SAFETY ALERT No. 17-18

CARRIAGE OF BAUXITE & BAUXITE FINES

1. Introduction

1.1. The International Maritime Organisation (IMO) has issued Circular **CCC.1/Circ.2/Rev.1 (CARRIAGE OF BAUXITE WHICH MAY LIQUEFY)**[1], concerning the safe carriage of Bauxite and Bauxite Fines in bulk. The Sub-Committee on Carriage of Cargoes and Containers (CCC), considered matters related to the carriage of Bauxite after the loss of the 10-year-old Bahamas flag Supramax bulk carrier Bulk Jupiter[2] with the loss of 18 lives on 02 January 2015.

1.2. This Safety Alert aims to highlight a new draft individual IMSBC schedule for Bauxite Fines contained within IMO Circular CCC.1/Circ.2/Rev.1 referencing Bauxite cargoes as either Group C (Bauxite) or Group A (Bauxite Fines) and the potential risks involved when transporting Bauxite Fines.

1.3. The Bahamas Maritime Authority wishes to bring the information referenced in Paragraph 1.1 and 1.2 to the attention of interested parties[3].

2. Guidance on the Safe Carriage of Bauxite and Bauxite Fines in Bulk

2.1. IMO Circular CCC.1/Circ.2/Rev.1 concerning the safe carriage of Bauxite and Bauxite Fines in bulk has been issued to raise awareness of the fact that some Bauxite cargoes should be treated as Group A cargoes in the International Maritime Solid Bulk Cargoes (IMSBC) Code. The IMSBC Code contains an individual schedule for Bauxite, which is currently

[1] IMO Circular CCC.1/Circ.2/Rev.1 available at the following link: http://www.bahamasmaritime.com/wp-content/uploads/2017/10/CCC.1-Circ.2-Rev.1.pdf

[2] The Marine Safety Investigation report can be located at the following link: http://www.bahamasmaritime.com/wp-content/uploads/2015/08/Bulk-Jupiter-Final-Report-August-2015.pdf

[3] This safety Alert is provided by the Bahamas Maritime Authority with the aim of highlighting incidents, lessons learnt and to increase awareness, which may help avoid similar incidents occurring elsewhere. Any queries on the content of the information provided should be referred to the party providing the information

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characterised as a Group C cargo defined as liable to neither liquefy (Group A), nor to possess chemical hazards (Group B).

2.2. The Global Bauxite Working Group (GBWG)[4] was established in light of recent events involving the transportation of Bauxite. The results of the group's work determined that some Bauxites exhibit instabilities due to moisture where the cargo dynamically separates to form a perched free slurry surface with an underlying lower water content, unsaturated and competent solid cargo. The research conducted by the GBWG identified that Bauxite Fines, as determined by Particle Size Distribution factors and other characteristics together with a new IMSBC Test Procedure (Annex 1 of CCC.1/Circ.2/Rev.1), can exhibit Group A characteristics.

2.3. For the cargo to undergo dynamic separation, it must have considerable amount of fine particles, high moisture content and experience sufficient forces due to vessel motions. If all of these factors are present, the cargo that was initially a pile will compact, pore water pressures will increase, (but not to liquefaction levels) causing moisture to be expelled to the cargo surface. As the water migrates to the surface, the pile can slump and flatten to form a free slurry at its surface.

2.4. The effect of dynamic separation on cargo stability and on vessel behaviour has been determined through evidence gathered from marine casualties and empirical evidence. When cargo instability due to moisture results from dynamic separation two distinct phases of vessel behaviour (leading to capsize) will be experienced:

i. Phase 1: Development of a list or steady heel due to free surface effects.
ii. Phase 2: Catastrophic capsizing due to cargo shift

Between phase 1 and phase 2 evidence suggests that an atypical motion (wobbling) may be experienced caused by the movement of a free surface slurry over the top of the cargo which is out of phase with the roll period of the ship. If left unchecked this movement of cargo has the potential to further reduce stability and potentially result in capsize.

3. Reference Material

3.1 CCC.4/INF.10 Global Bauxite Working Group Report on Research into The Behaviour of Bauxite During Shipping can be found at the following link:

http://www.bahamasmaritime.com/wp-content/uploads/2017/10/CCC-4-INF.10.pdf

[4] GBWG formed of industry experts to conduct detailed investigation into the characteristics and behaviour of Bauxite during ocean transportation.

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4. Validity

4.1 This alert is valid until further notice.

5. Revision History

Rev.0 (03 Oct 2017) – First issue

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