



The following is the full report of the Technical Seminar which took place at the Club-room on the evening of Wednesday, 17th April 2002.

THE SOUTHAMPTON MASTER MARINERS' CLUB TECHNICAL SEMINAR.

"The Sea, the Ship and The Shipowner - The bulk carrier dilemma"

The seminar delivered a depressing picture of a trade where almost farcical freight rates are dictated by the ready availability of a significant number of sub-standard bulk carriers.

Vessels whose non-compliant owners and operators enjoy a significant economic advantage over those who comply - forcing these owners, in turn, to reduce their maintenance, manning and operating costs thus replicating the problem. Terminal operators who, in the interests of economic greed, mortally damage ships by their refusal to accept safe loading procedures and who load at the fastest possible rate in total disregard of the ship's ability to deballast and with scant concern about the shear forces and bending moments incurred. Shipbuilders turning out light scantling, shoddily built ships built down to the cheapest possible price and all, seemingly, meeting with the approval of (some) Classification Societies and those who commissioned their construction - probably for resale as soon as building prices increase. Ships operating with inexperienced and incompetent crews - too few in number to carry out any meaningful maintenance and afforded little, if any, support by their employers who exert relentless "commercial pressure" in total disregard of safe operational practice. An industry where life is cheap and where the costs of fully investigating the true causes of a sinking preclude - in many instances - a meaningful enquiry and allocation of responsibility.

Some 52 representatives of a wide range of shipping interests - including The Royal Institute of Navigation, "Fairplay" magazine and the BBC - were given a "no punches pulled" presentation by the panel of three and this was followed by a "question and answer" session from the floor.

The assembly was welcomed by Captain Ian Stirling, Captain of The Southampton Master Mariners' Club and the Chairman for the evening was Captain Reg Kelso, Co-ordinator of the club's Technical Committee.

The panel comprised:

Mr Simon Milne, Principal Surveyor, The Maritime and Coastguard Agency

Captain Dennis Barber, an independent consultant to the MCA and lately Chief Marine Superintendent for P&O Bulk Shipping.

Mr John Noble, Chief Executive of The Salvage Association.

SIMON MILNE gave a brief outline of his professional background and then commenced a "Powerpoint" display embodying much of the information (and photographs) gleaned during the exhaustive investigations and enquiries into the loss of "Derbyshire".

The majority of bulk carrier losses can be attributed to structural failure. Their mode of construction embodying rigid topside wing tanks and rigid hopper tanks with relatively "flimsy" framing and plating between inadequately affords overall hull strength. Corrosion of these frames starting at bracket toes due to corrosive cargoes such as coal leads to frame detachment and in extreme cases to failure of these relatively flimsy side shell structures. Although a bulk carrier with B-60 freeboard is meant to be able to cope with one hold flooding, in practice the sloshing loads and combined weight of flood water and cargo lead to bulkhead failures, double bottom failures and the loss of the ship. Less frequent but just as critical are failures of hatch covers due to severe waves causing either vertical structural collapse or simply pushing the hatch cover sideways off the coaming. These failures all contribute to the unacceptably high number of bulk carrier losses.

Damage incurred during loading and unloading also contributes. Commercial pressures exerted by the port operator and the charterer (and lack of support for the Master by the Owners) meant that ships were exposed to excessive shear forces and bending moments during loading operations. Few vessels can deballast and load simultaneously in accordance with the approved operational plan and the damage done is virtually invisible at first but leads to a rapid fatigue of the ships structures and hull failure when the ship meets heavy weather at sea. The sub-standard operator enjoys a significant economic advantage over the more compliant one and this tends to produce an irrational market with decreasing standards of ship maintenance, manning and competence. Vessels can be registered in a wide variety of countries - many of them without any seafaring tradition or culture - and many of these pay scant attention to internationally recognised standards. Significant savings can be made by reducing manning to a level whereby any worthwhile on-board maintenance is precluded and even more can be saved by employing low cost, inexperienced and barely competent crew members.

