty metric tons. This type of vessel is the core of the world's current car carrier fleet.<sup>39</sup>

LCTC vessels have emerged the last couple of years. They are mainly a super sized PCTC vessel, i.e. they have increased height, weight capacity and additional hoistable decks. Adding to that, they are longer and thus have an increased loading capacity. Loading ramps are typically three hundred and twenty metric tons.<sup>40</sup>

RORO vessels are typically built to carry High and Heavy machinery. This is manifested by a majority of the decks being of significant height and weight capacity. Loading ramps

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<sup>38</sup> The EU Report: Legal and Economic Analysis of Tramp Maritime Services (URL: [http://ec.europa.eu/competition/sectors/transport/reports/tramp\\_report.pdf](http://ec.europa.eu/competition/sectors/transport/reports/tramp_report.pdf)) p.216

<sup>39</sup> The EU Report: Legal and Economic Analysis of Tramp Maritime Services (URL: [http://ec.europa.eu/competition/sectors/transport/reports/tramp\\_report.pdf](http://ec.europa.eu/competition/sectors/transport/reports/tramp_report.pdf)) p.216

<sup>40</sup> Wilh. Wilhelmsen ASA (URL: <http://www.wilhelmsenasa.com/aboutus/ourbusiness/thefleet/Pages/tugela.aspx>)

are three hundred and twenty metric tons and upwards. They can still carry cars but are not purposely built for this as its capacity far exceeds what is required to carry a car.<sup>41</sup>

CONRO vessels are combined container and ro-ro vessels. They typically carry containers on weather deck and ro-ro cargo under deck. These have similar characteristics as a ro-ro vessel when it comes to capacity, but as an additional feature can carry containers meaning that the rolling cargo capacity is less than a RORO, LCTC, PCTC and PCC.<sup>42</sup>

## 2.2 Corporate structure of Höegh Autoliners

### 2.2.1 Introduction

The company subject for the case study consists of a group of companies which are organised and structured based on different focus areas. It is necessary to understand how it is organised and what the main duties and focus of the different companies within the group are in order to understand each company's role and interaction. This is also of relevance when assessing how the company ensure compliance with the applicable provisions. Consequently, the main purpose of chapter 2.2 is to form the basis to determine the company in the group according to Section 4 in the Ship Safety and Security Act.

Höegh Autoliners Holding AS (Höegh Autoliners) is a privately owned shipping company. Höegh Autoliners is the parent company of the ro-ro business group activity and is owned by AP Møller – Maersk AS (37,5 per cent) and Leif Höegh & Co. Holdings AS (62,5 per cent).<sup>43</sup>

Höegh Autoliners Management AS (HAM AS) is a fully owned company of Höegh Autoliners. HAM AS delivers operational, financial and administrative services, i.e. is

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<sup>41</sup> Wilh. Wilhelmsen ASA (URL:

<http://www.wilhelmsenasa.com/aboutus/ourbusiness/thefleet/Pages/Tonsberg.aspx>)

<sup>42</sup> Atlantic Container Line (URL: <http://www.aclcargo.com/vesselSpecs.php>)

<sup>43</sup> Höegh Autoliners (URL:

[http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=57270](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=57270))

responsible to oversee the daily management of the ro-ro business group. HAM AS performs its duties through a management agreement with Höegh Autoliners.<sup>44</sup>

Höegh Autoliners AS (HA) is a commercial ro-ro entity with a number of wholly and partly owned subsidiaries worldwide. HA is owned by HAM AS.<sup>45</sup> HA offers port to port transportation services for all types of rolling and non rolling cargo. The main types of cargo are; cars, buses, trucks, boats, agricultural equipment and construction equipment. The role and duties of HA will be further elaborated in chapter 2.2.2.

Höegh Autoliners Shipping AS (HAS) is the main shipowning company in the group. HAS is owned by HAM AS.<sup>46</sup>

Höegh Fleet Services AS (HFS) is the ship management (technical management and crewing) entity of the ro-ro group. HFS is owned by HAM AS.<sup>47</sup> HFS delivers technical and crewing services to Höegh Autoliners. HFS is responsible for all safety and maintenance aspects concerning the vessels under their management. The role and duties of HFS will be presented in chapter 2.2.3.<sup>48</sup>

As elaborated above, Höegh Autoliners owns HAM. HAM owns HA, HAS and HFS. HA is the commercial entity of Höegh Autoliners and operates the ro-ro vessels. HAS is the

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<sup>44</sup> Höegh Autoliners (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=57270](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=57270))

<sup>45</sup> Höegh Autoliners (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=57270](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=57270))

<sup>46</sup> Höegh Autoliners (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=57270](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=57270))

<sup>47</sup> Höegh Autoliners (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=57270](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=57270))

<sup>48</sup> Höegh Autoliners (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=57270](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=57270))

shipowning company of the Höegh Autoliners<sup>49</sup>. HFS is the ship management entity of Höegh Autoliners and manages the ro-ro vessels owned by HAS. Each company within the structure has a specific focus area. This can be related to the fact that each company<sup>50</sup> in the ro-ro business group has different functions and roles which again requires different competence and focus.

### 2.2.2 Höegh Autoliners AS (HA) – Commercial operator

HA is global ro-ro service transportation provider with a fleet of approximately fifty ro-ro vessels. The operated fleet consists of owned<sup>51</sup> and in chartered vessels. The company have a global trade system which is supported commercially by thirty offices distributed in four different regions; Region Europe; Region Americas; Region Far East and Region Africa, Middle East, South East Asia and Australia. The main customers are global manufacturers of cars, heavy machinery and other rolling goods. Höegh Autoliners carried approximately 1,75 million car equivalent units (ceu). An approximate of 3400 port calls was made worldwide in 2010.<sup>52</sup>

Most of the operated fleet is registered in the Norwegian International Registry (NIS). HA has the cargo handling competence and also has the responsibility concerning cargo quality standards and procedures both on shore and at sea.

HA is not involved in the technical management and crewing of the vessels. HA is a commercial registered entity with focus on commercial operating aspects.

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<sup>49</sup> The majority of the vessels operated by HA is owned by HAS

<sup>50</sup> Each company within the group has an independent legal status

<sup>51</sup> Owned by Höegh Autoliners Shipping AS

<sup>52</sup> Höegh Autoliners (URL:

[http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about\\_us/company?p\\_dimension\\_id=56623](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/about_us/company?p_dimension_id=56623))

### 2.2.3 Höegh Fleet Services (HFS) – Ship Management service provider

HFS is the main service provider for Höegh Autoliners<sup>53</sup> in relation to technical management, crewing and supervision of newbuilding projects. HFS has its head office in Oslo, Norway. It is also represented in Quanzhou, China and Manila, Philippines. The geographical location of the offices abroad reflects the crew onboard the HFS managed vessels; Chinese and Filipino. The Head Office in Oslo consists of vessel superintendents (ship managers), a purchase department, Health, Safety, Security, Environment and Quality department (HSSEQ).<sup>54</sup>

According to Section 4 in the Ship Safety and Security Act, the entity considered to be the company is “*any company stated as the managing company in the Safety Management Certificate the ship shall possess*”. This means that the company stated in the Safety Management Certificate<sup>55</sup> of the respective vessel is considered to be the responsible company pursuant to Section 4 in the Act<sup>56</sup>. HFS is the company registered in the safety management certificate of the ro-ro vessels owned by HAS and operated by HA.<sup>57</sup> Consequently, HFS, being a ship management service provider, and stated as the “*managing company*”, is therefore subject to the applicable public rules and regulations. These rules and regulations are based on Norwegian law as the vessels are flagged in NIS.<sup>58</sup> Consequently, HFS has the responsibility to ensure that the vessels under its management are in compliance with all the applicable rules and regulations stemming from the Ship Safety and Security Act.

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<sup>53</sup> The Group, i.e. Höegh Autoliners Holding AS, see chapter 2.2.1

<sup>54</sup> Höegh Fleet Services (URL:

[http://www.hoeghautoliner.com/ikbViewer/page/hainternet/ship\\_management/organisation?p\\_dimension\\_id=56549](http://www.hoeghautoliner.com/ikbViewer/page/hainternet/ship_management/organisation?p_dimension_id=56549))

<sup>55</sup> ISM Code. See SOLAS Chapter IX, Regulation 4.

<sup>56</sup> HFS, Document of Compliance (URL:

[http://www.hoeghautoliner.com/ikbViewer/Content/24461/Norway\\_Document\\_of\\_Compliant.pdf](http://www.hoeghautoliner.com/ikbViewer/Content/24461/Norway_Document_of_Compliant.pdf))

<sup>57</sup> See NIS registry for Höegh Asia (URL: [www.nis-nor.no](http://www.nis-nor.no)) search for “Höegh Asia”. See ISM liable information.

<sup>58</sup> Höegh Fleet Services (URL:

[http://www.hoeghautoliner.com/ikbViewer/page/hainternet/ship\\_management/hsseq?p\\_dimension\\_id=56550](http://www.hoeghautoliner.com/ikbViewer/page/hainternet/ship_management/hsseq?p_dimension_id=56550))

## 2.3 Cargo Handling Quality and Safety standards

### 2.3.1 Introduction

HA is a port to port transportation service provider of ro-ro cargoes. HA has different governing manuals and instructions in order to avoid cargo damage and ensure best practices. Furthermore, the purpose of the manuals and instructions is also to ensure compliance with applicable cargo safety rules and regulations. Additionally, considering that there are third parties involved in the performance within the areas of responsibilities for HA; the manuals and instructions serves as the documented quality and safety standard.

A short elaboration of HA cargo handling governing documents is necessary in order to find whether or not Höegh Autoliners as a group is in compliance of the relevant cargo safety provisions. In addition, an outline on the process from the cargo being booked to the vessel being loaded will be explained. At last, the handling of the dangerous goods in HA will be elaborated. Chapter 2.3 will form the basis of the discussions in chapter 3, 4 and 5.

