

SUB-COMMITTEE ON CARRIAGE OF
CARGOES AND CONTAINERS
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Agenda item 15

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ANY OTHER BUSINESS

Common guidance on the presentation and loading of vehicles

Submitted by ICHCA, ICS, and the International Group of P&I Associations

SUMMARY

Executive summary: This document contains guidelines prepared by industry organizations and companies engaged in the shipment of vehicles. This document, including the supporting checklist, is intended to ensure that the risks associated with the shipment of vehicles, including electric and hybrid vehicles, are managed, and to promote the safety of terminal and vessel personnel and the protection of property, including the vessel. This document also recommends that guidelines be considered for inclusion in various instruments, codes and circulars published by IMO, as appropriate.

Strategic direction, if applicable: Not applicable

Output: Not applicable

Action to be taken: Paragraph 8

Related documents: None

Introduction

1 In recent years, the maritime industry has faced the ongoing risk of fires on vehicle carriers. These onboard vehicle fires have often resulted in total loss of the vessels and, in many cases, have led to loss of life.

2 As fire-fighting measures are being considered as a part of the new agreed work output of the SSE Sub Committee, it is essential to also consider fire-prevention measures in the CCC Sub-Committee. The co-sponsors of this document appreciate the work progress made by the Correspondence Group on amendments to the IMDG Code with respect to the carriage of vehicles under the chairmanship of the United States. The co-sponsors believe that the information contained in this guidance document can supplement any available industry resources and can be considered at any stage of regulatory development.

3 These guidelines aim not only to support the development of regulatory work at IMO but also to offer practical guidance to be used alongside specific procedures from individual vehicle manufacturers, shippers, terminals, carriers, and other relevant parties.

Industry guidelines

4 The guidelines define the information that should be provided and the checks to be carried out at four different stages of shipping the vehicles:

- .1 the time of the booking;
- .2 when the vehicles arrive at the terminal;
- .3 during loading and stowing; and
- .4 throughout the voyage.

5 The latter part of the guidance contains four tables that list the checks for different vehicle types against the party responsible for carrying out the checks.

Recommendation

6 The guidance was published in March 2024 and has been endorsed by several significant industry stakeholders, such as port operators, vehicle carriers, insurance bodies and industry associations. This guidance is intended to ensure that duty holders are aware of their responsibilities with respect to the shipment of vehicles.

7 In light of the above, the co-sponsors suggest that the contents of the guidelines, presented herein, might usefully be considered for inclusion in various instruments, codes and circulars published by IMO, as appropriate.

Action requested of the Sub-Committee

8 The Sub-Committee is invited to note the information contained in this document, including the annex below.

ANNEX
THE GUIDELINES



Common Guidance on the Presentation and Loading of Vehicles

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Common Guidance on the Presentation and Loading of Vehicles

The following common guidelines and supporting checklist are intended to ensure that the risks associated with the shipment of vehicles, including electric and hybrid vehicles are managed and to promote the safety of terminal and vessel personnel and the protection of property including the vessel itself.

The guidelines and checklist define the information that should be provided and the checks to be carried out at: the time of the

- booking,
- when the vehicles arrive at the terminal, during
- loading and stowing, and throughout the
- voyage.

These guidelines are intended to be used in conjunction with specific procedures from individual vehicle manufacturers, shippers, terminals or carriers in respect of information such as vehicle separation on board the vessel or emergency response.

These guidelines are applicable to the transport of unaccompanied vehicles on board vessels engaged on international voyages. For the purposes of these guidelines a vehicle is considered to be a wheeled or tracked unit capable of being driven or towed.

Booking and Voyage Planning

To ensure loading of the vessel is properly planned, accurate vehicle information must be provided. This includes a description of the unit, whether it is new or used, its condition¹, its dimensions, volume and weight, the number of axles, the type of propulsion system fitted, whether vehicle has low ground clearance, details of lashing points. Should any unit require special handling or have controls that may make handling more difficult, then specific instructions should be provided at this time, these should also be affixed to the unit, and stevedores at load and discharge ports should be advised.

