Ever Lucky Shipping Co Ltd v Sunlight Mercantile Pte Ltd and Another [2003] SGHC 80

Case Number : Suit 1266/2001

Decision Date : 15 April 2003

Tribunal/Court : High Court

Coram : Judith Prakash J

Counsel Name(s) : Jude P Benny with Magdalene Chew and Tan Hui Tsing (Joseph Tan Jude Benny) for the Plaintiffs; Richard Kuek with R Govintharasah (Gurbani & Co) for the Defendants

Parties : Ever Lucky Shipping Co Ltd — Sunlight Mercantile Pte Ltd; Liberty Citystate Insurance Pte Ltd

Admiralty and Shipping – General average – York antwerp rules – Right to general average contribution – Whether shipowners entitled to general average contribution of cargo interests (adjusted in accordance with York Antwerp Rules 1974) – Whether there was actionable fault on the part of shipowners – Rule D of the York Antwerp Rules 1974.

Admiralty and Shipping – Carriage of goods by sea – Seaworthiness – In relation to cargo loaded under deck, whether shipowners failed before and at the beginning of the voyage to exercise due diligence to make vessel seaworthy – Articles 3 and 4 of the Hague Rules.

Admiralty and Shipping – Carriage of goods by sea – Seaworthiness – In relation to deck cargo, whether shipowners were in breach of implied undertaking to make vessel seaworthy before and at the beginning of the voyage.

Admiralty and Shipping – Carriage of goods by sea – Seaworthiness – Whether there was latent defect in vessel that could not have been detected by exercise of due diligence – Article 4 of the Hague Rules.

Admiralty and Shipping – Limitation of liabilities – Hague Rules- Deck cargo not covered by the Hague Rules but subject to separate contract between parties – Whether exemption clauses in bills of lading would enable shipowners to pursue claim for contribution in respect of deck cargo.

Introduction

1 On December 24, 1999, the main engine of the vessel 'Pep Nautic' broke down while the vessel was sailing off the coast of southwest Africa on a voyage to the port of Tuticorin, India. The vessel was then laden with a cargo of logs. The owners of the vessel, the plaintiffs in this action, Ever Lucky Shipping Company Limited ('the shipowners'), subsequently arranged for the vessel to be towed first to Luanda, then to Cape Town, and finally to Tuticorin, where the cargo was discharged and delivered.

2 This action has been brought by the shipowners to recover from the first defendants, as the owners of the cargo, and the second defendants who, as the insurers of the cargo gave a guarantee in respect of such liability, the general average contribution of the cargo interests (adjusted in accordance with the York Antwerp Rules 1974) to the costs and expenses incurred by the shipowners resulting from the breakdown. The claim is resisted on the ground that the general average sacrifice was occasioned by the actionable fault of the shipowners and therefore the cargo interests cannot be forced to contribute to the expenses incurred.

Background

3 The vessel was built as a bulk log carrier in Spain in 1977. It was a small vessel with a gross

registered tonnage of 8,980 tonnes. The main engine was a Stork Werkspoor TM410L 12 cylinder engine. It had a brake horsepower of 8,500 and was capable of working at a maximum load of 570 rpm. On completion of construction, the vessel was classed with Lloyds Register of Shipping ('Lloyds').

4 The vessel changed ownership several times over the years. In January 1994, it was acquired by its third owner, Greta Shipping Co Ltd, and renamed 'Alexandros P'. The vessel was then sailing under the Cypriot flag and was still classed with Lloyds. No change of classification society or flag took place on the change of ownership.

5 By April 1999, the vessel was due to undergo the five-yearly special classification surveys for both hull and machinery mandated by Lloyds for maintenance of its classification status. These, however, were not done at that time and Lloyds granted Greta Shipping permission to postpone the surveys to July 1999. In May 1999, the vessel arrived at Piraeus and was put up for sale.

6 At about that time, Crossworld Shipping Ltd ('Crossworld'), a company that is incorporated in the United Emirates and operates several vessels on behalf of Alpha Emirates, a Dubai company, was looking for a bulk log carrier for Alpha Emirates. They were informed about the availability of the vessel and sent a surveyor to inspect it. The surveyor reported that the vessel was in a good and satisfactory condition and much better than could have been expected for a vessel of its age (22 years) and type. Unfortunately, before Crossworld's negotiations could bear fruit, the vessel was sold to another company, SMC Ltd, incorporated in Liberia but owned by Syrian parties.