### 2.3.2 Höegh Autoliners Cargo Quality Manual and Global Terminal Instructions

A basis for compliance of the rules and regulations is found in Höegh Autoliners Cargo Quality Manual<sup>59</sup> (HACQM) and Global Terminal Instructions<sup>60</sup> (GTI). There are two main objectives with the HACQM and GTI; (i) ensure compliance of the applicable cargo safety rules and regulations; and (ii) ensure that best practices are followed in order to avoid damage to crew, cargo handling personnel, vessel, cargo and environment.<sup>61</sup>

Additionally, in order to ensure customer satisfaction, certain requirements do in many instances exceed the minimum rules and regulations. Hence, a mix of the rules and

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<sup>59</sup> Höegh Autoliners Cargo Quality Manual (URL: <http://www.typoprint.se/hualwww/hual.pdf>)

<sup>60</sup> Global Terminal Instructions (URL: [http://www.hoeghautoliners.com/ikbViewer/Content/21201/Global\\_Terminal\\_Instructions.pdf](http://www.hoeghautoliners.com/ikbViewer/Content/21201/Global_Terminal_Instructions.pdf))

<sup>61</sup> Höegh Autoliners Cargo Quality Manual (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ps/cargo/article?p\\_dimension\\_id=56301&p\\_document\\_id=20258](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ps/cargo/article?p_dimension_id=56301&p_document_id=20258))



regulations in addition to best practices can be found in HACQM. The scope of the HACQM is to include procedures and requirements from the moment the cargo arrives to the terminal, i.e. in HA's custody (last point of rest), to delivery of the cargo at the discharge port (first point of rest). Consequently, the following personnel is required to follow the manual; (i) shore based Höegh Autoliners cargo handling personnel; (ii) terminal personnel from third party service providers; (iii) stevedores; and (iv) crew of the vessels.<sup>62</sup>

HA ensures that the Cargo Quality manual is followed in different ways. The overall aim is to have a simple, user-friendly manual (easy language, illustrations and pictures) restricted to necessary content.

Second, distribution of the manual to Port terminals, stevedores, agents, HA cargo handling personnel, HA operated vessels and HA offices is imperative. Furthermore, an electronic version of the manual is made available in Höegh Autoliners<sup>63</sup> website and intranet. This is in order to ensure transparently HA quality and safety standards.

Third, HA has cargo-handling operation attendance through the attending Port Captains. In addition to the duty to stow and load/discharge the vessel, the Port Captain shall also monitor, follow up and guide if necessary the standards and content set forth in the manual. This assistance can be given to crew, stevedores, terminals and agents. Consequently, the HA Port Captains plays an integral part of the cargo quality and safety system of the ro-ro group. Thus, the main focus is to supervise the loading and discharging operation in the respective ports. This involves ensuring; (i) high cargo utilisation of the vessel; (ii) that the quality standards are followed; (iii) rules and regulations are in compliance (cargo and

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<sup>62</sup> Höegh Autoliners Cargo Quality Manual (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ps/cargo/article?p\\_dimension\\_id=56301&p\\_document\\_id=20258](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ps/cargo/article?p_dimension_id=56301&p_document_id=20258))

<sup>63</sup> Refer to the ro-ro group in this context, not limited to HA

operation) (iv) coordinate arising issues with booking offices, crew and stevedores; and to be (v) HA representative on-scene.<sup>64</sup>

Fourth, the training to shore based personnel and seagoing personnel is given based on the content of the manual. This is to ensure that the stevedores and crew are aware of HA cargo quality and safety standards both from a damage prevention and safety point of view.

A close co-operation with customers is also an integral feature of the quality and safety work concerning the transportation of the cargo. Additionally, the major manufacturers of cars, heavy machinery and other non rolling goods often have their own quality manuals. If the HACQM is not in line with the quality manual of the manufacturer, then the latter is to be followed. As a consequence, it supersedes the HACQM with reservation that it does not compromise safety. The manufacturer's quality manuals are also based on rules and regulations together with quality standards. Consequently, the potential differences are mainly on the quality standards and not the safety standards.<sup>65</sup>

### 2.3.3 The cargo handling process from cargo booked to the vessel being loaded

The first stage is the cargo booking procedure. The cargo booking procedure is of great importance. This is where all the information gathering of the cargo intended to be shipped is done. It is crucial that this information is correct both from a private law<sup>66</sup> and public law<sup>67</sup> point of view. Furthermore a correct description of the cargo is fundamental. Length, width, height and weight information is imperative both from a commercial and safety point of view. Further, if it is rolling, i.e. tracks, rubber wheels, self propelled, non self propelled, towable or non rolling is important information. Cargo lashing points; strength

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<sup>64</sup> Höegh Autoliners Ro-ro flyer (URL:

[http://www.hoeghautoliners.com/ikbViewer/Content/20350/HoeghTrade\\_RoRoTransp.pdf](http://www.hoeghautoliners.com/ikbViewer/Content/20350/HoeghTrade_RoRoTransp.pdf))

<sup>65</sup> Höegh Autoliners Cargo Quality Manual (URL: <http://www.typoprint.se/hualwww/hual.pdf>) p. 19 under Chapter Loading.

<sup>66</sup> Falkanger, Bull, Brautaset (2010), cf. p.309

<sup>67</sup> Regulation 785/2006, cf. Section 6

and location on the cargo unit is also of imperative.<sup>68</sup> All the above is first and foremost important from a safety point of view. Second, from a commercial point of view, i.e. how to utilise the vessels, ensure an efficient cargo operation and avoid increasing the risk for cargo damage.

When the cargo is booked, the next step consists of delivering the cargo to the port terminal. This is done by the shipper/sender. HA does not operate any port terminals. Hence, the port terminal operation is a service conducted by a third party through HA requirements.<sup>69</sup> GTI is the HA instruction to the Port Terminals. If the cargo during the receiving process does not match the company's standard, it will be declined. If accepted, it will be stored in the terminal and made ready to be loaded on the planned vessel. At this point there are several tasks to be executed. These are mainly but not limited to: Survey, labelling, measurement of dimensions and preparation for the loading operation. Discrepancies between the booked cargo information and the measurement of dimensions are updated through the terminal IT system which is interfaced with Höegh Autoliners IT system. Consequently, the data shall be updated if there are any discrepancies.<sup>70</sup>

In the main loading ports the cargo is loaded in presence of a HA Port Captain. If anything is not up to standards in regards to lashing, securing or condition of the cargo, the Port Captain has the mandate to refuse to load the cargo. This is in order to conserve the safety of the vessel, crew and stevedores. Ultimately, the Master of the vessel is responsible for the vessel's safety, and can decline the cargo to be loaded or demand more lashings to secure the cargo if found necessary.<sup>71</sup> This assessment and decision can be done regardless of the standpoint of the HA Port Captain. Hence, the Master has the final saying. This is also explicitly expressed in the HACQM<sup>72</sup>.

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<sup>68</sup> Global Terminal Instructions (URL: [http://www.hoeghautoliners.com/ikbViewer/Content/21201/Global\\_Terminal\\_Instructions.pdf](http://www.hoeghautoliners.com/ikbViewer/Content/21201/Global_Terminal_Instructions.pdf)) p. 5

<sup>69</sup> Global Terminal Instructions (URL: [http://www.hoeghautoliners.com/ikbViewer/Content/21201/Global\\_Terminal\\_Instructions.pdf](http://www.hoeghautoliners.com/ikbViewer/Content/21201/Global_Terminal_Instructions.pdf))

<sup>70</sup> Höegh Autoliners Cargo Quality Manual, p. 4 in Chapter Intro (URL: <http://www.typoprint.se/hualwww/hual.pdf>)

<sup>71</sup> Section 19 (a), Ship Safety and Security Act

<sup>72</sup> HACQM, (URL: <http://www.typoprint.se/hualwww/hual.pdf>) p.2 in Chapter Loading

### 2.3.4 The handling of dangerous goods

As a starting point, Höegh Autoliners accepts dangerous goods in packaged form. However, this practice is limited to two factors; (i) the vessel must hold an IMDG certificate<sup>73</sup>; (ii) The dangerous goods must be of the type permitted in the given IMDG certificate. However, as the fleet of Höegh Autoliners consists of in-chartered tonnage<sup>74</sup> and owned tonnage, there is a marked difference in relation to which vessel holds an IMDG certificate. Generally, Höegh Autoliners owned vessels possess an IMDG certificate. In-chartered tonnage does not. Consequently, identifying the vessel which is actually subject of loading the dangerous goods is of fundamental importance. Not all types of dangerous goods are permitted to be loaded even though the vessel holds an IMDG certificate. The certificate lists what is permitted to be loaded. In order for the cargo to be accepted it must be in accordance with the respective IMDG certificate.<sup>75</sup>

The acceptance procedure in Höegh Autoliners when it comes to dangerous goods is of a centralised nature whereas the Port Captain can give approval.<sup>76</sup> The reason for this is to ensure correct interpretation and full overview of all the vessels under operation which holds the IMDG certificate. The dangerous goods can be accepted or declined depending on the vessel and type of dangerous goods. If accepted, the cargo must be accompanied by a Material Data Safety Sheet in addition to proper marking of the cargo as expressed in to the IMDG Code. This information must be given to the Port Captain and the vessel.<sup>77</sup>

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<sup>73</sup> Vessel holding IMDG certificate can load certain dangerous goods depending on what is permitted in the certificate.

<sup>74</sup> "Tonnage" i.e. vessels in this context

<sup>75</sup> HACQM (URL: <http://www.typoprint.se/hualwww/hual.pdf>) p.5 in Chapter Terminal

<sup>76</sup> HACQM (URL: <http://www.typoprint.se/hualwww/hual.pdf>) p.5 in Chapter Terminal

<sup>77</sup> HACQM (URL: <http://www.typoprint.se/hualwww/hual.pdf>) p.8 in Chapter Terminal

### 3 Loaded and ballasted in a cargo safety context

#### 3.1 Section 12, first paragraph Ship Safety and Security Act of 2007

Chapter 3 of the Act concerns technical and operational safety. Section 12, Cargo and Ballast, first paragraph regulates expressly the situation of the vessel being “*loaded and ballasted*”. First paragraph requires particularly two elements to be fulfilled; (i) stability and buoyancy; and (ii) life, health, property or the environment where the former shall not be endangered and the latter not be jeopardized.

“*Loaded and ballasted*” in this context means when the cargo is on board, i.e. after the completion of the cargo handling operations.<sup>78</sup> Moreover, it must be understood in a broad sense as it concerns the trim, stowage and shifting<sup>79</sup> of the cargo. Any mistake in relation to the cargo stowage could have a negative impact and in a worst case scenario cause a serious casualty<sup>80</sup>.

