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Carriage of Bauxite – Liquefaction Risks

The potential liquefaction of bauxite cargoes has been the subject of a number industry bulletins in recent years. These concerns have been renewed following the recent sinking of the bulk carrier Bulk Jupiter reportedly carrying 46,400 MT of bauxite loaded at Kuantan in Malaysia.

Similar to other unprocessed ores, such as iron ore fines and nickel ore, grades of bauxite that contain a high proportion of fines capable of retaining significant moisture are potentially at risk of liquefaction, resulting in cargo shift which may cause the capsizing of the carrying ship. Such cargoes are classed as Group A cargoes under the International Maritime Solid Bulk Cargoes (IMSBC) Code and should only be loaded if their moisture content is less than their transportable moisture limit (TML). Bauxite with high levels of fines appears to be particularly common in Indonesia and Malaysia, but has also been reported from other origins, including Guyana and Brazil.

As the IMSBC Code does not explicitly identify bauxite as a potential Group A cargo, shippers may wrongly declare Group A bauxite as Group C, and may not provide the required TML and moisture certification. Members should be alert to potentially misdeclared bauxite cargoes.

Depending on its particle size distribution, bulk bauxite may be either a Group A cargo or a Group C cargo. However, the only cargo listed in the IMSBC Code is Group C bauxite. This existing schedule is potentially misleading, as compliance with the size criteria given in the Code is not sufficient to demonstrate that a particular grade of bauxite is a Group C cargo. In the absence of a Group A bauxite schedule in the IMSBC Code, it should not be assumed that all bauxite cargoes are Group C.

In view of the potential risks of carrying mis-declared Group A bauxite, the Club makes the following recommendations to Members considering carrying bauxite:

1. Group C bauxite consists predominantly of large lumps and will not have the appearance of slurry or mud even when wet. Because of the coarse particle size, these cargoes can only retain limited quantities of water. Any cargoes that possess flow properties when wet, e.g. a mud-like or slurry-like appearance, or that contain a high proportion of fine particles, should be considered as Group A. These cargoes may or may not be visibly wet at the time of loading, but in any case require representative sampling prior to loading to determine the TML and the moisture content.

- 2. Any wet or damp cargoes that appear on visual inspection to contain a significant proportion of fine particles should be tested for flow properties prior to loading, even if shippers have declared them as Group C.
- 3. The Master, Officers and Crew should conduct frequent and regular cantesting in accordance with the method set out in Section 8 of the IMSBC Code. Development of a flat surface with signs of free moisture (glistening or shiny surface) is indicative of a flow state and thus a "fail".
- 4. In the event of failed can tests or the presence of splatter marks on the bulkheads and/or pools of free water, the Club's advice would be to suspend loading until the cargo has been properly tested for flow characteristics in a laboratory.
- 5. Because of the presence of very large lumps in some cargoes of bauxite, flow testing using the methods listed in the IMSBC Code is potentially difficult. The penetration test method for determining the TML of mineral cargoes is suitable for materials containing particles up to 25mm, and is therefore more likely to be applicable than the more common flow table method.



- 6. In cases where laboratory flow testing cannot be carried out, or is inconclusive, and pending the approval by IMO of suitable size criteria specifically for bauxite, the criteria recently introduced by IMO for iron ore fines may be a useful guide to assess which bauxite cargoes are likely to be Group A and which are likely to be Group C. Under the forthcoming iron ore fines schedule (see IMO circular DSC.1/Circ.71 of 15 November 2013), Group A cargoes contain more than 50% particles below 10mm and more than 10% particles below 1mm in size. While these size proportions have IMO approval at present only for iron ore fines, they may be useful in resolving potential loadport disputes concerning the correct categorisation of bauxite cargoes.
- 7. Group A bauxite cargoes should only be loaded with prior authorisation from the applicable Competent Authority, and in compliance with the detailed IMSBC Code regulations for the sampling, testing and declaration of Group A cargoes.