7 SMC Ltd took delivery of the vessel around the end of May 1999. They re-flagged it under the Cambodian flag and changed its name to 'Haj Ibrahim'. A Syrian crew was put on board. The vessel was taken out of Lloyds and classed with the International Naval Surveys Bureau ('INSB'), which at the time was not an internationally recognised classification society. INSB became a member of the International Association of Technical Survey and Classification Institutions in May 2001.

8 On 20 September 1999, the INSB issued an attestation confirming that:

(a) commencement of special hull/machinery surveys for the vessel had been carried out from 4 to 12 June 1999 at Istanbul, Turkey, and

(b) on satisfactory completion of these surveys the vessel would be supplied with full term class certificates with five years validity.

9 Under the ownership of SMC, the vessel undertook two voyages. The first was to Novorossisk in the Black Sea back to Damietta, Egypt, and the second was from Turkey to Lagos, West Africa.

10 In the meantime, Alpha Emirates had maintained their interest in purchasing the vessel and Crossworld continued to watch its movements. Crossworld then negotiated with SMC for the purchase of the vessel. A second survey of the vessel was arranged with SMC and was conducted on 27 June 1999 at Damietta, Egypt. Two representatives from Crossworld, one of whom was their managing director, Mr R Srinivasan, boarded the vessel for inspection. Mr Srinivasan was satisfied from his inspection of the vessel and his interviews with selected crewmen that it was a well-maintained vessel and in good condition.

11 SMC eventually agreed to sell the vessel. The shipowners were incorporated in St Vincent

and the Grenadines for the purpose of becoming the registered owner of the vessel. SMC wanted to effect delivery in West Africa as they had already fixed a voyage for the vessel from the Ukraine to Lagos. In anticipation of such delivery, the shipowners entered into a contract to carry West African round logs from three ports in West Africa to Tuticorin in India.

12 The vessel arrived in Port Owendo, Gabon on 23 September 1999. It was physically delivered to the shipowners the next day. The shipowners changed the vessel's name to 'Pep Nautic' and its flag to that of St. Vincent and the Grenadines. They decided, however, to maintain its class with INSB and Mr Srinivasan therefore asked INSB to survey the vessel at Gabon. INSB sent one Mr I.A. Hashmi to conduct the survey and he stayed on board the vessel from 24 September to 29 September for this purpose.

13 The shipowners had employed one Mr P.K. Chandran as chief engineer of the vessel. Mr Chandran went on board the vessel on 24 September together with Mr Hashmi and Mr Srinivasan and the rest of the new crew. Mr Chandran took over from the outgoing chief engineer who reported to him in broken English that everything was fine with the vessel and that his crew had not encountered any problems with the vessel. Mr Chandran found the overall condition of the engine room to be satisfactory. As the outgoing crewmen were all Syrian nationals who could not converse in English, there was a communication barrier between the two crews and, as a result, no inventory list was provided by the outgoing crew.

14 On taking over the vessel, Mr Chandran ensured that there would be sufficient spares on board for its requirements. He also changed the lube oil of the main engine and generators. On the advice of Mr Hashmi, the chief engineer and crew carried out the following maintenance work on the engine equipment:

(1) the main engine units nos. 3 and 5 were overhauled;

(2) the oily bilge water separator was examined and tested;

(3) the main and emergency steering gear were examined and tested; and

(4) the generators were examined in idling mode and on load as well.

Apart from supervising the overhaul of the main engine units 3 and 5 by the crew, Mr Hashmi also checked the crankcases, pistons, connecting rods, bottom end bearing bolts, crankpins and push rods of these two units and found them to be in satisfactory condition. Engine trials were conducted after the overhaul and whilst the vessel was at anchorage.

15 Mr Hashmi concluded that the vessel was seaworthy. Accordingly, on 28 September 1999, INSB issued their class certificate and all other statutory certificates for the vessel without any recommendations.

16 The vessel commenced loading of cargo at Port Owendo on 28 September 1999. Three of the derricks then broke down and the port authorities instructed the vessel to leave the port, repair the derricks and then return to load the rest of the cargo. The vessel arrived at Port Gentil on 19 October. Loading at Port Gentil was completed without delay. Thereafter, the vessel sailed to Bata, Equatorial Guinea, arrived there on 23 October and loaded cargo. The vessel arrived back at Port Owendo on 31 October. Due to congestion, however, it berthed only on 22 November. Loading was completed on 26 November.