In order for the “*stability and buoyancy*” not to be endangered, there must be a correlation between the cargo and the vessel’s capacity. This means that the Master and the commercial operator (the party providing the cargo, i.e. HA in this case) must have a close interaction. However, the Master having the knowledge of his vessel, its features and capacities is in the best position to ensure that the stability or buoyancy of the vessel is not endangered. Hence, routines and standards of the interaction between vessel and operator shall be in place.

Not to jeopardize “*life, health, property and environment*” means inter alia following relevant safety provisions and best practices. This is usually composed of competence, experience, proper training and finally a set of governing standards and procedures in a manual to ensure uniformity and clarity.

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<sup>78</sup> A vessel may need ballast in loaded condition, and in most cases when empty (after discharge operations). However, not all vessels need ballast as this depends on the construction of the vessel.

<sup>79</sup> “Shifting” is a term describing a planned or unplanned move of cargo inside the cargo hold

<sup>80</sup> NOU2005:14 På rett kjøp, p.113

HA has outlined a set of routines and standards concerning interaction in HACQM. This is in order to give the Master the necessary information of the cargo in order to ensure that the stability and buoyancy of the vessel are not endangered.<sup>81</sup> HFS trains and ensures that the Master and crew have the necessary competence and that they act pursuant to the HACQM. Consequently, HFS complies with Section 12, first paragraph of the Act.

Furthermore, second sentence, first paragraph of Section 12 states that The Ministry is given legal authority to make amendments and/or detailed instructions, i.e. the NMD to make or amend necessary provisions concerning cargo and ballast.<sup>82</sup>

### 3.2 Regulation concerning carriage of cargo on board cargo vessels and barges (Regulation 785/2006)

In a practical context, the understanding of the cargo being on board means that the vessel is “loaded”. Consequently, the cargo is subject for carriage from one place to another. This means that the legal authority given in Section 12 “loaded and ballasted” in the Ship Safety and Security Act is linked to Regulation 785/2006 as it concerns carriage of cargo in a safety context.

Regulation 785/2006 consists of ten Sections. The first five Sections are of a general nature whereas the scope, definitions, duties, exemptions and relationship to international legislation is elaborated. The following three Sections concerns specific and important subjects on cargo information, bulk cargo and the Cargo Securing Manual (CSM). The last two Sections are regarding the required documentation on board and information about when the regulation is effective. The most important Sections relevant for ro-ro vessels are Section 6 and 8. As a consequence these sections will be discussed in detail.<sup>83</sup>

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<sup>81</sup> HACQM, Chapter Preload

<sup>82</sup> NOU2005:14 På rett kjøp, p.114

<sup>83</sup> Regulation 785/2006

Section 3 of the Regulation concerns duties. The section sets out requirements concerning duties. Three parties are mentioned; (i) “*The Company*”; (ii) “*the master*”; and (iii) “*other persons working onboard.*” Referenced is made to the Ship Safety and Security Act whereas all the previous mentioned parties have a duty to follow the Act and the present regulation. This means that not only the master is responsible in accordance with the traditional notion, but also “*the company*” and “*other persons working onboard*”. This means that the Able Seaman or the Junior Deck Officer has a duty to ensure compliance with the above mentioned Act and the present regulation. The same accounts for “*The Company*”. In practice this requires the company to have a set of procedures and routines in place for the Master to follow. Additionally, these set of procedures and routines shall be incorporated in the duties of the crew on board in order to give the Master and the crew proper guidance in how to safeguard the stability and buoyancy of the vessel. HA ensures that the duties are clear through the HACQM concerning cargo quality and safety questions. HFS ensures proper training and that the crew are qualified to maintain the safety when it concerns “*stability and buoyancy*”. Furthermore, in the last paragraph of the Section, a duty is also laid on the “*shipper*” in accordance to Section 6. However, the “*shipper*” is not subject of duties and responsibilities according to the Ship Safety and Security Act.<sup>84</sup>

Section 6 requires certain information of the cargo subject to be loaded on board from the shipper. The information of the cargo is the basis when it comes to deciding where and how to stow it on board the vessel. Furthermore, it is of outmost importance to receive the correct and necessary information in order to ensure that the safety is safeguarded throughout the sea voyage. The responsibility is placed on the shipper. The information provided from the shipper shall be done timely in order for the Master or his representative to plan and prepare the transportation of the cargo. This is imperative to ensure that the vessel is “*loaded and ballasted*” in a safe way. Without the correct information, the stability and calculation of the vessel will be wrong given the discrepancy of the given information with the actual true information which for the vessel is unknown. Another

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<sup>84</sup> Pettersen, Bull (2010), p. 260

point is that this information must be given sufficiently in advance in order to make the necessary adjustments. Potentially, this may force the vessel to discharge ballast water in order to maintain “*stability and buoyancy*”. This can be a challenge given the different restrictions in the different ports which may impede any ballast water exchange in order to avoid unwanted species in their marine environment<sup>85</sup>. Further, the form of the information given by the shipper shall be in writing through shipping documents. Again, it is emphasized on the importance of this information being made available in a timely manner, i.e. early enough to make necessary planning and preparation to ensure the vessel being “*loaded*” or “*ballasted*” safely. Lastly, the Section lists the requirements of the cargo information. There are three letters; (a) general cargo; (b) cargo in bulk; and (c) dangerous cargo. Each letter pertains specific information on what is to be included based on the characteristic of the cargo. In regards to ro-ro vessels, letter a) is of relevance as a ro-ro vessel carry cargo which can be defined as general cargo. Bulk cargo cannot be carried on a ro-ro vessel as the cargo hold is not designed and built for this type of cargo.<sup>86</sup>

Further in the first paragraph of the Section, it is stated that “*Necessary*” information regarding the cargo shall be accessible. “*Necessary*” in this context will depend on the type of cargo, vessel, trade, its character and if it is considered to be normal or odd cargo. Hence, “*necessary*” will be something which can be a lot of things depending on the circumstances. Furthermore, what is considered to be “*necessary*” from a shipper’s point of view may not be deemed to be “*necessary*” from an operator’s point of view. Other factors determining whether the “*necessary*” information is given will depend on the shipper’s experience. How does the shipper know what information to provide? What kind of knowledge does the shipper have about sea transportation? Does the shipper know what kind of forces the cargo might be subject to during a sea voyage? The previous questions are of relevance in regards to be able to give the “*necessary*” information regarding the cargo to safeguard the crew, vessel and cargo itself. The operator on the other hand, being

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<sup>85</sup> Potential safety issues with ballast water (URL: <http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx>)

<sup>86</sup> The EU Report: Legal and Economic of Tramp Maritime Services (URL: [http://ec.europa.eu/competition/sectors/transport/reports/tramp\\_report.pdf](http://ec.europa.eu/competition/sectors/transport/reports/tramp_report.pdf)) p. 273



the experienced party, and being the service provider of the sea transportation, must ensure that it receives the “*necessary*” information in order to fulfil “*safe stowage and transportation*” which is directly connected with the vessel being safely loaded and ballasted.

For a ro-ro vessel, it is imperative to obtain the length, width, height, weight, used or new, description, rolling/non-rolling/static (forkliftable cargo). This information will determine if the cargo can; (1) be loaded; (2) where it can be stowed; (3) if it needs extra equipment; and (4) to determine lashing and securing requirements. This information is imperative to ensure that the vessel is “*loaded or ballasted*” in such a way that it safeguards the life, health, property and environment.

HA receives the booking, ensures that the “*necessary*” information is in place and produces the stowage planning<sup>87</sup>. HFS, through the competence and experience of Master and crew, requires the necessary information if the information received is not satisfactory in order to ensure that the vessel is safely loaded and ballasted.

The shipper is subject to the requirements of Section 6 of the Regulation 785/2006. However, the shipper is not subject to duties according to the Ship Safety and Security Act<sup>88</sup>. However, HA, being the operator of the ro-ro vessels verifies the cargo information given in the booking process of the Terminal. This is documented in HACQM under chapter Terminal.<sup>89</sup> In addition, this is also elaborated in GTI.<sup>90</sup> In practice, the Master of the vessel or “*his representative*” ensures or verifies that the information is correct. The Master’s “*representative*” in this case is HA or agent employed by HA as they issue the shipping documents.

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<sup>87</sup> Cf. 2.3

<sup>88</sup> Pettersen, Bull (2010), p.260

<sup>89</sup> HACQM, Chapter Terminal, Registering Cargo p.3

<sup>90</sup> GTI, p. 6 (2.1 Documentation)

Section 8 requires a manual for the securing of the cargo the vessel is specifically built to load. For a ro-ro vessel this manual is of particular importance. This is due to the vast amount of different cargo a ro-ro vessel can load. Additionally, it is also related to the high number of decks and cargo holds with different capacities and different cargo securing equipment on board. The Section consists of three paragraphs. Each paragraph focuses on different items. The first paragraph expressly states that a CSM has to be on board the vessel at any time. The second paragraph deals with the structure, forces and stability information that has to be available for the master. The third paragraph is about bulk cargo and the procedures concerning the planning on loading such cargoes between the vessel and the terminal. For a ro-ro vessel manager, i.e. HFS in this context, only the two first paragraphs are applicable. A ro-ro vessel does not load cargo in bulk and therefore the third paragraph is not applicable.

The first paragraph requires that the CSM must be “*approved*”. An “*approved*” CSM, according to Section 2 in the regulation is a SOLAS requirement, and shall be pursuant to MSC/Circular.745.<sup>91</sup> In practice, the CSM for each vessel is approved by a Classification Society<sup>92</sup>. This is made on behalf of the flag state. A typical CSM for a HFS managed ro-ro vessel operated by HA consists of mainly three parts; (i) general information; (ii) securing devices and arrangements; (iii) stowage and securing of non-standardized and semi standardized cargoes.<sup>93</sup> The first parts concern general ship data, definitions, general information and further about main sources of danger. The second part concerns specifications on the fixed and portable cargo securing devices in addition to inspection and maintenance schemes. The last part, elaborates on general principles of cargo securing and forces that can materialise under a sea voyage. Further, the CSM has several annexes and appendices with relevant information as set out in MSC.1/Circ.1353.

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<sup>91</sup> MSC/Circ.745: Guidelines for the preparation of the cargo securing manual.

<sup>92</sup> Falkanger, Bull, Brautaset (2010) p.79

<sup>93</sup> Model Cargo Securing Manual (URL: [http://www.dnv.com/binaries/Model%20Manual%20for%20General%20Cargo-Container%20vessel\\_tcm4-287971.pdf](http://www.dnv.com/binaries/Model%20Manual%20for%20General%20Cargo-Container%20vessel_tcm4-287971.pdf))

HFS ensures that each vessel under its management has an approved CSM. The information and cargo securing principles provided for in the HACQM correlates with the CSM.