By Dr Martin Jonas, Brookes Bell LLP, Liverpool, UK



Voyage Data Recorder issues

The Club has recently dealt with two claims which had one feature in common. On both occasions, when the voyage data recorder (VDR) data had been retrieved and analysed, it quickly became apparent that certain required sensors were not feeding data to the VDR unit at the material time.



This has led to delays in the analysis of the incidents and may also deny the Owners and Club salient claims handling information. Masters and operators should already be aware of the requirements for annual testing of VDR equipment prescribed under SOLAS Chapter 5 Regulation 18 which naturally assists in the avoidance of this problem:

"The voyage data recorder (VDR) system, including all sensors, shall be subjected to an annual performance test. The test shall be conducted by an approved testing or servicing facility to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location. A copy of the certificate of compliance issued by the testing facility, stating the date of compliance and the applicable performance standards, shall be retained on board the ship."

Furthermore, an analysis of a small selection of VDR operator's manuals by the Club has shown that in general, VDR units have a means of ascertaining that required sensors are providing data to the VDR unit. It seems the provision of LED lights in combination is a popular method of communicating such information to the operator, along with the provision of individual error codes.

We recommend that ships officers who are responsible for such equipment make sure that they are fully conversant with the error codes/indications prescribed in the appropriate VDR operator's manual. We also suggest that consideration is given to the routine assessment of such indicators and/or test sequences as deemed appropriate.

IMSBC CODE 2013 Edition

Members are reminded that the 2013 Edition of International Maritime Solid Bulk Cargoes (IMSBC) Code became mandatory from January 1st 2015.

The Club's ship inspection department can report that the majority of entered bulk carriers visited during the 2013/14 P&I year were voluntarily applying the 2013 Edition of the Code.



SAFETY POSTER RANGE EXTENDED



The Club is delighted to announce that it has recently extended its successful safety poster range to include Master/Pilot Information Exchange, Position Fixing Methods and Bulk Carrier Hold Safety as themes in response to trends in recent claims and inspection experience.

The posters are available in English, Simplified Chinese and Vietnamese and will be made available to all Members free of charge as usual.

Members should detail their requirements to **publications@londonpandi.com**

SOLAS: ENCLOSED SPACE ENTRY DRILLS

The Maritime Safety Committee (MSC) of the International Maritime Organisation (IMO) adopted amendments to SOLAS Regulation III/19 which added a new requirement for mandatory enclosed space entry and rescue drills in 2013.

From 1 January 2015 all persons involved in enclosed space entries, and/or assigned enclosed space rescue duties, are required to take part in enclosed space entry and rescue drills at intervals not exceeding two months. IMO Resolution MSC.350(92) prescribes both the frequency and content of such drills.

This new requirement coincides with a recent reminder of the dangers associated with bulk carrier hold atmospheres from our claims experience. An anchored ship was loaded with a cargo of coal and was due to discharge at the same port. The deck crew were asked to obtain samples from each of the cargo holds. However, a misunderstanding about the reason behind the method of sample collection to be employed occurred. When one of the cargo hatches developed a fault and failed to open fully, the sampling device used from the main deck was discarded. The crewman entered the hold himself with the aim of collecting a sample from the first platform. Unfortunately, he collapsed at the bottom of the ladder. The crewman was seen entering the hold by the other duty watchman on deck, who upon arrival at the scene took the decision to enter the hold immediately to effect a rescue but sadly suffered a similar effect. The standby-man on deck noticed the events further forward, investigated and on arriving at the hatch took the decision to raise the alarm. A full muster and enclosed space rescue was then undertaken. We are sorry to report that two fatalities occurred in this incident as a result of the inhalation of an oxygen-depleted atmosphere.

The incident highlights both the importance of sound decision-making under such circumstances and the proper training and understanding of ships' crews with respect to the potential dangers of bulk carrier hold atmospheres.

The tragic incident on the Viking Islay woke the industry to the dangers of chain locker atmospheres, and it is hoped that the Club's new Bulk Carrier Hold Entry poster will raise the question of whether it is actually safe to enter a cargo hold.