Classification Societies are commercial organisations with close links to the owners and operators and if a Society endeavours to impose its standards too rigidly the business is lost; class-hopping is commonplace. Over the past ten years some 116 have been lost (44 in the last two years alone) and investigation reveals that failure of side shell plating and/or hatch covers were the major cause of loss. The new IACS hatch cover standard URS21 enhances the strength of hatch covers by some 75% on new bulk carriers but the latest research jointly supervised by Lloyd's Register and the MCA at MARIN in the Netherlands indicates even greater strength is required in cape size bulk carriers. There is still much work to be done on other aspects of construction. Air pipes are a weakness and the MARIN researchers found that flow rates of some 300 tons of water per hour can enter a ship through a 300mm air pipe. The Loadline Regulations require urgent revision (and not just in respect of bulk carriers).

Returning to the problems created by sub-standard operators and low freight rates Simon said that the substandard ship maintained a deflated freight market where the good operator "enjoyed" a return of about US\$7000 a day - with daily operating costs of US\$7500. A substandard operator, according to a recent OECD report, could operate for US\$3500 a day - a major cash incentive to cut standards.. This cut-throat competition also intrudes on shipyard practice where vessels are constructed "down" to the cheapest possible cost (with no built-in degradation factor or concern for through-life cost) and under constant pressure to modify ship design to afford a cheaper product regardless of the safety ramifications. Only when the bulk carrier market and the Industry at large demands safer ships will we see a reduction in the appalling losses of men and ships.

DENNIS BARBER, an ex bulk carrier Master, lately Chief Marine Superintendent for P&O Bulkships and currently an independent consultant to the MCA recalled the difficulty of a shipmaster identifying the

problems on the foredeck in heavy weather from his lofty viewpoint on the bridge. He screened a photograph of a bulk carrier shipping a quarterly sea - a vivid depiction of the amount of water that can be taken aboard by a single wave. Other pictures demonstrated the ravages on a hull of undetected corrosion. Pictures of detached frames (and of others damaged by hydraulic hammers during discharge of cargo) left nothing to the imagination.

The protection (and additional reserve buoyancy) afforded by a forecastle head are essential elements in ship safety and he welcomed the introduction of the "double hull" (at a cost of some &700,000 for a Capesize bulk carrier) which would undoubtedly provide increased safety - and faster and safer discharge of cargo. These ships were proving to be more popular with charterers. The damage done to the current single hull bulker by the use of bulldozers and pneumatic hammers to displace cargo lodged between frames etc. was deleterious to safety. Closing with a graphic illustration of a "drive through" bulk carrier lacking shell plating to port and starboard within a forward cargo space Dennis also reinforced many of the points raised by the previous speaker and commented that he would be happy to field any questions when the time arose.

Quite undeterred by the lack of a "promised" slide projector and after an extremely modest outline of his career to date, **JOHN NOBLE** explained that The Salvage Association is not involved with "total loss" casualties. There was little "interaction" between the industry and the underwriters although there were indications that as the costs of meeting loss of life and other claims steadily escalated the underwriters were starting to sit up and take notice. In his earlier career as Managing Director of Murray Fenton Associates he had been involved with some 60 major casualties and he related the instance of a large bulk carrier entering a sheltered refuge 2 degrees "down by the head" and with the Master totally unaware that she was on the verge of sinking - which she did. Once buoyancy is lost - sinking is inevitable and fast; in one instance a vessel deliberately scuttled sank within 25 seconds.

John told of yet another "drive through" bulk carrier where the loss of shell plating was very obviously the result of "maintenance not being a priority" and of a well managed iron ore carrier where the relatively rapid onset of wastage of high tensile steel was not appreciated by her operators, resulting in a 50 metre shell side failure and consequent loss. In another instance ignorance of the ravages of electrolytic action gave rise to frame detachment, the loss of shell plating and an early demise.

Ore Terminal loading operators whose maxim was "If you cannot meet our loading rates we will throw you off the berth (with resulting "Off Hire") and berth someone who can" contributed massively to the damage - apparent and hidden -, which could result in a c.t.l. and there were few owners and operators who would withdraw ships from "gainful" employment for a period sufficient to allow for a thorough investigation examination and assessment of condition. John echoed the tone of the meeting when he finished by asking " Who is really interested in finding out what really happened when a ship sinks in deep water, far from shore and probably manned by nationals from an underdeveloped country and who will pay for the costs of such an investigation "?