Second paragraph states that the Master is to prevent “*excessive*” stress on the ship’s structure. In order to give the master a basis as to whether or not to take necessary action he must be given information regarding the vessel’s “*stability data*” and “*strength*”.

“*Excessive*” stress in this context can be divided into two categories; (i) static stress; and (ii) dynamic stress. Static stress in a ro-ro ship context could be when the vessel is not moving, or underway. A regular situation where static stress on the vessel occurs is when the vessel is berthed. There are no external forces in terms of the vessel rolling or accelerating. Hence, the focus under this term is to safeguard that the cargo does not exceed the deck capacity of the vessel in terms of weight for instance. A breach of the deck “*strength*”, i.e. loading a unit which is heavier than the deck capacity will cause “*excessive*” stress. Moreover, the stowage of the cargo units will have a direct impact on the stability of the vessel, hence the importance of the “*stability data*”. Dynamic stress is when the vessel is underway and starts rolling due to forces caused by wind, current, sea or manoeuvring. This is where the stowage and securing of the cargo is of particular relevance. No securing of the cargo unit will mean that there is nothing preventing the cargo unit to move besides its natural friction to the deck. In regards to stowing, it is of relevance where certain units are placed as there are certain areas of the vessel which are more exposed to the potential forces acting on the vessel (for instance, the higher up the more movement). Cargo not being secured properly can break loose from the original position which again will mean that the weight distribution of the vessel will be different compared to the weight distribution at departure. This may have a direct effect on the stability of the vessel. In this situation, the vessel can in worst case not deemed to be safe. Again an assessment of the “*stability data*” is of relevance. The second paragraph state: “*to enable*” the master in preventing “*excessive stresses*”. “*To enable*” means give the master the opportunity to assess and make decisions based on the relevant data made available for him. This is the “*stability data*” and “*strength*” information pointed out in the

second paragraph. Furthermore, in order to “prevent” the “stresses” the Master must in ensure that the cargo does not exceed the “strength” nor cause a dangerous situation in regards to the “stability”. Only the Master has first hand knowledge of the quantity of bunkers and ballast he has on board. This means that he must supervise the loading operation in order to maintain the safety of his ship concerning “strength”, “stability” and the prevention of “excessive” forces on his vessel. He must ensure that the cargo is loaded according to what is planned as this is the basis for the stability calculations of the vessel. On a ro-ro vessel this is imperative due to simultaneous cargo operation (loading and discharging in several parts of the vessel at the same time).

This means that the crew must actively supervise and control the cargo operation and at the same time control the “stability” of the vessel. HFS ensures this through the compliance of HACQM<sup>94</sup> which is to be followed together with the CSM. Hence, First and foremost, HFS by obtaining an approved CSM complies with Section 8. HFS manages to have the vessel safely loaded and ballasted by ensuring that the Master and crew follows the HACQM and CSM, in addition to ensuring that Master and crew are competent, experienced and trained.

### 3.3 International rules and regulations; Chapter VI in SOLAS and CSS Code

Chapter VI in SOLAS is about the carriage of cargoes. It consists of three parts. Part A concerns general provisions. Part B concerns special provisions for bulk cargoes other than grain. Part C concerns Carriage of grain. The whole chapter has 9 regulations. Part A has 5 regulations, whereas the last two Parts have two regulations each.

From a ro-ro vessel perspective, being considered as a vessel able to carry general cargo, Part B and C is not of relevance. Hence, only the general provisions set forth in Part A is of relevance for Höegh Autoliners and the type of vessel it operates. Regulation 785/2006 refers to the above mentioned chapter in SOLAS.

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<sup>94</sup> HACQM (URL: <http://www.typprint.se/hualwww/hual.pdf>) Chapter Loading

Regulation 1 in chapter VI in SOLAS concerns its application. The regulation is divided into two paragraphs. First paragraph specifies the type of cargo which the chapter is applicable for. The chapter does not concern liquids and gases in bulk or other cargo covered in other chapters. Furthermore, the relevant cargo for this chapter is cargo which owes “*particular hazards to ships or persons on board*”. This applies for all ships regardless of size.

Regulation 5 in Chapter VI in SOLAS concerns requirements regarding stowage and securing. This regulation consists of six paragraphs. All paragraphs except fifth paragraph are of relevance of a ro-ro vessel. The basis for the discussion in this chapter is on the vessel being safely “*loaded and ballasted*”. Each paragraph specifies important aspects of how to stow and secure the cargo. This is imperative for a cargo vessel to be “*loaded and ballasted*” in a safe manner.

First paragraph requires the cargo to be “*stowed and secured in such a way that it does not cause damage or hazard to the ship and the persons on board, and loss of cargo overboard*”. “*Stowed and secured*” is a consequence of the loading operation, i.e. post loading operation.

The loading operation is based on a pre load plan made by the Port Captain. Hence, the loading operation is of vital importance in order to avoid causing “*damage or hazard*” to the vessel, crew and cargo. Not only while in port, but also “*throughout the voyage*”. This term means from load port to discharge port. In practice this can be both by sea and through different ports. This can be illustrated by a typical ro-ro vessel having three load ports in Europe and seven discharge ports in the Far East. A cargo unit loaded in the first load port and discharged in the last discharge port will stay onboard through eight ports. This is due to the fact that the voyage starts at first load ports and ends at the last discharge ports. Hence, it is not sufficient that the cargo is stowed and secured to avoid “*damage or hazard*” from one port to the next port. It should be stowed and secured from load port to discharge port including the port calls in between the load port and the discharge port.

HFS ensures compliance to this paragraph by ensuring that the crew follow the principles and standards set forth in the HACQM<sup>95</sup> and CSM. In practice the crew checks the securing of all cargo while at sea. If found necessary, additional lashings or other measures are taken in order to keep the vessel safely loaded and ballasted.

Second paragraph sets out requirements to cargo or items which is inside the cargo unit. The cargo “*shall be so packed and secured within the unit*” in order to avoid dangerous situations and damage during the sea voyage.

“*Packed and secured within the unit*” means that the cargo shall be safely stowed in such a way that it does not break loose inside the cargo unit. The “*unit*” in this context could be a car, truck, excavator, crate or box. The main message is that it is not sufficient to secure the cargo unit if there is another cargo unit inside which is not secured. This paragraph is of outmost importance as they are often enclosed without any possibility to verify how things are secured “*within the unit*”. Another aspect is that the shipper is the one who has made the box or crate. A relevant question is if the shipper understands the forces and accelerations the cargo will be subject to during a sea voyage. This will often determine if the units are safely stowed within the crate or box. Another point is if the crate and box is strong enough to sustain both internal and external securing devices. “*Packed and secured*” in order to “*prevent*” any danger to its surroundings, inter alia crew, cargo and vessel is imperative. A loose cargo unit within a box could have a devastating effect. A false safety sentiment can easily become present due having secured the box. However, the key point in this paragraph is that the unit(s) within another cargo unit (e.g. a box) shall also be “*packed and secured*” in a way that prevents danger to its surroundings.

HFS satisfies this requirement by following general cargo handling principles set forth in the HACQM in addition to proper cargo handling training. However, the HACQM does not

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<sup>95</sup> HACQM, (URL: <http://www.typoprint.se/hualwww/hual.pdf>) Chapter Loading

mention explicitly how to handle cargo units within a cargo unit. The CSM<sup>96</sup> does however point out this problem and refers to SOLAS, Chapter VI Regulation 1 and 5. Hence, HFS is in compliance with the requirement set forth in the paragraph.

Third paragraph sets out requirements for out of gauge cargo. “*Appropriate precautions*” means that extraordinary measures must be taken. The paragraph emphasizes that it is not only during cargo operations, but also during the “*transport*”. The term is understood as the sea voyage and during the port calls, i.e. from load port to discharge port for the cargo.

Furthermore, “*structural damage*” and “*adequate stability*” shall be avoided by having taken the necessary measures “*throughout the voyage*”. “*Structural damage*” could arise during loading or during the voyage. This could e.g. be that the unit while being loaded collides with the structure of the vessel. This risk will naturally be higher when the dimensions of the unit are above what can be considered as average. The term “*adequate stability*” points toward a proper assessment as to where it is wise to place the unit on the vessel based on the stability during the subsequent port calls. A unit with an abnormal weight but within the capacity of the vessel calls for extra attention by all parties. It is not only important to take the extra precautions during loading or discharging, but it is also imperative to monitor the cargo while at sea, and initiate actions if found necessary to maintain the “*adequate stability*” of the vessel. Another factor building on the importance to monitor the “*heavy cargoes*” is that a potential result of the cargo breaking loose is that it will cause increased damage to the vessel and surrounding cargo.

HFS satisfies the requirements in this paragraph by being in pursuant to HACQM<sup>97</sup> and the CSM. This is especially shown through the general instructions given in Chapter Loading and Chapter Sea in the HACQM whereas emphasize is on the supervision during loading and during the sea voyage. In practice, the crew will supervise and even though it is not

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<sup>96</sup> CSM (URL:

<http://www.dnv.com/industry/maritime/shiptypes/orecarrier/cargosecuringmanual.asp>)

<sup>97</sup> HACQM, Chapter Sea and Loading (URL: <http://www.typprint.se/hualwww/hual.pdf>)

explicitly mentioned in the HACQM and CSM, the crew will have an extra eye on abnormal cargo both during loading and during the sea voyage.

Fourth paragraph sets out requirements specifically for ro-ro vessels. “*Appropriate precautions*” in this context concerns the typical cargo combined with the design of a ro-ro vessel. The “*precautions*” refers to both “*loading and transport*” of the units. This means that an important aspect is the planning and execution of the cargo operation in addition to the voyage itself, mainly at sea. The paragraph points specifically towards the “*securing arrangements*”.

The main difference on how cargo is stowed and secured on a ro-ro ship compared to a general cargo ship is that there is physical distance between the units on the former. The general cargo ship is built on strong compartments on the bottom and the sides, whereas the cargo is stowed side by side, i.e. supporting each other. Consequently, the securing arrangement is vital. There are mainly three different securing devices involved; (i) the lashing point on the cargo; (ii) the lashing; (iii) the lashing point on the vessel. The securing system is not stronger than the weakest device. Consequently the capacity of the lashing is based on the device with the lowest capacity. Another factor becomes relevant as most of the cargo on ro-ro vessels is rolling cargo. An athwartship stowage increases the risk of the cargo to roll to each side following the accelerations of the vessel at sea. The main correlation between this paragraph and ensuring that the vessel is “*loaded and ballasted*” in a safe manner, is to have taken the necessary measures to avoid any cargo breaking loose which could endanger the crew, vessel, property and environment.