17 In total, at the three ports, the vessel took on board 2212 logs, measuring slightly over 10,000 cubic metres, for carriage to Tuticorin. Twenty-one bills of lading were subsequently issued by the shipowners acknowledging receipt of the cargo. The bills of lading specifically incorporated the Hague Rules 1924. Most of the logs were stowed in the holds but some 430 logs were loaded on deck as noted on the relevant bills of lading.

18 While the vessel was at Port Owendo, the crew became hostile to the master because of the death of a sick crewman. The master resigned and a new master arrived on the vessel on 25 November. As the vessel was about to sail, the Gabon police came on board and arrested the outgoing master and second officer and ordered the vessel not to sail until clearance was given. Clearance arrived on 30 November but, just prior to sailing, the master found eight stowaways on board. Further delays ensued and the vessel was only able to proceed to Port Gentil some days later. The stowaways were disembarked from the vessel at Port Gentil on around 13 December. The vessel sailed from Port Gentil on 18 December on the first leg of the voyage to Tuticorin.

19 Due to the unexpected delays in Port Gentil and Port Owendo, the provisions on board the vessel were insufficient to last until it arrived at Durban, which was intended to be the next port of call. The master was therefore instructed to proceed to Cape Town that was the nearer port in order to take on bunkers, provisions and fresh water.

20 According to the chief engineer, Mr Krishnan, on route to Cape Town the vessel encountered reduced speed in comparison to its design factor because of the fact that it had been at anchorage for an extensive period at Port Owendo. This had caused the ship's hull to be subjected to fouling by seaweed and barnacles over and above the ageing factor of the vessel. Also, on route to Cape Town, he had to stop the vessel on 22 and 23 December to effect repairs because of generator failures such as 'cooling water pipeline burst and water condensation in the fuel oil service tank'.

21 On 24 December, at about 0410 hours, the incident that led to this action occurred. The chief engineer stated that what had happened was that a main engine crankcase 'explosion' took place. Prior to this explosion, all systems were operating normally. The explosion was instantaneous and occurred without any warning or indication. There was no unusual or abnormal vibration or sound before the incident.

22 After the incident, the engine was inoperable and the vessel was adrift. The chief engineer inspected the damage caused by the explosion. His Breakdown Report described it as follows:

(1) main engine no. 1 starboard side crankcase inspection/relief door was blown out,

(2) main engine no. 1 portside hot spot marks noticed at no. 1 portside crankpin,

(3) crankshaft unit no. 1 webside ridges found with sharp corners,

(4) one of the two con rod bolts sheared-off (truncated) and blown out through the starboard side crankcase door in the explosion,

(5) push rods of unit 1 portside were found bent.

Item no. 4 was, in the shipowners' view, the most significant item of damage. What the description given meant was that the no. 1 connecting rod bottom end bearing bolt in the main engine had sheared and blown through the starboard crankcase door, piercing through it.

23 Crossworld then arranged for a tugboat to tow the vessel to the nearest port, Port Luanda, in Angola. The vessel arrived at the inner anchorage of Port Luanda on the morning of 28 December 1999.

24 On 14 January 2000, Mr Srinivasan and a surveyor from the Salvage Association boarded the vessel at Port Luanda. After his survey, the surveyor informed Mr Srinivasan that the engine was no longer operable. He advised that the vessel should be towed to Cape Town as there were no facilities available at Port Luanda to carry out the necessary repairs. Some five days later, the Salvage Association recommended that the shipowners consult an average adjuster concerning when and where general average was to be declared as it was likely that cargo interests would be required to contribute toward certain of the costs incurred by the shipowners in relation to the incident. A report issued by the Salvage Association on 24 January describing the damage found and recommending extensive repairs to be carried out at Cape Town, concluded:

The cause of the initial damage to No. 1 crankpin and No. 1 portside unit can reasonably be attributed to failure of the lower connecting rod bearing bolt, however the reason for the failure will require that the bolt be examined metallurgically to determine the nature of the failure. The cause of the general failure of the main bearings can only be determined when the engine has been dismantled however, damage to main bearings is usually associated with loss or partial loss of lubricating oil pressure. A sample of the lubricating oil has been taken and retained on board for analysis at the vessel's repair port.

