

December 16, 2021

Mr. Tristan Brown  
Acting Administrator  
Pipeline and Hazardous Materials Safety Administration  
1200 New Jersey Ave., SE  
Washington DC 20590

The attached letter from the NTSB Chair provides information about the NTSB's [December 1, 2021, report *Fire aboard Roll-on/Roll-off Vehicle Carrier Höegh Xiamen, Pier 20, Blount Island, Jacksonville, Florida, June 4, 2020*, NTSB/MAR-21/04. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (for example, M-21-014). We encourage you to submit your response to [ExecutiveSecretariat@nts.gov](mailto:ExecutiveSecretariat@nts.gov). If your reply exceeds 20 megabytes, including attachments, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.



Executive Secretariat-LRM  
Office of the Managing Director  
National Transportation Safety Board  
490 L'Enfant Plaza SW  
Washington, DC 20594  
Email: [ExecutiveSecretariat@nts.gov](mailto:ExecutiveSecretariat@nts.gov)

# National Transportation Safety Board

Office of the Chair

Washington, DC 20594



December 16, 2021

Mr. Tristan Brown  
Acting Administrator  
Pipeline and Hazardous Materials Safety Administration  
1200 New Jersey Ave., SE  
Washington DC 20590

Dear Mr. Brown:

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to assist victims and their family members affected by major transportation disasters.

We are providing the following information to urge the Pipeline and Hazardous Materials Safety Administration to act on the safety recommendation in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter also includes information about our December 1, 2021, report *Fire aboard Roll-on/Roll-off Vehicle Carrier Höegh Xiamen, Pier 20, Blount Island, Jacksonville, Florida, June 4, 2020*, NTSB/MAR-21/04. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Lack of training for vehicle battery securement.
- Ineffective oversight of vehicle battery securement.
- Regulatory exceptions for used and damaged flammable-liquid-powered vehicles.

- Fire detection system deactivation during cargo loading.
- Ineffective emergency distress calls.

Accordingly, the NTSB makes the following safety recommendation to the Pipeline and Hazardous Materials Safety Administration. Additional information regarding this recommendation can be found in the noted sections of the report.

- Eliminate the exceptions provided in Title 49 *Code of Federal Regulations* 176.905(i) for used and damaged flammable-liquid-powered vehicles transported by roll-on/roll-off vehicle carriers. (M-21-014) (See section 2.4.)

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendation by number (Safety Recommendation M-21-014). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Sincerely,

[Original Signed]

Jennifer Homendy  
Chair

Admiral Karl Schultz  
Commandant  
US Coast Guard Headquarters  
2803 Martin Luther King Jr. Ave., SE  
Stop 7318  
Washington, DC 20593

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December 16, 2021

Admiral Karl Schultz  
Commandant  
US Coast Guard Headquarters  
2803 Martin Luther King Jr. Ave., SE  
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Dear Admiral Schultz:

This letter provides information about the National Transportation Safety Board's (NTSB) December 1, 2021, report *Fire aboard Roll-on/Roll-off Vehicle Carrier Höegh Xiamen, Pier 20, Blount Island, Jacksonville, Florida, June 4, 2020*, NTSB/MAR-21/04. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Lack of training for vehicle battery securement.
- Ineffective oversight of vehicle battery securement.
- Regulatory exceptions for used and damaged flammable-liquid-powered vehicles.
- Fire detection system deactivation during cargo loading.
- Ineffective emergency distress calls.

Accordingly, the NTSB makes the following safety recommendations to the US Coast Guard. Additional information regarding these recommendations can be found in the noted sections of the report.

- Propose to the International Maritime Organization to eliminate International Maritime Dangerous Goods Code special provision 961 for used and damaged flammable liquid powered vehicles transported by roll on/roll off vehicle carriers. (M-21-015) (See section 2.4.)

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement this recommendation. When replying, please refer to the safety recommendation by number (Safety Recommendation M-21-015). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

Sincerely,

[Original Signed]

Jennifer Homendy  
Chair

December 16, 2021

Ms. Lauren Brand  
Executive Director  
National Maritime Safety Association  
211 N. Union Street  
Alexandria, VA 22314

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of the accidents and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters.

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Executive Director  
National Maritime Safety Association  
211 N. Union Street  
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Dear Ms. Brand:

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We are providing the following information to urge the National Maritime Safety Association to act on the safety recommendation in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter also includes information about our December 1, 2021, report *Fire aboard Roll-on/Roll-off Vehicle Carrier Höegh Xiamen, Pier 20, Blount Island, Jacksonville, Florida, June 4, 2020*, NTSB/MAR-21/04. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

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- Ineffective oversight of vehicle battery securement.
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- Fire detection system deactivation during cargo loading.