HFS satisfies this paragraph through the crew’s compliance of the HACQM<sup>98</sup> and the CSM together with ensuring that the crew are properly trained, experienced and competent to be on board a ro-ro vessel. In practice, the training is given through officer conferences, cargo

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<sup>98</sup> HACQM, (URL: <http://www.typoprint.se/hualwww/hual.pdf>) Chapter Loading and Chapter Terminal



handling workshops, on the scene guidance by experienced Port Captains in addition to education according to the STCW Code.

Paragraph six underlines the requirement that the cargo shall be “*loaded, stowed and secured*” in accordance with the CSM. Furthermore, second sentence, specifically points out “*ships with ro-ro spaces*”. The main message concerning the ro-ro vessels is that the securing of the cargo shall be completed before the vessel departs the quay. Furthermore, it shall strictly follow what is laid out in the CSM. Last sentence implicitly states that the standard shall be in accordance with the guidelines given and developed by IMO.

In practice, this means that the respective Classification Society has the authority to approve the CSM on behalf of the flag state given that it fulfils the guidelines set forth by IMO.<sup>99</sup> HFS satisfies this requirement by ensuring that each vessel under its management holds a CSM which is approved by DNV. Furthermore, HFS ensures that the crew understands and is in compliance with the CSM. Consequently, the compliance of this paragraph supports the vessel being safely loaded and ballasted.

### 3.4 How does Höegh Autoliners ensure compliance?

According to Section 12, first paragraph, the vessel shall be “*loaded and ballasted*” in order to safeguard life, health, property and environment. This is achieved by ensuring that the stability and buoyancy is not compromised.

Höegh Autoliners, through its subsidiary HFS ensures that the vessel is “*loaded and ballasted*” in a safe manner by ensuring that the “*stability and buoyancy*” is not endangered through the Master’s competence and authority. He has the overview of the cargo, bunkers and ballast on board. Höegh Autoliners, through its subsidiary HA has a shore based role called Port Captain (Supercargo). This role is fully focused on the cargo

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<sup>99</sup> Cargo Securing Manual, DNV (URL: <http://www.dnv.com/industry/maritime/shiptypes/orecarrier/cargosecuringmanual.asp>)

booked, stowage and utilisation of the vessel. The Port Captain will make pre load plans for the cargo booked for the assigned vessel. The pre plan includes assessment on; (i) stability; (ii) Buoyancy; and (iii) utilisation of the vessel. If the vessel has any remarks to the plan concerning the above factors, it shall be pointed out. The Port Captain must amend the stowage plan in order to satisfy the Master's requirements. This means that there are two crucial roles in the equation (Master and Port Captain). However, the Master has the final responsibility to maintain the vessel's safety.

The company, i.e. HFS is responsible for the vessel being "*loaded and ballasted*" in a way that it does not endanger crew, cargo and environment. This is manifested through ensuring that the crew joining the ship is properly trained and prepared, i.e. to ensure that the vessel is "*loaded and ballasted*" in a satisfactory way. Additionally, HFS has to provide the Master with the necessary tools and systems in order to fulfil the requirement set forth in first paragraph Section 12 of the Ship Safety and Security Act.

Requirement regarding the cargo information is stated in Section 6 of Regulation 785/2006. The requirement is placed on the shipper. The shipper is however not subject to any duties in the Ship Safety and Security Act. In practice, the Master of the vessel or "*his representative*" verifies that the information is correct. This is done through procedures in Chapter Terminal of the HACQM and GTI. The Master's "*representative*" in this case is HA or agent employed by HA which also issues the shipping documents.

Requirement concerning the CSM is set out in Section 8 of Regulation 785/2006. HFS obtains and provides the CSM for the vessel. HFS ensures that the Master and crew understands and follows the CSM. This concerns the vessel's capacity, stability data and strength. Hence, Section 8 is satisfied by HFS.

Regulation 5 in SOLAS Chapter VI concerns requirements regarding stowage and securing. All paragraphs except paragraph five are relevant for ro-ro vessels in regards to "*loaded and ballasted*". HFS is in compliance of the relevant paragraphs through ensuring

that the crew following the procedures, principles and standards set out in both HACQM and the CSM. However, the HACQM could be more detailed in relation to all the relevant requirements set forth in Regulation 5.

Based on the above, Höegh Autoliners, through its subsidiary HFS satisfies the requirement set forth in first paragraph, Section 12 in the Ship Safety and Security Act, i.e. to ensure that the vessel is loaded and ballasted in a safe manner.

#### **4 Cargo-handling operations in a cargo safety context**

4.1 Section 12, second paragraph in the Ship Safety and Security Act of 2007  
Second paragraph of Section 12 is about “*cargo-handling operations*”. These operations “...shall not be carried out so as not to endanger life, health, property or the environment”.<sup>100</sup> This part of the Section concerns specifically the cargo handling operation.

The reason for pointing out the cargo-handling operation itself in addition to what is stated in the first paragraph of the Section is the risk involved when loading and discharging cargo. The interaction between the crew and stevedores in combination of time pressure and potential lack of knowledge manifests a substantial risk. This risk concerns inter alia life, health, property and environment. Therefore, it is of particular importance for the Master and crew to supervise and control the cargo operation.<sup>101</sup> Section 12, second paragraph gives The Ministry legal authority to make amendments, i.e. the NMD concerning cargo-handling operations, in addition to the cargo handling appliances. The equipment is fundamental in terms of quality and safety together with correct use.<sup>102</sup>

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<sup>100</sup> Ship Safety and Security Act (2007), Section 12

<sup>101</sup> NOU2005:14 På rett kjøp, p.115

<sup>102</sup> NOU2005:14 På rett kjøp, p.115

HFS complies with Section 12, second paragraph in ensuring that the crew is in compliance with the HACQM which describes a set of procedures, instructions, standards and best practices. As a starting point, HFS shall also ensure that the crew is competent and trained to be in compliance with HACQM.

#### 4.2 Regulation concerning carriage of cargo on board cargo vessels and barges (Regulation 785/2006)

There are two Sections in Regulation 785/2006 which is relevant concerning cargo-handling operations. Section 6 concerns requirements regarding cargo information. Section 8 concerns requirements about CSM.

As mentioned above, Section 6 concerns requirements regarding cargo information. The information provided shall be “...*available during loading operations*...” The natural question in this regard is when the “*loading operations*” is considered to be started? This is imperative considering that when the operation has started, everything thereafter is considered to be “*during*” cargo operations. Hence, the “*necessary cargo information*” must be present when the cargo operation starts in order to be “*available during loading operations*”.

Is the “*loading operation*” considered started when the pre load meeting with the stevedores and agent is performed the day before the loading operation? This question is of relevance as this is a routine the HA Port Captain follows prior cargo-handling operations. However, this interpretation is unlikely as the meeting is still a pre load meeting. However, the main point is that the “*loading operation*” has not started. A more natural interpretation of the start of the “*loading operation*” would be when the first stevedores arrive on board to perform the “*loading operation*”. This also correlates with the typical stevedoring shifts, e.g. first shift from 0600 to 1400. Consequently, if the “*loading operation*” of the vessel will take place in the first shift, the “*necessary cargo information*” must be “*available during loading operations*”, i.e. from 0600 to 1400. However, this is unfortunate as the planning of the loading operation is being done in detail before the actual “*loading*

*operation*”. During the *“loading operation”* it is too late as the operation is already underway. Furthermore, the term *“safe stowing and transportation”* will in the ro-ro industry mean it is placed in the correct place and by safe means in order to safeguard the crew, vessel and cargo. Correct place means in accordance to the capacities of the cargo holds and in proper distance to other cargo units in order maintain safety and quality. Furthermore, proper lashing and securing is to ensure that the cargo unit will not move unintentionally at sea. If cargo breaks loose from its securing arrangements, it could have a knock on effect on other cargo units. Consequently, a dangerous situation might arise with the cargo. This means that the stability of the vessel may deteriorate to a dangerous condition. Worst case scenario would be that the vessel capsizes.

The shipper is subject to a responsibility in the second sentence Section 6. As mentioned in Chapter 3.2, the shipper is not subject of duties according to the Ship Safety and Security Act. However, this fact does not make this Section less relevant as it is crucial for the safety to obtain the correct information timely. First and foremost the shipper is to give the *“...master and or his representatives...”* the cargo information. Representatives could be any party preparing the loading operation. It could also be the agent or another representative from the company. In this context it must be understood to be the person who does the planning and preparation of the loading on behalf of the Master. HA as the operator, i.e. the Port Captain (Supercargo) conducts the pre load planning. Furthermore, it is stated that the cargo information shall be given *“...sufficiently in advance of loading...”* This phrase broadens the scope of the first sentence in the Section where it was stated that the cargo information had to be *“...available during loading operation...”*. *“Sufficiently in advance”* is a vague expression. *“Sufficiently”* for the shipper or the *“master or his representative”*? It is specified further that it should be *“sufficiently”* in the context of being able to take necessary *“precautions”* to stow properly and safely transport the cargo. A natural understanding of the term *“sufficiently”* must be seen from the stowage planner point of view (Port Captain). This is due to the fact that he is actually making the plan and must have the information a certain time in order to make the pre load plan and at the same time not compromise on safety. Furthermore, the plan must be distributed to both crew and

stevedores. This means that the term “*sufficiently*” from a HA Port Captain point of view, could be to have the “*information on the cargo*” the day before the loading operation as it is imperative for the planning of a safe cargo operation.

In letter a), which is of relevance for ro-ro vessels, there are mainly three terms which specifies what should be included in the cargo information; (i) “*general description of the cargo*”; (ii) “*gross mass*”; and (iii) “*relevant special properties*”.