25 Mr Srinivasan made the necessary arrangements for towage. On 20 February the crew arrested the vessel for unpaid wages. Mr Srinivasan was able to persuade the crew to withdraw their action on 23 February and the tugboat arrived at about the same time. The vessel departed for Cape Town under tow on 24 February. Shortly afterwards, the shipowners declared general average.

26 The vessel arrived at Cape Town on 3 March. The original intention had been to effect repairs to the engine at that port. According to Mr Srinivasan, however, problems were encountered in obtaining a repair berth for the vessel and unreasonable demands were made by the port authorities for the provision of such a berth. As a result of the difficulties encountered, the vessel remained in the anchorage and no repairs were undertaken.

27 The eventual decision taken by the shipowners was to tow the vessel to the destination port of Tuticorin directly from Cape Town. They were concerned that any other port in South Africa would take a position similar to that of the Cape Town Port Authority and deny entry to the vessel. Mr Srinivasan made further towage arrangements and the vessel left Cape Town under tow on 24 March. The day before its departure, a surveyor representing the cargo interests, one Mr Geoffrey Needham, went on board the vessel and conducted a short survey. Around this time, negotiations took place between the shipowners and the cargo interests as a result of which a general average bond was provided by the first defendants and the general average guarantee was provided by the second defendants.

28 The vessel arrived at Tuticorin on 14 May. It had been manned by a skeleton crew. The most senior engineering officer on board had been the third engineer. In June, Mr Srinivasan found out that the vessel's charts, logbooks, other documents, binoculars and walkie-talkies were not on board. On making enquiries he was informed by some crewmen that these items had been thrown over board by other crewmen who wanted revenge for the dispute with the shipowners over their wages. The vessel completed discharge of cargo at Tuticorin on 4 June. In the meantime, Mr Srinivasan had advised the shipowners to dispose of the vessel for scrap because the alternative of taking her to some other shipyard for complete repairs would be extremely costly and would take a

further few months. On 29 June 2000, the shipowners sold the vessel. It was subsequently scrapped.

The action

29 This action was commenced in October 2001. In the statement of claim and in support of the claim for general average contribution, the shipowners pleaded the occurrence of the main engine crankcase explosion on 24 December 1999, the stoppage of the main engine, the drifting of the vessel and its subsequent towage to Luanda, Cape Town and Tuticorin where the cargo was delivered. In saving the vessel and its cargo from common danger as set out aforesaid, the vessel incurred general average loss and expenditure including towage expenses totalling US$910,288.78 of which US$746,967.18 was attributable to cargo under the York Antwerp Rules 1974 and/or the York Antwerp Rules 1994. The sum of US$746,987.18 was claimed as general average contribution or, alternatively, damages.

30 The defendants filed both a defence and a counterclaim for damage to cargo. The counterclaim was, however, withdrawn in the course of the trial. The defence was amended several times and took its final form in July 2002, just after the trial commenced. The main points of the defence are as follows. The casualty caused by the main engine crankcase explosion was admitted. It was also admitted that a general average adjustment prepared by M/s Richards Hogg Lindley dated 28 February 2001 was delivered to the defendants. It was denied, however, that any extraordinary sacrifice or expenditure was intentionally and reasonably incurred for the common safety for the purpose of preserving the ship and cargo from peril. The meat of the defence was the assertion that, in breach of contract, the shipowners failed before and at the beginning of the voyage to exercise due diligence to make the vessel seaworthy and, further, that the vessel was not seaworthy at the start of the voyage. Particulars of unseaworthiness and failure to exercise due diligence were given. Insofar as the cargo loaded on deck was concerned, the defendants pleaded that the shipowners in breach of their implied undertaking had failed to, before and at the beginning of the voyage, make the vessel seaworthy and that the main engine was liable to and did seize up during the voyage.

31 In the reply filed by the shipowners, they denied that the vessel was unseaworthy or that they were in breach of contract. They also made a positive averment that they had exercised due diligence before and at the beginning of the voyage to make the vessel seaworthy. The shipowners also pleaded in the alternative that the main engine crankcase explosion was caused by a latent defect which was not discoverable by the exercise of due diligence on their part.

