

## Indonesia and the Philippines – Safe Carriage of Nickel Ore Cargoes

As members may be aware in October and November 2010 three vessels the 'Jian Fu Star', 'Nasco Diamond' and 'Hong Wei' sank during the carriage of nickel ore from Indonesia to China with the loss of forty four seafarers. The cause of the sinkings has not yet been definitively determined but nickel ore, like iron ore fines and many concentrates, is a cargo which may liquefy, if the moisture content of the cargo exceeds the Transportable Moisture Limit (TML) when loaded. Liquefaction of such a cargo can result in loss of stability which in turn can lead to a vessel capsizing. It is therefore very possible that all three vessels were lost as a result of cargo liquefaction.

There have been a number of other recent reports of cargoes of nickel ore loaded in both Indonesia and the Philippines liquefying and causing loss of stability to the carrying vessel but fortunately not resulting in the loss of the vessel. In one such case the carrying vessel grounded causing extensive hull damage. Currently nickel ore is only loaded in four locations in the Philippines, Santa Cruz (Luzon), Surigao and Tubay (Mindanao) and Rio Tuba (Palawan Island).

Liquefaction of some ore cargoes can be caused by the normal incidents of a sea voyage, for example the motion of the ship in the seaway or vibrations caused by the running of the main engine or other on-board machinery.

The International Group informally raised its concerns about the loading and carriage of nickel ore from Indonesia and the Philippines, with the Indonesian and Philippine delegations that attended the 88<sup>th</sup> session of the IMO Maritime Safety Committee (MSC) which was held between 24 November – 3 December 2010. Intercargo made an intervention at that session expressing its concerns with respect to the hazards and risks associated with the carriage of cargoes that can liquefy such as nickel ore. In addition Intercargo pointed out that some charterers and masters had been put under extreme pressure to accept shippers' declarations and testing reports without having been permitted the opportunity of independently verifying such declarations and reports. The Marshall Islands supported Intercargo's intervention and the Indian delegation outlined the actions that the

Indian authorities were taking to improve the safe carriage of iron ore fines cargoes loaded in India.

### Specific Concerns Associated with the Loading and Carriage of Nickel Ore

The loading and carriage of nickel ore cargoes from both Indonesia and the Philippines has given rise to the specific concerns set out below.

- (a) Most mines are situated in remote locations and loading/port facilities are therefore non-existent or very limited and loading equipment and methods rudimentary. Cargo is stock-piled, uncovered, on the beach and accordingly totally exposed to the prevailing weather conditions
- (b) The traditional practice has been to ship nickel ore cargoes in the dry season, between February – May/June when rainfall in past years was negligible. However in recent years anecdotal evidence suggests that the distinct demarcation between the wet and dry seasons has been substantially eroded and heavy rainfall is now experienced during the dry season. The stock-piles do not therefore benefit to the same extent from solar-drying as in the past
- (c) The mines are not easily accessible due to their remoteness and it is therefore difficult for independent surveyors/experts acting for the vessel to attend the mines and take samples of the cargo to be loaded
- (d) There are few if any independent laboratories in Indonesia and the Philippines. The mines gen-

erally have their own laboratories but it is often not possible to determine whether the correct testing equipment is available and in a satisfactory condition or whether they are following the procedures laid down under the International Maritime Solid Bulk Cargoes Code (the Code) when testing cargo samples. Such audits as it has been possible to carry out of mines equipment and testing and sampling procedures suggest not. Accordingly the reliability of the information and documentation which the shipper is required to provide under the Code which became mandatory internationally on 1/1/11, most notably the Transportable Moisture Limit (TML) certificate and the Flow Moisture Point (FMP), is questionable

**(e)** The composition and physical properties of nickel ore vary considerably from location to location. Since the cargo is not homogenous it is difficult to accurately determine the TML and moisture content of the cargo as a whole. Frequently shippers will only provide one TML certificate for a cargo that has been drawn from a number of different sources and is not homogenous, which is contrary to the Code

**(f)** Nickel laterite has a high clay content. Because of this, testing the FMP of a sample using the usual flow table method can be subjective and the results questionable. If the flow table method of testing is not suitable, section 1.1.1 of the Code provides that the procedures to be adopted should be those approved by the relevant authority of the Port State.