The understanding of “*general description*” would be if the cargo unit is a vehicle, truck, bus or excavator. It describes the cargo unit on a general note as it would be normally understood, e.g. if the cargo is a bus, it is simply described as a bus. “*Gross mass*” means weight. “*Relevant special properties*” can be understood to be cargo which is self propelled, non-self propelled, cargo with tyres, tracks, boxed, crated, used or new, etc. It would be additional information to the general description, only more detailed and specific. For a ro-ro vessel this is very important as there might be cargo spaces in the vessel where it would be safer to place the unit. Certain type of rolling cargo, e.g. with tracks, would be preferable to load on certain decks which are easy accessible as tracked units are slower and causes extra work<sup>103</sup> for all parties when driving on the internal ramps.

Section 6 does not place a requirement upon Höegh Autoliners, but on the shipper. As explained above, the shipper is not subject to duties in the Ship Safety and Security Act. Nevertheless, HA and HFS have procedures which verifies the cargo information. This is documented in the HACQM in chapter Terminal page 3 and in GTI chapter 2.1 Documentation.

Section 8 concerns the CSM. In a cargo operation context it is important to have knowledge of the vessel’s capacity, equipment, securing devices, general forces and potential accelerations. The CSM is important for the Master and the crew on board as it sets out the cargo handling capabilities of the vessel. The CSM, based on the information

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<sup>103</sup> Dunnage, rubber mats or ropes to be placed on the internal ramps. This is done in order to increase friction between the steel tracks and steel ramps.

provided, is an instruction on how to use the vessel related to the cargo-handling operations. According to the Section, a stability booklet shall be part of the CSM. This booklet provides information regarding different accelerations in different parts of the vessel. This information regarding the stability booklet may influence where to stow and secure the cargo in order to not “*endanger life, health, property and environment*”. Moreover, the CSM “*shall be kept on board*”.<sup>104</sup> Hence, if the pre load planning is done ashore, i.e. a Port Captain will not have access to the Manual. Consequently, this is a document which is intended for the crew.

HFS fulfils the requirement in Section 8 by obtaining and providing the CSM<sup>105</sup> to the ro-ro vessels under its management. Chapter Stowage and Securing in the CSM is of importance as it elaborates about general cargo handling principles. Furthermore, by following the HACQM, which correlates with the CSM, HFS is in compliance of this Section. Additionally, HFS ensures that the crew understands and uses the information provided in the CSM correctly in connection with cargo-handling operations. This is done through training and competence building<sup>106</sup>.

### 4.3 International rules and regulations, Chapter VI in SOLAS and CSS

Regulation 5, in Chapter VI in SOLAS presents the requirements regarding stowage and securing in six paragraphs. The focus in this chapter is the actual cargo-handling operation.

First paragraph explains how the cargo shall be “*loaded, stowed and secured*” in order to prevent dangerous situations “*throughout the voyage*”. “*Loaded, stowed and secured*” means during the cargo operation. “*Loaded*”, means cargo being transported on board from the terminal. This can be thousands of units over several days for a PCTC vessel in one

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<sup>104</sup> Section 8, Regulation 785/2006

<sup>105</sup> Model Cargo Securing Manual (URL: [http://www.dnv.com/binaries/Model%20Manual%20for%20General%20Cargo-Container%20vessel\\_tcm4-287971.pdf](http://www.dnv.com/binaries/Model%20Manual%20for%20General%20Cargo-Container%20vessel_tcm4-287971.pdf))

<sup>106</sup> HFS (URL: [http://www.hoeghautoliner.com/ikbViewer/page/hainternet/ship\\_management?p\\_dimension\\_id=56548](http://www.hoeghautoliner.com/ikbViewer/page/hainternet/ship_management?p_dimension_id=56548))

single port. “*Stowed*” means placed on board. The “*stowed*” concept can have different interpretations. It could e.g. be tightly “*stowed*”, which means that the units are very close to each other, which will lead to more cargo on board which again means more freight revenue. Stowage also means placing the right cargo at the right place in order to avoid any issues with the vessel’s capacity. The requirement set in this paragraph is fulfilled by HFS through the crew’s compliance of the standards and requirements set forth in HACQM<sup>107</sup> chapter loading which concerns handling standards and instructions for cars, High and Heavy, excavators, roll-trailers, static (crated cargo), trucks and tractors.

Third paragraph sets the requirements regarding abnormal cargo in terms of dimensions or weight. Risk involved with the loading of “*abnormal*” sized cargo is first and foremost if it fits the vessel, i.e. that there is no conflict between dimensions of the cargo unit and the capacity of the vessel. Several dangerous situations can arise for both crew members and stevedores given the unusual nature of the cargo. Furthermore is “*structural damage*” of importance. The term concerns damage to the vessel. Damage to a crucial part of the structure of the vessel due to the loading of an “*abnormal*” dimensioned cargo may weaken a supporting beam which may affect the cargo capacity of the vessel.

HFS ensures compliance of this paragraph by following Chapter concerning General Stowage and Securing of cargo in the CSM. This chapter explains the general cargo handling principles in a thorough manner. Additionally, HACQM lists specific crew member duties in Chapter Loading. Furthermore, in the same chapter under the General Höegh Autoliners standard instructions, it is clearly listed what is expected and required from the crew and Master during cargo-handling operations. This is inter alia having an updated load plan, knowledge of the quality standards and present where the cargo-handling operation takes place in order to supervise. HFS ensures that the crew is properly trained in cargo handling matters, i.e. fully acquainted with CSM and HACQM. Consequently, HFS is in compliance with this paragraph.

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<sup>107</sup> HACQM, (URL: <http://www.typoprint.se/hualwww/hual.pdf>) Chapter Loading



Fourth paragraph is about specific requirements for ro-ro vessels. The focus is on the “*securing arrangements*”. These are; (i) lashings; (ii) lashing points on the unit; and (iii) lashing points on the vessel. “*Appropriate precautions*” is directly related to the strength of the “*securing arrangements*”. The reason for this is that the securing of a cargo unit is not stronger than the weakest part (one of the three securing devices above). Recognizing also that a ro-ro vessel stows the cargo different from traditional cargo vessels, i.e. space between more or less all cargo units means that there is no support on the sides of the respective cargo units. Hence, the units are lashed<sup>108</sup> in order to create friction to impede the cargo to move when the vessel roll.<sup>109</sup> In order to ensure compliance regarding securing arrangements, i.e. securing devices, an “*appropriate precaution*” can be interpreted to be inter alia certified securing devices. HFS ensures that the vessel is in compliance with the relevant fixed securing devices through the CSM which contains certificates of the fixed securing devices. Furthermore, by ensuring that the crew follows the instructions in Chapter Equipment in the HACQM the lashing equipment on board is of a certified type and maintained throughout its normal lifespan. The lashing points attached to the cargo unit is often for the shipper’s account, and can therefore not be guaranteed. However, HFS, with properly trained crew shall be able to detect potential weak lashing points visually and through supervision of the cargo-handling operation.

Paragraph six is specifically about ro-ro vessels as the paragraph specifically mention “*ro-ro spaces*”. The requirement is that all the cargo shall be secured satisfactory before the vessel departs the quay. This requirement means that cargo-handling operations on a ro-ro vessel consist of an increased risk compared to other types of cargo vessels. An element of that risk is the space between the cargoes which requires every single unit to be secured. The fact that the majority of the cargo is of a rolling type also makes the cargo vulnerable in terms of movement. This is not explicitly mentioned in the HACQM, but can be understood through the general standard instructions given in Chapter Loading. Regulation

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<sup>108</sup> Lashed by appropriate lashing gear from lashing point on deck to lashing point on cargo unit

<sup>109</sup> Höegh Autoliners Cargo Quality Manual (URL: (<http://www.typoprint.se/hualwww/hual.pdf>)) Chapter Loading and Chapter Equipment

5 is however explicitly referred to in the CSM. Hence, HFS is in compliance of this paragraph by ensuring that the crew is fully acquainted with HACQM and the CSM.

Regulation 5, Chapter VI in SOLAS refers to the CSS Code. The purpose of the CSS Code is to promote international cargo handling (stowage and securing) standards in order to promote safety. Given the fact that stowage and securing of cargo takes place during cargo-handling operations the Code is of high relevance. In order to satisfy this requirement, the general cargo handling principles explained in CSS Code and which are applicable for ro-ro vessels shall be known by the crew. Hence, HFS ensures proper cargo handling training regarding the general principles set forth in the CSS Code. This is satisfied through knowledge and understanding of the HACQM and CSM which uses the Code as basis.

#### 4.4 How does Höegh Autoliners ensure compliance

Second paragraph, Section 12 requires that the “*cargo-handling operations*” shall be performed in way that safeguards, life, health, property and environment. HACQM is the given authority concerning cargo-handling operations in Höegh Autoliners, i.e. where both HA and HFS are involved as operator and management company. The Manual elaborates on Port captain and crew duties before and during the cargo-handling operations.<sup>110</sup> Furthermore, the manual is in compliance with SOLAS Chapter VI and CSS Code<sup>111</sup> and explains general cargo handling securing and stowage principles.

Section 6 of Regulation 785/2009 explains the requirements related to cargo information. The requirement is placed on the shipper. The shipper is however not subject of duties in the Ship Safety and Security Act. However, given the importance of Section 6 and the context of cargo-handling operations, HA has routines and procedures to obtain and verify the relevant information. In a HA context the cargo information is provided before the pre load meeting. This is in order to give the Port Captain the information required to inform and plan the cargo-handling operation together with agent, stevedores and tally. Based on

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<sup>110</sup> HACQM, (URL: <http://www.typoprint.se/hualwww/hual.pdf>) Chapter Vessel Readiness, Preload and Loading

<sup>111</sup> HACQM, (URL: <http://www.typoprint.se/hualwww/hual.pdf>) Chapter Intro

this meeting, relevant information is passed on to the Master of the relevant vessel. This routine is explained in the HACQM.<sup>112</sup>

Section 8 of Regulation 785/2006 requires a CSM. HFS, as the ship management company has the duty to obtain and provide an approved CSM to all vessels under its responsibility. Furthermore, it is implied that the manual is understood and followed by the Master and the crew on board through satisfactory training and education (STCW Code). Consequently, HFS complies with Section 8.

Regulation 5 in SOLAS Chapter VI concerns requirements regarding stowage and securing. Through proper training, understanding and crew compliance of both HACQM and CSM, HFS is in compliance of Regulation 5.

Based on the above, HFS is in compliance of Section 12, second paragraph of the Ship Safety and Security Act which concerns cargo-handling operations in a safe manner.