The issues

32 Rule A of the York Antwerp Rules 1974 defines a general average act as follows:

There is a general average act when, and only when, any extraordinary sacrifice or expenditure is intentionally and reasonably made or incurred for the common safety for the purpose of preserving from peril the property involved in a common maritime adventure.

The rights to contribution are provided under Rule D:

Rights to contribution in general average shall not be affected, though the event which gave rise to the sacrifice or expenditure may have been due to the fault of one of the parties to the adventure, but this shall not prejudice any remedies or defences which may be open against or to that party in respect of such fault.

33 From their submissions, it is clear that the defendants are not seriously disputing that the shipowners incurred extraordinary expenditure for the common safety for the purpose of preserving from peril the vessel and its cargo of round logs which were involved in a common maritime adventure. There are some disputes over the reasonableness of the expenditure but the main dispute is whether the shipowners have, in the light of Rule D, the right to claim a contribution towards that expenditure from the cargo interests.

34 The shipowners agree that, under Rule D, if the general average sacrifice resulted from their fault, that would give the defendants a cause of action against the shipowners and the shipowners would lose their right to contribution. The general average adjustment carried out by M/s Richards Hogg Lindley would have, as explained in *General Average Law and Practice* (1997 Ed, at p 66) by F D Rose, adjusted the rights and liabilities to contribution independently of the fault of the parties to the common adventure. As Rose goes on to explain, however, if the necessity for the general average (in this case the damage to the main engine) has arisen from the fault of one of the parties (in this case the shipowners) and that fault is actionable at the suit of another party (in this case the defendant cargo owners), the rights, remedies and defences between the two parties are preserved; in particular, the party not at fault is prima facie not obliged to pay contribution to the party at fault.

35 The 'fault' that has to be established by the defendants to escape from general average liability has been described as a legal wrong that is actionable as between parties at the time when the general average sacrifice or expenditure was made. See *Goulandris Brothers Ltd v B. Goldman & Sons Ltd* [1957] 2 Lloyd's Rep 207. The shipowners' position is that in this case an actionable fault would be:

(1) a fault which caused the main engine damage which in turn gave rise to the general average expenditure; and

(2) a fault for which the shipowners would be liable in law to the defendants.

36 The shipowners maintain that there was no actionable fault on their part because:

(1) they had in accordance with their obligations in law and in contract, provided a seaworthy vessel for carriage of the cargo;

(2) the matters complained of by the defendants in alleging that the vessel was unseaworthy were not causative of the main engine damage; and

(3) the main engine damage was caused by the failure of no. 1 connecting rod bottom end bearing bolt which had a latent defect that could not have been detected by the exercise of due diligence.

37 The defendants have a two-pronged position. In relation to the portion of cargo that was loaded under deck, they rely on Articles 3 and 4 of the Hague Rules which impose an obligation on the carrier, before and at the beginning of the voyage, to exercise due diligence to make the ship seaworthy and, provided that obligation is complied with, relieve the carrier from liability for loss or damage arising from unseaworthiness. They maintain that the shipowners did not comply with this obligation and thus are liable for the loss. As regards the deck cargo, they maintain that there was an implied term in the contract of carriage that the shipowners undertook that the vessel was seaworthy at the commencement of the voyage and, as a result of a breach of that implied term, the casualty occurred. Accordingly, they would not be able to claim general average contribution. A separate issue here is whether certain exemption clauses in the bills of lading excluding liability for

deck cargo would be sufficient to absolve the shipowners of any actionable fault for breach of the contract.

38 From the submissions it would appear that the defendants consider that the issues I have to determine and the order in which they are to be determined are:

(1) was the vessel seaworthy at the commencement of the voyage;

(2) did the shipowners exercise due diligence to make the vessel seaworthy at the commencement of the voyage;

(3) what was the cause of the main engine failure;

(4) could this cause have been detected by the exercise of due diligence or was it a latent defect;

(5) in respect of the cargo loaded on deck, would the exemption clauses in the bills of lading in any event enable the shipowners to pursue the claim for contribution; and

(6) if general average liability is established, was the quantum of expenditure incurred reasonable.