- Ineffective emergency distress calls.

Accordingly, the NTSB makes the following safety recommendation to the National Maritime Safety Association. Additional information regarding this recommendation can be found in the noted sections of the report.

- Inform your members of the circumstances of the *Höegh Xiamen* accident and encourage them to establish battery securement procedures as well as a means to ensure that the procedures are followed through adequate oversight of vehicle loading and battery securement. (M-21-016) (See section 2.3.2.)

To aid you in implementing this recommendation, we are also attaching an article regarding our investigation of this accident that you may use, either in its entirety or modified to fit the length and style considerations of your publication and/or website. We ask that you publish it, or similar content, in the next issue of your newsletter and/or website, and that you send us a copy of the newsletter or a link to the website article once it has been published.

The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendation by number (Safety Recommendation M-21-016). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Sincerely,

[Original Signed]

Jennifer Homendy  
Chair

December 16, 2021

Mr. Eric Thiel, Esq.  
Florida Board Certified Admiralty and Maritime Lawyer  
Banker Lopez Gassler P.A.  
501 E. Kennedy Blvd.  
Suite 1700  
Tampa, FL 33602

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# National Transportation Safety Board

Office of the Chair  
Washington, DC 20594



December 16, 2021

Mr. Eric Thiel, Esq.  
Florida Board Certified Admiralty and Maritime Lawyer  
Banker Lopez Gassler P.A.  
501 E. Kennedy Blvd.  
Suite 1700  
Tampa, FL 33602

Dear Mr. Thiel:

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We are providing the following information to urge Grimaldi Deep Sea to act on the safety recommendations in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter also includes information about our December 1, 2021, report *Fire aboard Roll-on/Roll-off Vehicle Carrier Höegh Xiamen, Pier 20, Blount Island, Jacksonville, Florida, June 4, 2020*, NTSB/MAR-21/04. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

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- Ineffective oversight of vehicle battery securement.

- Regulatory exceptions for used and damaged flammable-liquid-powered vehicles.
- Fire detection system deactivation during cargo loading.
- Ineffective emergency distress calls.

Accordingly, the NTSB makes the following safety recommendations to Grimaldi Deep Sea. Additional information regarding these recommendations can be found in the noted sections of the report.

- Develop a training program for any vehicle preparation personnel tasked with supervising and conducting vehicle battery securement to ensure greater fire safety aboard vehicle carriers. (M-21-017) (See section 2.3.1.)
- Revise your written procedures to improve oversight of vehicle loading and battery securement, using such methods as requiring additional inspectors, pre-job briefings, hands-on demonstrations, or independent follow up inspections. (M-21-018) (See section 2.3.2.)

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Sincerely,

[Original Signed]

Jennifer Homendy  
Chair

December 16, 2021

Mr. Shea Michael Moser  
Mosely, Prichard, Parrish, Knight & Jones  
501 West Bay Street  
Jacksonville, FL 32202

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# National Transportation Safety Board

Office of the Chair

Washington, DC 20594



December 16, 2021

Mr. Shea Michael Moser  
Mosely, Prichard, Parrish, Knight & Jones  
501 West Bay Street  
Jacksonville, FL 32202

Dear Mr. Moser:

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We are providing the following information to urge Höegh Technical Management to act on the safety recommendations in this letter because we believe your organization can help reduce the risk of future accidents. For more information about the NTSB and our recommendation process, please see the attached one-page summary.

This letter also includes information about our December 1, 2021, report *Fire aboard Roll-on/Roll-off Vehicle Carrier Höegh Xiamen, Pier 20, Blount Island, Jacksonville, Florida, June 4, 2020*, NTSB/MAR-21/04. The details of this accident investigation and the resulting safety recommendations may be found in the attached report, which can also be accessed at <http://www.nts.gov>.

As a result of this investigation, we identified the following safety issues:

- Lack of training for vehicle battery securement.
- Ineffective oversight of vehicle battery securement.
- Regulatory exceptions for used and damaged flammable-liquid-powered vehicles.
- Fire detection system deactivation during cargo loading.

- Ineffective emergency distress calls.

Accordingly, the NTSB makes the following safety recommendations to Höegh Technical Management. Additional information regarding these recommendations can be found in the noted sections of the report.

- Revise your "Vehicle Lashing Inspection Procedure" to include a process to ensure all vehicle batteries are disconnected before departure and provide training to all crew on the revised procedure. (M-21-019) (See section 2.3.3.)
- Revise your "Cargo Safety Awareness" procedure to minimize the amount of time that your vessels' fire detection systems are deactivated. (M-21-020) (See section 2.5.1.)
- Ensure that contact information for emergency response authorities for each port of the vessel's passage plan is immediately available to vessel bridge teams and that they are trained on its use. (M-21-021) (See section 2.5.2.)