## **5 The carriage of Dangerous Goods in a cargo safety context**

### **5.1 Section 12, first paragraph in the Ship Safety and Security Act of 2007**

Section 12, first paragraph, sets out requirements on how a ship shall be loaded and ballasted. The safety of life, health, environment and property shall not “*in any other way be jeopardized*”. Incorrect handling of dangerous goods poses a potential safety risk for the crew, cargo handling personnel, vessel, property and the environment.<sup>113</sup>

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<sup>112</sup> HACQM, Chapter preload.

<sup>113</sup> Pettersen, Bull (2010), p. 258

In order to satisfy Section 12, first paragraph in regards to the handling of dangerous goods, it is necessary to have procedures and instructions in order to not jeopardize the safety of life, health, environment and property.

HFS satisfies Section 12 in regards to dangerous goods through the crew's compliance of chapter Terminal page 5 to 9 in the HACQM and the CSM.

Furthermore, in the first paragraph of Section 12 in the Ship Safety and Security Act, second sentence gives NMD delegated authority to issue detailed provisions concerning the handling of inter alia dangerous goods.

## 5.2 Regulation concerning the carriage of dangerous cargoes on Norwegian ships (1481/2009)

This regulation consists of ten chapters. Chapter 1 is concerns general provisions such as scope, definitions, exemptions, training, responsibility and safety measures. Chapter 2 concerns general requirements for dangerous packaged goods. This chapter has two parts; Part A and Part B. Part B is not applicable for ro-ro vessels engaged in international trade. This part is focused on ferries (ro-ro passenger ships) forming part of the Norwegian road-network. Chapter 3, 4 and 5 concerns carriage of dangerous cargoes in bulk of solid form, liquid chemicals and liquefied gases respectively. Chapter 6 is about Carriage of packaged irradiated nuclear fuel, plutonium and high-level radioactive wastes (INF). Chapter 7 is about dangerous goods carried on board offshore supply vessels. Chapter 8 concerns concluding provisions, i.e. entry into force. As seen, there are many forms of dangerous goods including different types of vessels involved. This is the reason for the different chapters and requirements. A ro-ro vessel carries dangerous goods in packaged form. Hence, chapter 1 and chapter 2 of this regulation are of relevance for HFS managed vessels under HA operation.

Chapter 1, Section 4 is divided into three parts. It concerns the responsibilities and documentation on board. The first part states that the master shall ensure that the dangerous

goods is loaded and stowed safely according the plan. The fact that he shall “*ensure*” that it is safely placed on board gives him a clear responsibility in safeguarding that the necessary precautions have been taken and that everything is in order prior the vessel departs the port. The second part concerns the documentation. It expresses clearly that is to be given to the Master and be kept on board. “*Transportation document*” can be Bill of Lading, Manifest or other relevant dangerous goods document with the relevant information. It is clearly stated that EmS<sup>114</sup> numbers and MFAG<sup>115</sup> numbers must be present in the “*transportation document*”. Third part of the Section instructs the vessel to have the applicable international regulation on board.

HFS satisfies Section 4 in the Regulation through compliance with Chapter Terminal page 8 in the HACQM. Additionally, compliance with CSM will also ensure that HFS satisfies this Section.

Section 5 concerns training. The Section consists of two parts. The first part states that training in the handling of dangerous goods is required. The second part specifies the standard and requirement of the training. In the first part the main point is that “*The Company*” is the responsible party to make sure that the involved personnel concerning dangerous cargo has the necessary training. “*The Company*” according to the Ship Safety and Security Act is HFS. In regards to Höegh Autoliners this duty will be divided in two aspects. One, HFS is responsible for the adequate dangerous goods training concerning the vessel’s crew. Two, HA, being the operator, is responsible to ensure dangerous goods training for the land-based personnel, i.e. personnel deciding whether or not the respective dangerous cargo is acceptable or not on a booking stage. The training is specified to consists of “*handling of and safety measures*” for the goods in question. Last sentence in the first paragraph states that the training must be “*documentable*”. This means it must be verifiable in written through certificate of training or diploma of courses attended.

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<sup>114</sup> Definition in Regulation 1481, Section 2: EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods, MSC/Circ.1025

<sup>115</sup> Definition in Regulation 1481, Section 2: MFAG: The Medical First Aid Guide for Use in Accidents Involving Dangerous Goods, MSC/Circ.857.

Paragraph two of the Section specifically states that the training must satisfy the requirements set forth in STCW Convention and IMDG Code.

HA satisfies Section 5 through ensuring that the crew is educated and trained according the STCW Convention and IMDG Code. This is documented through the necessary certificates all Deck Officers on board HFS managed vessels<sup>116</sup> holds.

In addition there are requirements set forth in ADR<sup>117</sup> for ships forming part of the domestic road-network, however, this is not applicable for Höegh Autoliners as all the vessels are engaged in international trade.

Section 6 is about safety measures. The Section places the responsibility on the master to ensure that the vessel is fit and prepared in accordance with the special procedures given for vessels being certified to carry Dangerous Goods. Two aspects are pointed out; (i) fire and safety; and (ii) medical first aid. This Section illustrates the potential hazards this type of cargo can cause and hence places the responsibility of preparedness in potentially countering fire and provide medical aid on the master.

HFS satisfies Section 6 through (i) certification of the vessels, i.e. IMDG certificate; (ii) proper training related to fire fighting and medical first aid; and (iii) regular fire fighting exercises which is mandatory according the ISM Code<sup>118</sup>.

Chapter 2 consists of two parts. Part A is of a general nature and sets a general requirement. Part B does not concern ro-ro ships trading domestically which is not part of the “road network”. The understanding of being part of the “road network” is when a “ro-ro ship” is

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<sup>116</sup> HFS (URL: [http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ship\\_management/organisation?p\\_dimension\\_id=56549](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ship_management/organisation?p_dimension_id=56549))

<sup>117</sup> ADR is the abbreviation for Accord européen relatif au transport international des marchandises Dangereuses par Route

<sup>118</sup> ISM Code, cf. Chapter 8 Emergency Preparedness (URL: [http://www5.imo.org/SharePoint/mainframe.asp?topic\\_id=287](http://www5.imo.org/SharePoint/mainframe.asp?topic_id=287))

able to carry passengers and rolling vehicles (cars and trailers) and offers a scheduled transportation service in a fixed route with fixed ferry quays. On the other hand, Part A, Section 7 concerns “*Ships carrying dangerous packaged goods*” which as a starting point involves all vessels that can carry general cargo. “*Dangerous packaged goods*” is general cargo but with a dangerous element. The cargo can be loaded and handled in the same way as non-dangerous cargo. However, being defined as “*dangerous packaged goods*” implies that there are additional requirements for the packing and stowage of this kind of cargo. Consequently, there are several requirements in the handling, packing, labelling and stowage for this type of cargo.

Part A is divided into two paragraphs. The first paragraph concerns “*ships carrying dangerous packaged goods*”. There is no specific definition or limitation on what kind of vessels. Second paragraph on the other hand specifies “*High-speed craft*” which is designed and built in accordance with HSC Code 2000. This means that all other vessels than “*High-speed craft*” is covered by the first paragraph. Ro-ro vessels engaged in international trade where the purpose is to transport cargo, not passengers, will be covered in paragraph one of Section 7.

Section 7, paragraph one, subparagraph a) and b) are straightforward in its wording by referring directly to SOLAS, Chapter VII Part A, and the IMDG Code. This demonstrates the close connection between national regulations and the international rules and regulations governing maritime safety matters. Consequently, what is stated in the above mentioned Convention and Code is applicable according to Section 7, paragraph one.

### 5.3 International rules and regulations, SOLAS Chapter VII and IMDG Code

The material rules concerning the carriage of dangerous goods are found in SOLAS chapter VII. SOLAS chapter VII consists of five parts. Part A concerns carriage of dangerous goods in packaged form. Part A-1 is about carriage of dangerous goods in solid form in bulk. Part B and C are about construction and equipment of the ships carrying dangerous

liquid chemicals and liquefied gases in bulk respectively. Part D concerns carriage of packaged irradiated nuclear fuel, plutonium and high-level radioactive waste.

The detailed rules concerning carriage of dangerous goods are found in the IMDG Code. In the Code detailed instructions in how to handle the dangerous goods are described. This information consists of; (i) classification of the goods as set out in the Code; (ii) documentation; (iii) package; (iv) marking; and (v) stowage.<sup>119</sup> The Code is comprehensive and consists of seven parts. Part 1 concerns general provisions, definitions and training. Part 2 is about classification. Part 3 presents dangerous goods list. Part 4 concerns packing and tank provisions. Part 5 is about consignment procedures. Part 6 is about construction and testing of packaging. Part 7 presents requirements concerning transportation operations.

As outlined above, Part A of SOLAS Chapter VII concerns carriage of dangerous goods in packaged form. This means that this part of the chapter only applies to vessels carrying dangerous goods in packaged form. A general cargo vessel, i.e. a ro-ro vessel can only carry dangerous goods in packaged form. Consequently, Part A is applicable for Höegh Autoliners.

Regulation 3 is the main rule concerning carriage of dangerous goods for ro-ro vessels. The requirement in the regulation is that the carriage of dangerous goods “*shall be in compliance with the relevant provisions of the IMDG Code*”. This means that in order to be in compliance with Regulation 3, the carriage of the goods in question must be according to the IMDG Code. The term “*Relevant provisions*” means that the applicable provisions will vary depending on what kind of dangerous goods which are subject for carriage. In practice this means that every time a cargo subject for shipment is classified as dangerous goods, i.e. found in the dangerous goods list, it must be checked and verified according the detailed technical rules laid out in the IMDG Code. The first step in relation to shipment of dangerous goods on board vessels would be to determine if the vessel intended to load the

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<sup>119</sup> Pettersen, Bull (2010) p.46



dangerous goods is actually allowed to carry the dangerous goods. Regulation 2 concerns the application of the carriage of dangerous goods in packed form. The regulation refers to SOLAS Chapter II-2, Regulation 19 paragraph 4 which states that the vessel shall hold a document of compliance (IMDG Certificate)<sup>120</sup> as evidence that the vessel is allowed to carry dangerous goods. This means that any vessel intended to carry dangerous goods in packaged form must hold a document of compliance to carry dangerous goods fulfilling SOLAS Chapter II-2 Regulation 19 paragraph 4.