39 The shipowners on the other hand put forward only one compendious issue which they phrase as follows: whether the main engine failure resulted from the shipowners' failure to make the vessel seaworthy at the commencement of the voyage. It seems from this formulation that the shipowners consider it irrelevant whether or not they made the vessel seaworthy at the commencement of the voyage and would argue that even if the vessel was unseaworthy at that time due to a failure on their part, as long as the main engine failure did not result from that failure, they would not be at fault. The shipowners do not, however, concede that the vessel was unseaworthy at the commencement of the voyage. Their stand is that the main engine damage was caused by the bolt failure (as described in item 4 of the damage report) in spite of the fact that they had, at the commencement of the voyage, exercised due diligence and made the vessel seaworthy. If the shipowners had conceded that the vessel was unseaworthy at the commencement of the voyage due to the defective state of the bolt, then I could concentrate on whether that defect could have been detected by the exercise of due diligence. As they have not, I will have to consider the individual issues as formulated by the defendants.

(i) Was the vessel seaworthy at the commencement of the voyage and what was the cause of the main engine breakdown?

(a) The law

40 I must first review the law on the test for unseaworthiness at the commencement of the voyage. A seaworthy vessel is one that has that degree of fitness which an ordinary owner would want it to have at the time it starts its voyage having regard to the circumstances the vessel would probably meet during the voyage. This is an objective test as the question to be asked is whether a prudent owner would have required that the defect in the ship be made good before sending his ship to sea, had he known of it. This formulation is derived from the judgment of Scrutton LJ in *F.C. Bradley & Sons v Federal Steam Navigation Co.,* [1926] 24 LLR 446. It was approved in the English Court of Appeal case of *The "Fjord Wind"* [2000] 2 LLR 191 and the court also approved the holding of the trial judge, Moore-Bick J, that seaworthiness is not an absolute concept but is relative to the

nature of the ship, to the particular voyage and even to the particular stage of the voyage.

41 Also relevant on the question of what inferences should be drawn from the breakdown of the vessel is the following passage from the judgment of the trial judge quoted by the Court of Appeal (at p 198):

> … The yardstick of the prudent owner in this context simply reflects the fact that seaworthiness is to be judged by reference to the realities of commercial life and does not require absolute perfection. Thus it might be the case that a prudent owner when told about the existence of a particular defect might quite properly decide that the risk of its causing loss was so remote that it need not be made good immediately but could be left to a more convenient occasion. It remains the case, however, that seaworthiness as such is concerned with the condition of the vessel herself at the relevant time rather than with whether the owner has behaved prudently in sending her to sea in that condition. Where, as here, a vessel suffers a serious casualty without any outside intervention, the natural inference is that there was something wrong with her which a prudent owner would have rectified if he had known about it. I do not think it makes any difference for this purpose whether the defect is one which can subsequently be specifically identified, such as a crank in the component, or is one which cannot be specifically identified but whose existence can be inferred from a propensity for failures to occur for unknown reasons and at unpredictable intervals. What matters is whether such a defect actually exists, and if it does, whether the risks involved in leaving it unrepaired are sufficiently serious to require remedial action to be taken before the ship proceeds farther. In this case I think it is clear that there was a defect, albeit unidentified, in the vessel's propulsion equipment which was liable to result in a crankpin bearing failure at some time during the voyage without warning and with potentially disastrous consequences. It had manifested itself as a propensity for crankpin bearings to fail at unpredictable intervals, and I have little doubt that a prudent owner, if he had been aware of the nature of the defect, would have taken steps to correct it rather than risk the consequences. I am satisfied, therefore, that the vessel was unseaworthy both when she left Rosario and, for that matter, when she left Barcelona at the beginning of her approach voyage.

42 The defendants submitted that since the vessel did encounter an engine breakdown on 24 December 1999, about six days after the commencement of her voyage from Port Gentil, and since there had been no external intervention leading to such breakdown, the natural inference would be that the vessel was unseaworthy at the commencement of the voyage by reason of the fact that there was something wrong with it which a prudent owner would have rectified had he known of it. That may be the natural inference but one must also examine the evidence to determine whether there is any reason not to draw that inference. Since it is accepted that after the explosion on 24 December the engine was inoperable, the way to proceed is to scrutinise the evidence and try to ascertain what, on the balance of probabilities, was the cause of that breakdown. Then, I would have to determine whether this cause would have made the vessel unseaworthy at the commencement of the voyage. In the discussion that follows, I will be dealing with issues 1 and 3.