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate a response within 90 days of the date of this letter, detailing the actions you have taken or intend to take to implement these recommendations. When replying, please refer to the safety recommendations by number (Safety Recommendations M-21-019 through -021). We encourage you to submit your response to [ExecutiveSecretariat@ntsb.gov](mailto:ExecutiveSecretariat@ntsb.gov). If your reply, including attachments, exceeds 20 megabytes, please e-mail us at the same address for instructions on how to send larger documents. Please do not submit both an electronic copy and a hard copy of the same response.

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Sincerely,

[Original Signed]

Jennifer Homendy  
Chair

## Roll-on/Roll-off Vehicle Carriers and Fires: Lessons Learned from the *Höegh Xiamen* Fire

On Thursday, June 4, 2020, about 3:30 p.m., while preparing the 600-foot-long roll/on-roll/off vehicle carrier *Höegh Xiamen* for departure from its berth at the Blount Island Horizon Terminal in Jacksonville, Florida, a fire was discovered on one of the cargo decks. The vessel had been loaded with used vehicles, but, in contravention of the charterer's (Grimaldi Deep Sea) procedures, many vehicles' batteries had not been secured, increasing the risk of a fire caused by electrical arcing at battery terminals and electrical component faults. Additionally, the vessel's fire detection system had been deactivated for loading but had not been reactivated at the completion of loading at 3:00 p.m., so the detection of the fire was delayed. The crew attempted to fight the fire but were repelled by heavy smoke. Shoreside fire department teams from the Jacksonville Fire and Rescue Department arrived about 30 minutes after the discovery of the fire. About 15 minutes later, after consulting with the fire department, the crew released the vessel's carbon dioxide fixed fire-extinguishing system into the affected deck, but since the fire had spread to multiple fire zones by that time, the carbon dioxide system was ineffective. Nine firefighters sustained burns while responding to the fire; none of the vessel's 21 crewmembers were injured. The vessel, which burned for 8 days, and its cargo of 2,420 used vehicles were declared a total loss valued at \$40 million.

### **What the NTSB found**

The NTSB determined that the probable cause of this accident was ineffective oversight of longshoremen, which did not identify that Grimaldi's vehicle battery securement procedures were not being followed, resulting in an electrical fault from an improperly disconnected battery in a used vehicle. The crew not immediately reactivating the vessel's fire detection system immediately after the completion of loading contributed to the delay in the detection of the fire. The master's decision to delay the release of the carbon dioxide fixed fire-extinguishing system also contributed to the extent of the fire.

In our report on the fire on the *Höegh Xiamen*, we recommended that the National Maritime Safety Association members take action to reduce the risk of fires aboard vehicle carriers by establishing vehicle battery securement procedures as well as a means to ensure that these procedures are followed through adequate oversight of vehicle loading and battery securement. We encourage your members to review the NTSB's report on the *Höegh Xiamen* fire and to incorporate the lessons learned to establish battery securement procedures and to ensure that the procedures are followed through effective oversight.

### **Lessons Learned**

**Securing Vehicle Batteries is Essential to Safety on Vehicle Carriers: Proper Training and Effective Oversight is Needed**

Grimaldi Deep Sea had established vehicle battery securement procedures that vehicle preparation staff were required to follow during loading. However, after the accident, Coast Guard investigators examined several of the used vehicles loaded on board the vessel and found numerous vehicles that did not comply with Grimaldi's battery securement requirements—including several with negative battery cable lugs near or lying in contact with battery terminal posts and many vehicles without plastic covers over negative battery terminal posts. Stevedores from SSA Atlantic (the company hired by Grimaldi to load the vehicles on the *Höegh Xiamen*) supervised the preparation and loading of vehicles and were required to reject any vehicle if its engine compartment could not be accessed. Instead, loading personnel flagged such vehicles by raising the windshield wipers after loading them onto the vessel. This alternative process was neither accepted nor recognized by Grimaldi or Höegh Technical Management (the vessel's operator). As a result, the NTSB recommended that Grimaldi Deep Sea develop a training program for vehicle preparation staff tasked with supervising and conducting vehicle battery securement to ensure greater fire safety aboard vehicle carriers.

During loading, Grimaldi's port captain had oversight authority to ensure that the vessel's cargo was properly secured and in safe condition. However, the port captain missed opportunities to ensure that loading personnel properly isolated vehicle electrical systems. Additionally, the vessel's chief mate was informed of vehicles that had incomplete battery disconnections, but he took no further action. As a result, the NTSB recommended that vessel procedures be reviewed and revised to improve oversight of loading and battery securement.