As the hazards, vehicle safety inspection criteria and stowage requirements associated with different vehicle propulsion types can vary, it is critical that the propulsion type is specified at the time of booking.

Consideration should be given to the effect on vessel stability and deck loading as a result of the increased weight of electric vehicles. Load planning should consider whether it is preferable to stow similar models and types of vehicles together in block stows and the challenges this may present with regards to safe access and emergency response. Any specific stow requirements will require cooperation between the vessel and the terminal to ensure these can be achieved efficiently.

Each EV or hybrid manufacturer produces a vehicle and model specific first responders or emergency guide. This guide describes the design and configuration of the vehicle's battery pack and high voltage system and includes procedures to be followed in an emergency or a system failure. It may also contain guidance on activating transport mode if applicable. This guide should be provided during the booking and made available to all parties² involved in handling the vehicles.

Confirm requirements regarding activation of transport mode, where applicable, and define party responsible for activating. The process for notifying the responsible party should also be confirmed. Responsible party to confirm with

NOTES

1. Vehicle condition, this should include information on whether the vehicle is damaged or not, whether it's driveable or not, whether it's scrap, whether it needs to be towed or loaded by non standard means.
2. Any shore or ship personnel involved in handling the vehicles should have access to a copy of the emergency guide, this ensures familiarity with the vehicles systems and OEM's recommended steps for responding to an incident.

Common Guidance (cont.)

others in transport chain that transport mode has been activated.

Engage with OEM's to determine the safest charge level for transportation taking into account energy density and the effect this will have should thermal runaway occur. 30-40% is considered to be the best balance between ensuring the vehicle has sufficient power for manoeuvring during transportation and safety. Some OEM's typically require higher states of charge to protect the vehicle's systems.

High states of charge create a high energy density within the battery which can prolong incidents and increase the potential likelihood of an incident recurring.

Batteries with a low state of charge can still suffer from thermal runaway. In the event of thermal runaway batteries with a lower state of charge may release significant quantities of highly toxic, flammable (potentially explosive), and corrosive gases. Batteries with a high state of charge can produce flame jets, in addition to the gases, in the event of thermal runaway.

When the battery of an electric vehicle is in thermal runaway, the gases will vent with loud popping or screaming noises followed by black and white clouds of what appears to be smoke.

Presentation at the Terminal

On arrival in the terminal all vehicles should undergo a safety inspection to ensure that the vehicles do not present any undue risk to personnel, other vehicles, the carrying vessel or the environment. The safety inspection will confirm that the vehicles can be safely loaded, that fire risks are minimized and that the vehicle can be safely and effectively stowed and secured on board³. In addition to a physical inspection of the vehicle's systems, the vehicle compartments should be unlocked and confirmed as free from any cargo or personal effects, checked to ensure that the state of charge is acceptable, free from battery system alarms⁴ and on hybrid vehicles also that the fuel level is acceptable⁵, usually between 1/8 and 1/4 of a tank, and may have the declared weight verified.

Any vehicle which is found to be unsafe, damaged⁶, overweight, or not as described must be rejected from the load until such time as all issues have been addressed.

Each vehicle should be clearly marked on the front and rear windscreen with details of the propulsion type fitted and, where applicable, details of the typical state of charge for that type or class of vehicle, any other information relevant to the safe handling of the vehicle should also be included.

Loading and Securing

When being prepared for loading, all vehicles will undergo another physical safety inspection⁷ to ensure that they can be safely driven and do not present a fire risk.

Maintaining a fire watch at all times, particularly if fire detection systems have been disabled during loading, is critical to ensure potential issues are identified at an early stage, in the event of any of these signs being apparent, emergency actions as specified in individual procedures should be taken.

Fire/smoke detection systems and ventilation systems should be operated in accordance with individual company procedures. All emergency escape routes should be confirmed as clear and accessible.

A pre-load meeting should be held between all relevant parties to confirm arrangements and discuss loading plan.