(b) the evidence

43 The defendants assert the following matters evidence defects in the main engine:

(1) the low revolutions per minute ('rpm') achieved by the engine;

(2) the engine sea trials at Port Gentil before departure;

(3) the breakdowns after departure; and

(4) its course after departure.

44 It is not in dispute that the main engine of the vessel was operated by the crew at well below the designed engine load of 570 rpm. According to the chief engineer, even when the vessel was sailing between the three load ports between end September 1999 and December 1999, the operating load of the main engine at its peak was 320 rpm. The engine logbook entries from the commencement of the voyage on 18 December 1999 till the explosion six days later also indicate the load on the engine as 320 rpm. The speed of the vessel was also relatively slow. On some of the days between 18 and 24 December the vessel's speed varied between 5.61 knots and 7 knots. The design speed was 15 knots and the evidence was that when the vessel was owned by SMC, it had made speeds of between 10.5 and 11.5 knots. Further, during the ten days prior to the vessel being delivered by SMC, the latter's crew had also operated the engine at 320 rpm.

45 In his evidence in chief, the chief engineer did not mention the low rpm of the engine. He explained the vessel's slow speed on route to Cape Town as being due to its extended stay in the Port Owendo anchorage which had caused the hull to be fouled by seawater and barnacles. When questioned on the speed and rpm, Mr Chandran gave various reasons at various points for the reduced speed and rpm. First, he stated he had 'convinced the master that he was going through the behaviour part of the running machineries' and also told the master that page 2-4/I-2/16/E of the engine manual stated that an rpm of 250 was safe for the engine. It should be noted that when the engine manual was produced, what was stated was that if one of the engine cylinders failed, then the engine should not be operated below 250 rpm.

46 Subsequently, Mr Chandran repeated the assertion in his affidavit that the low rpm was a result of hull fouling and the age of the vessel. Next, he stated that his reason for running the engine at low rpm was that he wanted to study the behaviour of the main engine and its auxiliaries and to gradually increase the rpm. He maintained that he was not confident of running the engine at its design load because of 'various factors' which he did not elucidate. To run the engine at design load between 18 and 24 December 1999 would have been similar to reckless driving. That was an interesting comment bearing in mind that he had had control of the main engine since 24 September 1999.

47 The chief engineer then alleged that many fishing vessels sailed along the western coast of Africa and the low speed and rpm were maintained to avoid colliding into them. When he was pressed as to why he had not increased the rpm three days after leaving Port Gentil since he had testified that, given three to four days of continuous steaming, he would increase it to 70% to 80% of 570 rpm, Mr Chandran said that this was because only two units of the engine had been overhauled by him and therefore he still did not have confidence in the engine. He said he was taking his time to have a real judgment of his own on the condition of the engine. It should be noted that when the chief engineer was discussing the engine with the expert appointed by the shipowners, Mr Chay Choon Chong, he had told the latter that he had run the engine at low load because there were no previous records of its maintenance and operation available on board and that he was monitoring its performance to build up confidence in it.

48 Mr Srinivasan was also asked about the speed. He explained that the chief engineer was a very cautious man. It had been his own decision to keep at a slow speed. Mr Srinivasan twice spoke to the chief engineer about the speed and was told on the first occasion that the speed would be increased within two or three days and on the second occasion that it would be increased shortly. The master had asked him to tell Mr Chandran to increase the speed but Mr Srinivasan explained he had not wanted to push the chief engineer to do so until the latter was happy with the engine. He had been content to allow Mr Chandran to operate the vessel on a low rpm even though he knew that

the shipowners' profitability would be affected if the vessel was run this way.

49 Mr Chay gave a report in which he stated that, although in theory, a correctly maintained engine of a 20 year old ship can operate at the full engine design speed, this is not achievable in practice as consideration has to be given to the wear and tear on the engine component parts and its associated gears and ancillary machinery over two decades of use, increased frictional resistance and other factors. His review of the documentary evidence showed there was no evidence to suggest that the engine could not have made full sea speed. He understood that the chief engineer did not want to do so during the initial stages of the voyage and had elected instead to first proceed at a reduced speed. The chief engineer had stated that he was running-in the engine and this running-in period was a matter which fell within the chief engineer's discretion. Mr Chay found the chief engineer's actions to be reasonable.