**(g)** Vessels are invariably loaded whilst at anchor from barges or landing craft which have themselves been loaded from stockpiles situated on the beach. The stock-piled cargo may well have been subject to rainfall after samples have been taken and tested, during transportation from the mine to the beach and while stockpiled on the beach. The Code requires that the interval between testing for the moisture content and loading shall never be more than seven days but in many instances this period is not observed

**(h)** There have been a number of reports of surveyors appointed on behalf of vessel interests to take cargo samples and conduct independent testing, being subject to extreme pressure by shippers to accept the results of the tests carried out by the mines. In certain instances the 'pressure' has been nothing short of physical intimidation.

### International Maritime Solid Bulk Cargoes Code (IMSBC Code)

The Code is issued under SOLAS 1974 and its Protocols. It sets out the internationally agreed provisions for the safe stowage and shipment of solid bulk cargoes, including cargoes that may liquefy, such as nickel ore. Cargoes not specifically listed are covered by Section 1.3 of the Code. It became mandatory internationally on 1 January 2011.

Regulation VI/2, SOLAS 1974 requires the shipper to provide the master or his representative with all relevant information relating to the cargo sufficiently in advance of loading to enable precautions which may be necessary for the proper stowage and safe carriage of the cargo to be put into effect.

Section 4 of the IMSBC Code sets out the obligations and responsibilities imposed on the shipper for providing information about the cargo.

Most importantly for cargoes that may liquefy (Group A cargoes), certificates should be provided evidencing the moisture content of the cargo at the time of shipment and the transportable moisture limit (TML). The TML is defined in the Code as 90% of the Flow Moisture Point (FMP). The FMP can only be determined by laboratory analysis of cargo samples. Any cargo with a moisture content in excess of the TML should not be accepted for loading (unless on specially constructed or fitted ships). Nickel Ore does not have its own schedule in the Code but should be regarded as being a Group A cargo.

#### (A) Master's Obligations

The master or his representative should monitor the loading operation from start to finish. Load-

ing should not be commenced until the master or the ship's representative is in possession of all requisite cargo information in writing as described above.

The master has an overriding authority under SOLAS not to load the cargo or to stop the loading of the cargo if he has any concerns that the condition of the cargo might affect the safety of the ship.

## **(B) Shipper's Obligations**

### **(1) Cargo Information**

The shipper must provide the master or his representative in writing with all information and documentation required under the Code in sufficient time before loading, to ensure that the cargo can be safely loaded onto, carried and discharged from the ship (section 4.2.1).

### **(2) Documentation**

The documentation must include:

**(a)** a certificate/declaration certifying the moisture content of the cargo to be loaded together with a statement that to the best of the shipper's knowledge the moisture content is the average moisture content of the cargo. Where a cargo is to be loaded into more than one cargo space, the certificate or declaration of moisture content shall certify each type of material loaded into each space, unless, following proper sampling and testing it is apparent that the different types are uniform throughout the whole consignment.

**(b)** a certificate certifying the TML of the cargo together with the FMP test result prepared by a competent laboratory.

The Code requires that the interval between testing for the Flow Moisture Point (FMP) and loading be no more than 6 months for regular materials unless the production process is changed in any way and the interval between testing for the moisture content and loading shall never be more than 7 days. However with irregular materials such as nickel ore every ship-

ment should be checked. Masters should be wary of moisture content certificates provided by the shipper's laboratory and moisture content percentages that are very close to the TML. If there is significant rain between the time of testing and the time of loading the shipper must conduct test checks (section 4.5.2) to ensure that the moisture content of the cargo is still less than its TML.

### **(3) Laboratories**

The shipper must identify the laboratory used to conduct the tests on the cargo samples. However as stated above little reliance can be placed on the results of testing conducted by mine laboratories and samples should be the subject of independent testing by surveyors and experts appointed on behalf of the vessel.

### **(4) Stockpiles**

The shipper must identify the stock piles from which the cargo is to be loaded and confirm in writing that the samples tested and in respect of which certificates have been issued/declarations made originated from those stock piles.

### **(5) Barges**

Where barges are used to transport cargo to the ship they must be capable of being individually identified by the master/ship/appointed surveyor.