HFS ensures that this certificate is in place and valid on HA operated vessels as HFS is the ship managers of the vessels.<sup>121</sup> Furthermore, when receiving an inquiry concerning shipment of dangerous goods, HA verifies if the vessel subject to carry the dangerous goods hold an IMDG certificate. If this is confirmed the next practical step is to ensure that the subject dangerous goods in question is allowed to be carried under the IMDG certificate. If a positive conclusion based on the above can be made, the dangerous goods can be carried on board the vessel in question. This process is evidenced through the HACQM, Chapter Terminal, page 5 concerning acceptance of dangerous goods. Additionally, in page 6 of the same chapter of the HACQM a Dangerous Goods acceptance form is to be followed and serves as a checklist and documentation of the steps explained above.<sup>122</sup> Hence, HFS satisfies Regulation 3 of SOLAS Chapter VII through compliance with the HACQM, Chapter Terminal, page 5 to 9.

In relation to the carriage of dangerous goods, there are also specific requirements concerning the documents. Regulation 4 of SOLAS Chapter VII, Part A states the requirements. There are several requirements; (i) proper shipping names shall be used; (ii) correct description with classification according to the IMDG Code; and (iii) the document shall be a certificate or declaration according to the requirements set forth in the IMDG

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<sup>120</sup> MSC/Circ.1027

<sup>121</sup> HSSEQ in HFS (URL:

[http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ship\\_management/hsseq?p\\_dimension\\_id=56550](http://www.hoeghautoliners.com/ikbViewer/page/hainternet/ship_management/hsseq?p_dimension_id=56550))

<sup>122</sup> HACQM, Chapter Terminal, Dangerous Goods p. 5

(URL:<http://www.tyoprint.se/hualwww/PDFKatalog/Terminal5-9.pdf>)

Code which is signed. In addition, according to paragraph five of Regulation 4 states that the vessel shall have a “*special list or manifest*” with information; (i) in accordance with the IMDG Code requirements; (ii) of the dangerous goods; and (iii) location on board. Alternatively, a stowage plan containing the above listed information is also acceptable.

In order to satisfy the above requirements of there must be a certain level of competence of the IMDG Code and the general handling of dangerous goods. If the shipper does not have this competence, the carrier should strive to guide the shipper to obtain the necessary documents as elaborated above according the valid rules. This means obtaining the proper shipping name, the UN number and class according to the dangerous goods list in the IMDG Code. In addition to compliance of the IMDG Code a certificate and declaration must follow the cargo which is intended to be shipped. If this is not fulfilled, the cargo is not in legal terms acceptable nor ready to be loaded.

HA requires a certification or declaration containing all the information as set forth above. The same is required by the HFS managed vessel. This is evidenced through the dangerous goods acceptance form<sup>123</sup>. However, the declaration or certificate is not explicitly mentioned in the HACQM. Consequently, a potential room for transparency and clarification can be made in the HACQM concerning this particular point due to the lack of documentation and clarification.

HA satisfies the requirements set forth in Regulation 4 concerning manifest or special list through the Höegh Autoliners standard dangerous goods manifest.<sup>124</sup> This is also documented in the HACQM and is therefore transparent for all relevant parties in the logistic chain where HA has responsibility.

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<sup>123</sup> HACQM, Chapter Terminal. Dangerous Goods p. 6 (URL: <http://www.tyoprint.se/hualwww/PDFKatalog/Terminal5-9.pdf>)

<sup>124</sup> HACQM, Chapter Terminal, Dangerous Goods p. 8 (URL: <http://www.tyoprint.se/hualwww/PDFKatalog/Terminal5-9.pdf>)

#### 5.4 How does Höegh Autoliners ensure compliance?

Section 12, first paragraph in relation to the handling of dangerous goods requires specific routines, instructions and procedures in order to ensure correct handling with the purpose to not jeopardize life, health, property and environment.

Detailed provisions regarding the handling of dangerous goods are given in Regulation 1481/2009.

Section 4 for in the Regulation set forth requirements in relation to responsibilities and documentation. HFS satisfies the requirements through compliance of Chapter Terminal page 4 to 9 in the HACQM and CSM.

Section 5 in the Regulation sets out the requirement concerning training. HA as the operator together with HFS as the manager are both involved with the handling of dangerous goods. Hence, HA is responsible for the training of the shore based personnel involved in the handling of the dangerous goods. HFS, the company subject of the duties in the Ship Safety and Security Act, is responsible for the dangerous goods training of the crew. HFS satisfies the requirements in Section 5 through ensuring that the crew is educated and trained according the STCW Convention and IMDG Code. The same Codes also ensures that the documentation requirement is satisfied.

Section 6 concerning safety measures is satisfied by HFS through the mandatory ISM Code through drills and exercises involving fire fighting and medical first aid.

Section 7 requires compliance with SOLAS Chapter VII and the IMDG Code. HFS satisfies the above requirement through adherence to the relevant regulations and provisions given in SOLAS Chapter VII and the IMDG Code.

Regulation 3 concerning the requirements for the carriage of dangerous goods states that the IMDG Code as mandatory, i.e. the carriage shall be in compliance with the relevant

provisions in the Code. HFS satisfies Regulation 3 of SOLAS Chapter VII through compliance with the HACQM, Chapter Terminal, page 5 to 9.

Regulation 4 is about documentation concerning dangerous goods. HA satisfies the requirements in Regulation 4 regarding manifest or special list through the Höegh Autoliners standard dangerous goods manifest given in the HACQM, Chapter Terminal.<sup>125</sup> HFS, by ensuring adherence to the HACQM complies with Regulation 4 in SOLAS Chapter VII.

Based on the above, HFS satisfy the requirement set out in Section 12, first paragraph as to not jeopardize life, health, property and handling through correct handling of dangerous goods according to the provisions set forth and through the compliance of chapter Terminal, page 5 to 9 in the HACQM and CSM.

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<sup>125</sup> HACQM, Chapter Terminal, Dangerous Goods p. 8 (URL: <http://www.tyoprint.se/hualwww/PDFKatalog/Terminal5-9.pdf>)

## 6 Conclusion

The ro-ro industry consists of mainly six significant market players. NYK, K-Line, MOL are Japanese based operators. EUKOR is based in Seoul, South Korea. WWL and Höegh Autoliners are headquartered in Oslo, Norway.<sup>126</sup> Höegh Autoliners with its corporate structure has organised the cargo safety focus in two separate entities; HA and HFS. HA operates the ro-ro vessels. HFS manages most of HA operated ro-ro vessels. The HFS managed ro-ro vessels are NIS flagged. Consequently, Norwegian legislation applies for these ro-ro vessels. Rules concerning cargo safety in Norwegian legislation are found in Ship Safety and Security Act.

Section 12 in the Ship Safety and Security Act concerns cargo safety. The Act applies for cargo vessels. A ro-ro vessel is a cargo vessel. Hence, requirements set forth in Section 12 apply for ro-ro vessels.

Section 12 consists of two paragraphs. First paragraph describes particularly two elements in a broad sense; (i) stability and buoyancy; and (ii) life, health, property or the environment, where the former point shall not be endangered and the latter point not be jeopardized. This paragraph also entails the handling of dangerous goods. This is due to the fact that life, health, property or the environment can be jeopardized by wrongful handling of dangerous goods. Furthermore, second sentence has delegated authority to NMD to issue detailed regulations concerning cargo and ballast. Second paragraph concerns cargo-handling operations. The term “*cargo-handling operations*” is specifically mentioned given the potential risk the cargo-handling operation represents. Second sentence has delegated authority to NMD to issue detailed regulations concerning cargo-handling operations.

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<sup>126</sup> The EU Report: Legal and Economic analysis of the tramp service ([http://ec.europa.eu/competition/sectors/transport/reports/tramp\\_report.pdf](http://ec.europa.eu/competition/sectors/transport/reports/tramp_report.pdf)) p.220

There are mainly three requirements for a ro-ro vessel in order to be in compliance with Section 12; (i) safely loaded and ballasted; (ii) safe cargo-handling operations; and (iii) safe handling of dangerous goods.

Detailed requirements are set forth in Regulation 785/2006 concerning carriage of cargo and Regulation 1481/2009 concerning carriage of dangerous goods. These regulations have implemented the relevant international safety rules and regulations in two ways; (i) by verbatim in the respective regulations; and (ii) by reference to SOLAS, CSS Code and IMDG Code.

Höegh Autoliners ensures compliance with the cargo safety rules and regulations through its subsidiary HFS. HFS is considered as the company set forth in Section 4 in the Ship Safety and Security Act. HFS is consequently the responsible company according to cargo safety questions. However, the internal cargo safety rules (based on Norwegian law) are manifested and distributed internally through HACQM. HA is the document owner of HACQM given its cargo handling competence, experience and focus. This entails monitoring applicable cargo safety rules in order to have an updated HACQM. Hence, a close interaction and collaboration between HA and HFS on all cargo safety questions is imperative to ensure compliance of the applicable cargo safety rules. This is of particular importance given the described corporate structure of Höegh Autoliners.

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### Treaties/Statutes

Ship Safety and Security Act of 2007 (Skipssikkerhetsloven av 2007)

The International Convention for the Safety of Life at Sea (SOLAS), 1974

Regulation of 29 June 2006 No. 785 concerning the carriage of cargoes on cargo ships and barges

Regulation of 8 December 2009 No. 1481 concerning the carriage of dangerous cargoes on Norwegian ships

Regulation of 17 January 1978 No. 4 concerning loading and discharge arrangements on ships

Convention of the International Maritime Organisation (IMO)

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*Höegh Autoliners, Höegh Autoliners Cargo Quality Manual* (2009)

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### **Internet Resources**

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<http://www.jus.uio.no/english/services/library/treaties>

<http://www.emsa.europa.eu>

<http://ec.europa.eu>

<http://www.dnv.com>



## List of Abbreviations

ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route
CEU	Car equivalent Units
CONRO	Container Roll-on Roll-off vessel
CSS	Cargo Stowage and Securing
DNV	Det Norske Veritas
EEA	European Economic Agreement
EMSA	European Maritime Safety Agency
EU	European Union
HSC	High-Speed Craft Code of 2000
HSSEQ	Health, Safety, Security, Environment and Quality
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
ISM	International Safety Management Code
LCTC	Large Car and Truck Carrier
MSC	Maritime Safety Committee
NIS	Norwegian International Register
NMD	The Norwegian Maritime Directorate
PCC	Pure Car Carrier
PCTC	Pure Car and Truck Carrier
RORO	Roll-on Roll-off vessel
SOLAS	Safety Of Life At Sea
STCW	International Convention for Standards, Training, Certificates and Watchkeeping 1978.