All vehicles should be loaded strictly in accordance with the Cargo Securing Manual and the pre-planned stowage and segregation plan taking into account any requirements regarding vehicle separation. Once in the final stowage position, all vehicles must have the ignition system turned off, keys removed, parking brake set, and transmission placed in park, or for manual vehicles left in gear. Hybrid and electric vehicles should undergo an additional check to confirm that the ignition is off. If the vehicle is fitted with a transport isolation mode limiting the number of active vehicle systems, then this should be activated. This will require consultation with the OEM as some transport modes will also deactivate the handbrake system.

NOTES

3. Similar to the inspection currently carried out on vehicles prior to loading with the additional check of confirming that there are no alarms or faults showing in relation to the battery management system. The purpose of the inspection is to try and identify vehicles with potential problems before they are loaded onboard.
4. No BMS related alarms displayed in vehicle.
5. Check of SoC to be carried out during vehicle inspection and recorded on inspection log. SoC should match that agreed in contract with OEM. Defining an acceptable SoC will be by agreement between vessel operators and contractual partners.
6. Damage refers to significant damage to the vehicle structure that can make the vehicle unsafe, not to cosmetic damage such as dents or marks on body panels.
7. This refers to the pre-drive checks done by the stevedores when loading the vehicles.
8. Where temperature monitoring equipment is available, such as portable thermal cameras or infrared thermometers it is recommended that the crew check for changes in temperature during their vehicle deck patrols. It will not be possible to check every vehicle during deck patrols but scanning of vehicles may provide early indication of a potential problem.

Common Guidance (cont)

It is recommended that vehicles should undergo temperature monitoring during loading and once in the final stowage position. Used light ICE vehicles should have their battery disconnected and isolated, this should be documented, once stowed and high or heavy units will have the battery kill/isolation switch activated.

Any vehicles or equipment with moving parts should be confirmed as locked down and be suitably secured for sea.

All vehicles must be secured in accordance with the vessel's CSM and lashing plan. While the vehicles are being secured further checks should be carried out to ensure that there are no visible fluid leaks. Should any leaks be identified then the vehicle must either be removed from the vessel or properly repaired prior to departure.

During Voyage

All vehicles should be regularly inspected throughout the course of the voyage to ensure that all lashings are secure, where monitoring equipment is available, that no vehicle is showing any increased temperature^a and to confirm that no fluid leaks have developed.

Where leaks are noted these should be contained and cleaned up promptly. On electric and hybrid vehicles these leaks may be electrolyte from the battery packs which is highly toxic and should only be cleaned up with appropriate PPE. Leaking electrolyte should be taken as major damage to the battery pack and the vehicle should be isolated in a safe manner in accordance with individual vessel emergency response procedures.

Where an increase in temperature is noted this should be dealt with promptly in accordance with individual vessel emergency response procedures.

Fire / smoke detection systems for vehicle decks should be fully operational throughout the voyage.

All but essential work should be avoided. Essential work should only be conducted after the activity has been risk assessed.

Any situation which has the potential to increase the risk of an incident occurring should be reported to owners/operators as a matter of urgency in accordance with individual company procedures.

DEFINITIONS		Light	Cars and small vans of less than 3.5T	High/Heavy	trucks, trailers, buses, large vans, heavy plant, cranes etc.			
1	BOOKING							
	Make, Model, Year	✓	✓	✓	✓	✓	✓	Shipper/Booking Agent
	Vehicle Weight	✓	✓	✓	✓	✓	✓	Shipper/Booking Agent
	VIN Number	✓	✓	✓	✓	✓		Shipper/Booking Agent
	Vehicle dimensions including details of vehicles with low ground clearance	✓	✓	✓	✓	✓	✓	Shipper/Booking Agent
	No of Axles	✓	✓	✓	✓	✓	✓	Shipper/Booking Agent
	Propulsion type (ICE, BEV, PHEV, HEV, FEV)	✓	✓	✓	✓	✓		Shipper/Booking Agent
	OEM required State of Charge	✓		✓	✓			Shipper/Booking Agent
	OEM specific carriage instructions	✓		✓	✓		✓	Shipper/Booking Agent
	Vehicle specific OEM first responders or emergency guide	✓	✓	✓	✓			Shipper/Booking Agent
	Lashing type (point or rim)	✓	✓	✓	✓	✓	✓	Shipper/Booking Agent