## **Recommended precautions**

1. Loading should not be commenced until the master is in possession of all requisite cargo information and documentation/certificates that a shipper is obliged to provide under the Code or local regulations (where not in conflict with the Code) and is satisfied that the cargo is safe to load and carry

2. Considering the recent casualties mentioned above, members are encouraged to consider reviewing with the Managers steps that might be considered to reduce the risk presented by this cargo before loading and in any case, if the

master is in any doubt as regards the suitability of the cargo for loading, very serious consideration should be given to the appointment of a surveyor on behalf of the ship in advance of loading to assist the master. However, it should be made clear to the competent authority (which, in the Philippines, is likely to be the Bureau of Mines), shippers and charterers that the appointment of a surveyor by the ship is not intended to and does not relieve the shipper of his obligations under the Code or local regulations (when not in conflict with the Code).

**The terms of the surveyor's appointment should include the following:**

**(a)** To assist the master with compliance with his obligations under the Code and local regulations (when not in conflict with the Code)

**(b)** To contact and liaise with shippers to identify the stockpiles from which the cargoes are to be shipped on the subject vessel and to ensure that representative samples are correctly taken in accordance with sections 4.4 and 4.6 of the Code

**(c)** To take owners' own representative samples for testing in an independent competent laboratory which is likely to be located outside the country

**(d)** To liaise with an independent expert to ensure that the laboratory conducts its tests in accordance with Appendix 2 of the Code.

**(e)** To compare the shipper's certificates with owners' own test results for TML and moisture content. Masters should be wary of moisture content certificates provided by the mines laboratories and moisture content percentages that are very close to the TML. If there is significant rain between the time of testing and the time of loading the shipper must conduct test checks

**(f)** To monitor the loading operation from start to finish, paying particular attention to the weather conditions and the presence of any moist cargo in the barges/landing craft

**(g)** To stop loading if further moisture and/or can tests are conducted, as necessary, on any parts of the cargo presented for shipment (sections 4.5.2 and 8.4 of the Code)

**(h)** To monitor the stockpiles and/or barges to ensure that the cargo presented for shipment is from the designated and tested stockpiles and/or barges. This will involve keeping a careful tally and identification of barges/landing craft offered for loading

**(i)** To ensure loading is suspended during periods of rain

**(j)** To carefully examine cargo offered for loading from barges/landing craft and if in any doubt of the moisture content, conduct 'can' tests particularly when rain has been experienced. The 'can' test is described in section 8 of the IMSBC Code as a spot check a Master can conduct if he is suspicious of the condition of the cargo, and is not meant to replace or supersede laboratory testing which is the responsibility of the Shippers.

Section 8 states that if the sample shows signs of liquefaction – i.e. flat surface with evidence of free moisture, arrangements should be made to have additional laboratory tests conducted on the material before it is accepted for loading. Nevertheless cargo should never be accepted on the basis of the 'can' test alone as it is difficult to accurately interpret the behaviour of the sample in the can and accordingly its moisture content. The test may indicate if cargo is unfit for shipment but cannot determine if a cargo is fit to be loaded– this can only be determined by laboratory testing.

**3.** If the master or his appointed surveyor is presented with any document seeking their confirmation that the cargo is safe to carry they should refuse to sign it. The obligation under the Code is on the shipper to declare that the cargo is safe to carry and signing such a document could prejudice a Member's rights of recourse against a shipper in the event of a subsequent casualty.

4. Report any instance of commercial pressure exerted on or intimidation of the master, surveyor or experts to the Association so that this may be taken up by the Group with the Indonesian / Philippine authorities.

5. Members should consider how they might protect themselves contractually before agreeing to carry nickel ore cargoes e.g. including an appropriate clause in any charterparty. Equally Members should not be pressurised into entering into charterparties which restrict their right to fully apply the provisions of the Code, appoint independent surveyors of their choice or take and test cargo samples.

6. Members should refer to the Club any contractual and/or safe carriage concerns it may have

relating to nickel ore cargoes loaded in Indonesia or the Philippines.

### **Consequences of a Member's failure to comply with the Code**

The risks of loss of life, damage to the environment and loss of property are only too apparent, but if a Member fails to comply with the Code or local regulations when not in conflict with the Code, they should also be aware that they might be prejudicing Club cover. All of the Group Clubs have similar Rules which in essence exclude cover for liabilities, costs and expenses arising from unsafe or unduly hazardous trades or voyages.

All clubs in the International Group have issued a similar circular

Yours sincerely,  
The Swedish Club



Lars Rhodin