After a break to replenish glasses a lively "question and answer" session was chaired by Captain Reg Kelso, and the questions were posed by a wide variety of those in attendance representing the broad spectrum of shipping interests locally and from further afield including representatives from the media. The first noted that during his lifetime as a seafarer the crew of a bulk carrier had been cut from 65 to 17 with the predictable impact on maintenance and upkeep. The effectiveness of Port State Control was, at best, questionable and he felt that there was a need for a confidential reporting system to allow crewmembers to express their fears. The chairman said that the Nautical Institute, for one, had instituted such a system but possibly it was not widely recognised.

Another asked if bad welding of pre-fabricated ship sections was a contributory factor and Simon Milne said that virtually all ships were pre-fabricated today and that supervision of welding standards was important. An ex Master of an RCT landing craft extolled the virtues of having the bridge forward and a

ferry Master was of the opinion that bad initial design and metal fatigue were significant factors in casualties and an ex MCA Surveyor spoke of the stability problems associated with the "fluidity" of some bulk cargoes but Simon Milne opined that bulk carriers generally had far too much stability and he thought that cargo "behaviour" would have scant effect.

A questioner was adamant that weather alone was seldom, if ever, a factor in bulk carrier losses and it was seemed to be agreed that a well found and competently operated ship should never be overwhelmed by stress of weather. Accident investigation by the flag state was essential to identify the underlying cause of the loss and prevent unscrupulous owners hiding behind "press of weather" as an excuse. He wondered if bulk carriers would be safer if they did not have double bottoms. An ex Principal Surveyor (BoT) wondered about the impact of abnormally large waves and the consequences of "jump" loading at many ore terminals. John Noble was in little doubt that the blame for this lay fairly and squarely with the operators of the terminals and the chairman noted that the MCA had recently issued a MGN reminding owners and Masters that agreement of a safe loading plan between the ship and the loading terminal was now mandatory - as was adherence to the plan. It was reiterated that a well-found ship in competent hands should have little to fear from weather conditions - machinery failure being the obvious exception.

A bulk carrier Master spoke of the stress problems caused by the enormous rolling and pitching motion of many bulk carriers - frequently in resonance with the sea conditions and he was sure that bad design was to blame for the failure of the hopper side and associated brackets. Ashore it was the practice to construct bins for the mining industry with uniform strength throughout - at least to half height. The design of "joggled" bulkheads should be further investigated as it is not improbable that they could transmit stress to more rigid structures.

The chairman said that he had been asked (by someone who was unavoidably absent) to raise the issue of "strapping" bulk carriers - a practice widely used years ago on ageing T2 tankers and "Liberty ships" to afford longitudinal strength and arrest cracking. Simon Milne said that whilst "strapping" was not the most "elegant" solution it certainly was adopted in practice one and he thought that there had been instances relatively recently where this had been adopted. The Club Captain said that the RCNC had reverted to strapping in at least one destroyer type and this provoked a discussion as to whether the strapping was to arrest cracking or afford longitudinal strength; it was agreed that it achieved both and Simon undertook to give the chairman some further details of recent practice.

A Warsash representative said that the industry never seemed to learn anything from disaster after disaster and an ex Principal Surveyor (SA) said that he had never experienced a case of a collapsed hatch cover and he reminded us that the forward flooding of "Derbyshire" was, almost certainly, due to the destruction of the vents on the forecastle head and the subsequent steady and massive intake of water. Why have these vents been fitted in such an exposed area? Simon Milne said that the positioning of these had been investigated but the solution of that problem would create another problem - research was ongoing. An ex MCA Surveyor wondered if the scrutiny of logbooks contributed much to the enquiry into a casualty but it was recognised that logbook entries were often made after the incident.

The Chairman drew the session to a close by inviting Mr Walter Weyndling, a Naval Architect and a seminar organiser to "sum up" and to thank the speakers. Walter noted how little blame had been attributed to human failure and how much of the criticism had been levelled at naval architects for their design failures. As an ex Accident Investigator on behalf of the DoT he envied the modern day investigator the means of casualty recovery at his disposal.

Walter proposed a vote of warm thanks to our three speakers for giving of their time, knowledge and experience to afford us an interesting and thought-provoking evening and this was received with applause from all of those present.

CRK 14.05.02