Common Guidance (cont)

2	PRESENTATION	New Light	Used Light	Caravans /Mobile Homes	New High /Heavy	Used High /Heavy	Mafi/ Trailer Cargo	Responsible party
	Weight Verified – where scales are available		Random Sample	✓	✓	✓	✓	Terminal
	Units Measured			✓	✓	✓	✓	Terminal
	All compartments unlocked and accessible for inspection	Note 1	✓	✓	Note 1	✓		Shipper/Booking Agent Terminal
	Vehicle free of personal items and DG's, only equipment supplied by the OEM can be included in vehicle – Packing list provided	✓	✓	✓	✓	✓		Shipper/Booking Agent
	Marker placard on front and rear windscreen specifying propulsion type	✓	✓	✓	✓	Note 4	Note 4	Terminal/Shipper
	State of charge verified and recorded	✓	✓	✓	✓	Note 4	Note 4	Terminal
	Staged separately in terminal by port of discharge and propulsion type	✓	✓	✓	✓	✓	✓	Terminal
	Vehicle Safety inspection to confirm that the following are all in order, if any points are failed vehicle to be rejected until corrective actions taken	✓	✓	✓	✓	✓	✓	Terminal/Surveyor/ Shipper - As applicable
	Steering							
	Brakes including emergency brakes							
	Battery pack, electrical system and drivetrain. Note: This is not expected to be a physical check of the electrical system but a check to confirm that the vehicle is not showing any electrical system faults							
	No major damage to vehicle body, particularly in way of battery pack							
	No visible fluid leaks	Note 3	Note 3					
	Tyres							
	Windows intact/clear							
	Vehicle clean							
	Keys present							
	Properly marked lashing points	Note 2	Note 2	Note 2	Note 2	Note 2	✓	Shipper
	Operating instructions provided for any units with specific driving requirements				✓	✓		Shipper

Note 1 - Compartments may not be accessible as vehicle may be in transport mode or be fitted with a full body cover. Note 2 - Lashing to be performed in accordance with requirements of CSM and OEM instructions.

Note 3 - Leaks may be electrolyte from battery pack which is HIGHLY TOXIC, appropriate PPE must be worn. Leaking electrolyte should be considered as major damage to battery requiring vehicle to be isolated.

Note 4 - Where applicable, placards should be fitted specifying propulsion type and the state of charge should be verified and recorded.

Common Guidance (cont.)

3	LOADING AND SECURING	New Light	Used Light	Caravans /Mobile Homes	New High /Heavy	Used High /Heavy	Mafi/ Trailer Cargo	Responsible party
	Vehicle safety checks as above, confirm ignition off and key must be removed from ignition and stored in vehicle cabin	✓	✓	✓	✓	✓	✓	Stevedores
	Moving parts on equipment suitably secured for sea transport			✓	✓	✓	✓	Stevedores
	Battery disconnected once loaded and stowed on board		✓	✓				Stevedores
	Battery isolation/kill switch activated - OEM advice on isolation/kill switch functionality			✓	✓	✓		Stevedores
	Where fitted to EV and hybrid vehicles, ensure that transport mode is engaged in accordance with OEM instructions	✓	✓	✓	✓			Stevedores
	Loading carried out in accordance with agreed loading plan	✓	✓	✓	✓	✓	✓	Stevedores/Crew

4	DURING VOYAGE	New Light	Used Light	Caravans /Mobile Homes	New High /Heavy	Used High /Heavy	Mafi/ Trailer Cargo	Responsible party
	Vehicle Deck Inspection	✓	✓	✓	✓	✓	✓	Crew
	Temperature monitoring - where appropriate equipment is available							
	Leak Check	Note 3	Note 3	Note 3	Note 3			
	Lashing Check							

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