Viking Islay MAIB Report:

http://www.maib.gov.uk/publications/investigation_ reports/2008/errv_viking_islay.cfm Marine Consulting Co., Ltd, QHD



HAPPY MARINE Independent Marine Consultants & Surveyors

Happy Marine Consulting Co., Ltd undertakes P&I ship inspections on both new and existing entries on behalf of the London P&I Club in Northern China. Happy Marine was set up in China in 2009 by Capt. Chen Hai Tao. With his specialist ship inspection knowledge, Happy Marine soon developed relationships with P&I Clubs, H&M underwriters, Flag States and Insurers.

Chen Hai Tao is a senior oceangoing captain with experience of ship survey and inspection, ship management, ship maintenance and repairs, cargo loading and discharge. In the past nine years, Capt. Chen has carried out more than 500 condition surveys for P&I Clubs all over the world as a surveyor and marine consultant. He is also the sole sub-contractor for RightShip inspection in China.

"Our aim is to build up a team of highly talented and experienced senior surveyors. We are here to minimise risk using our professional knowledge in support of our clients." says Capt. Chen. Happy Marine has a team of four senior marine surveyors and eight other staff who are able to carry out marine/cargo surveys on the China mainland and across the South East Asia region. All incoming surveyors at Happy Marine have been personally trained by Capt. Chen to ensure continuity of performance and service.

"Our offices in both Qinhuangdao and Shanghai (which are major ports in North and South China respectively) enable us to dispatch surveyors across the region rapidly, with the aim of providing our services in the shortest time possible", he says. All Happy Marine surveyors have successfully completed manufacturer training courses for the 'Cygnus Hatch Sure' Ultrasonic Test equipment and obtained operator's certificates.

Outside of the P&I world, the Commonwealth of Dominica has approved Happy Marine as an authorised representative and surveyor to monitor and oversee its Flag State inspections. "Over the years, Happy Marine has been fully recognised and approved by industry majors such as the London P&I Club, and accumulated experience through every case that has been entrusted to us," says Capt. Chen.

ACCIDENT INVESTIGATION WORLD ROUND-UP

In this regular column, we round up some of the eye-catching accident investigation reports from around the globe:

Ovit MAIB – United Kingdom

An investigation into the grounding of a Chemical Tanker in the Dover Strait. The investigation identified that unsafe courses were laid off on an ECDIS unit and that this was not detected due to a lack of supervision of an inexperienced officer and that key alarms were disabled in the ECDIS unit.

http://www.maib.gov.uk/publications/investigation_ reports/2014/ovit.cfm

Roseburg BSU – Germany

Loss of timber deck cargo from the ship during preparations to weigh anchor prior to entry into the Kiel Canal. The investigation concludes that the ship probably sailed in an overloaded condition and that having removed ballast water to reduce her draft for the canal passage, the ship no longer met statutory minimum stability criteria. The ship experienced a heeling moment and the resultant 40 degree angle of list resulted in a significant volume of timber deck cargo being lost overboard.

http://www.bsu-bund.de/EN/publications/Investigation%20 Reports/investigation_report_node.html

Scorpius DMAIB – Denmark

The investigation concludes that the chief officer onboard died due to a fall from the top of a tank access ladder as he was checking the tanks visually during tank cleaning. By taking a few steps down the tank access ladder without an entry permit, he did not comply with the safety procedure onboard. This, however, was not likely to have any connection to the outcome of the accident. Due to the design of the ladder, the accident could have happened on any other day even if the enclosed space procedure had been followed.

The Club considers that the conclusion serves as a timely reminder that risks beyond those directly related to enclosed space atmospheres remain a threat during enclosed space entry and should not be overlooked during Task Risk Assessments.

http://www.dmaib.com/Sider/CasualtyReports.aspx

Arslan II – MCIB Republic of Ireland

This is an investigation into the grounding of a General Cargo ship on the charted and marked Arklow Bank en route to Belfast. The report cites inadequate position fixing intervals, reliance on a small-scale chart and improper use of unofficial tide tables as being contributing factors to the grounding.

http://www.mcib.ie/reports/?-fromsearch=y&-skiprecords=0&-maxrecords=1





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