### **Excepting Used Vehicles from Hazardous Materials Regulations increases Transport Risks**

The used vehicles that were loaded on to the *Höegh Xiamen* were excepted from the requirements of the Hazardous Materials Regulations in Title 49 *Code of Federal Regulations* Subchapter C because the vessel's cargo space had been approved by the flag state as specially designated and approved for vehicles. The NTSB determined that the circumstances of this accident suggest that used vehicles, particularly those that are older with unknown maintenance history and/or crash damaged, require extra protections to mitigate the risk of vehicle fires on board vehicle carrier vessels. Some of the crash-damaged vehicles that were loaded on the *Höegh Xiamen* had engine compartments that could not be accessed to secure batteries, which was the only requirement for the excepted non-hazardous cargo. If the cargo had not been excepted, evaluating the electrical systems and inspecting for fluid leakage would have been required.

In its report, the NTSB noted that its concern about the transportation of used vehicles classified as non-hazardous cargo is not limited to this single incident. In a 2017 loss prevention briefing for its members, the North England P&I Association detailed the increased risks with shipping used vehicles—especially for vehicles whose history and condition cannot be verified—including electrical faults, such as shorting across electrical circuits or the battery; parts seizing; or fuel/oil systems' seals perishing, thus allowing hazardous fluids to leak. Additionally, in 2015, 2017, and 2019, fires aboard the vehicle carrier vessels *Courage*, *Honor*, and *Grande America* and *Grande Europa*, respectively, were all connected to vehicle cargo carried aboard each vessel. As a result, the NTSB recommended that the Pipeline and Hazardous Materials Safety Administration eliminate the exceptions provided in the Hazardous Materials

Regulations for used and damaged vehicles transported on vehicle carriers, and further recommended that the Coast Guard propose to the International Maritime Organization to eliminate similar exceptions.

### **Reactivate Fire Detection Systems After Completing Loading and Communicate Effectively with Emergency Response Authorities**

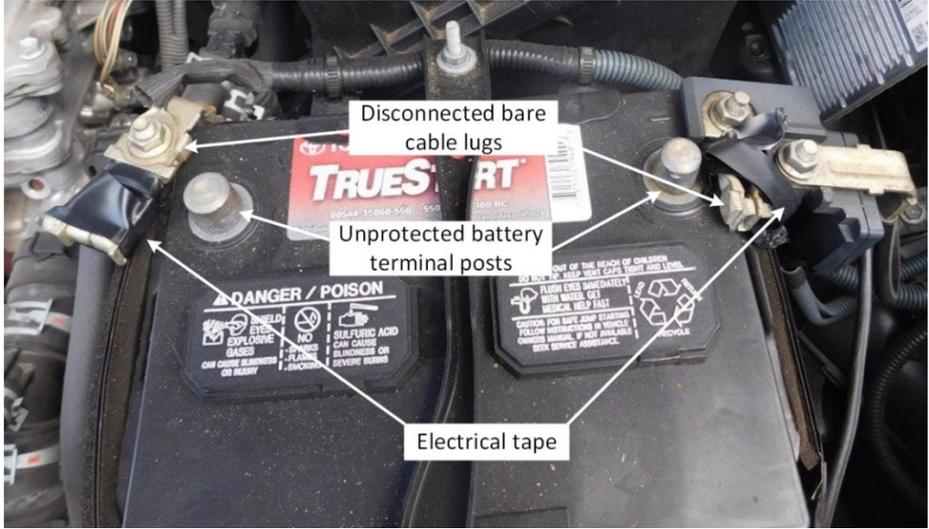
The NTSB found that, with the fire detection system deactivated and without crew on the cargo decks to detect any smoke or fire, there was a 30-minute gap between the completion of loading and the discovery of the fire, during which the vessel was unprotected. The NTSB recommended that the time when fire detection systems are deactivated should be minimized. Additionally, to report the fire, a successful emergency response is contingent on early distress notification and clear, effective communication, and in this case, the master's ineffective communication delayed the fire department's response to the accident site. The NTSB recommended that contact information for emergency response authorities for each port of a vessel's passage plan be immediately available to vessel bridge teams and that crews are trained on its use.



Caption: Firefighters conduct exterior boundary-cooling on June 5, 2021, the day after the fire was discovered. (Source: Jacksonville Fire and Rescue Department)



Caption: Thermally damaged vehicles after removal from the *Höegh Xiamen*, Blount Island, Jacksonville, Florida, July 23, 2020. (Source: NTSB)



Caption: Battery contained in forklift vehicle removed from deck 5. The disconnected battery cable lugs were located near terminal posts, and the battery terminal posts were unprotected. (Background source: US Coast Guard)