50 Under cross-examination, Mr Chay admitted that, when it had been properly maintained, the engine rpm of a 20 or 25 year old ship could be brought to its maximum load. He also admitted that if it was true that the chief engineer had insufficient confidence in the main engine he should not have run it at low loads to ascertain whether it was capable of running properly at high loads and thereby taken the risk that something might go wrong with the engine. Although Mr Chay asserted that if he had been in the place of the chief engineer, he would have proceeded cautiously at an acceptable minimum speed, checked all the systems and then slowly brought the speed up as his confidence increased, he also agreed that doing so would not be a guarantee of no engine damage or no explosion occurring. He concluded, therefore, that what the chief engineer and shipowners did was not justified. Later Mr Chay qualified this reply by stating that the chief engineer's actions had not led to the explosion.

51 The defendants' engineering expert, Mr William Hastings, testified that a ship's main engine is normally run at its maximum rpm to achieve optimum fuel efficiency and speed. His opinion was that there is no engineering basis for saying that an engine cannot achieve its maximum rpm because of age unless such engine is not properly maintained or is defective in some respect.

52 Next, the defendants asserted that there had been engine repairs before the vessel departed Port Gentil on 18 December. They asserted the evidence showed that certain engine trials had been carried out at Port Gentil. First, their surveyor Mr Needham had copied certain entries in the vessel's deck log when he boarded the vessel in Cape Town. According to him, the entry made on 15 December at 1012 hours stated 'Anchor aweigh – vessel on sea trials and engine tested out'. Further, the Salvage Association report stated that examination of the engine room logbook indicated that maintenance work on the engine had been carried out between 7 and 18 December 1999 when the air, lube oil and jacket water coolers were cleaned. The report also stated that according to the engine logbook, sea trials were carried out between 14 and 15 December and were found to be satisfactory.

53 Whilst the chief engineer had admitted that engine sea trials are always carried out when repair work on the main engine has taken place, he denied that any main engine repairs had been effected at Port Gentil. His evidence was that there is a difference between an engine try out and a sea trial. A sea trial is done during manoeuvres at sea prior to a long voyage and it involves checking the steering and oil consumption and monitoring the condition of all machinery. The purpose of a sea trial is to check overall operation of the vessel including the operation of the main engine. On the other hand, an engine try out is just to try working of the engine before putting it on standby.

54 According to the chief engineer, before 18 December, the Pep Nautic underwent only one sea trial. This took place on 13 or 14 December when the vessel had arrived at Port Gentil an 84 mile

voyage from Gabon. When asked why there was a need for this trial after such a short voyage, Mr Chandran replied 'it is customary practice out at sea, when there is a variable rpm, it is not on a steady speed, it is said all parameters maintain normal. Whenever all watch- keeping engineers are down in engine room we just have a thorough examination. We have conducted all the tests. He has written "sea trials conducted" [that was a reference to the logbook entry] but it's only examination of machinery'. The entry in question was made by one of the engine room crew and countersigned by the chief engineer who, under cross-examination, maintained that it had been an oversight on his part not to correct the entry.

55 With reference to another entry in the logbook for 15/16 December 1999 stating 'Sea trials conducted' and also countersigned by the chief engineer, his position was that it too was an erroneous entry. Mr Chandran maintained that both these entries were not sea trials because if they had been sea trials, he would have ensured that all the main engine parameters were entered into the logbook and that was not done in the engine logbook on these two dates. Subsequently when Mr Chandran was shown the entry for 15 December in the deck logbook, he admitted that there had been a sea trial on that date and explained that there had been a slip up in the engine logbook recording on that date. The net result of the cross-examination was that Mr Chandran was uncertain whether there had been more than one sea trial conducted prior to departure from Port Gentil. He did, however, confirm that the sea trial conducted on 15 December had lasted three hours as shown in the deck logbook.

56 Mr Srinivasan was also asked about the sea trials. He admitted that he knew two engine trials had taken place between 13 and 15 December. He asserted that these were normal pre-voyage procedures that a pilot would insist on upon boarding the vessel and denied that there were evidence of engine repairs being carried out. He denied that the vessel's departure from Port Gentil was delayed until 18 December because of engine repairs. His explanation was that the delay in departure resulted from the failure to pay monies owing to the ship's agent including payments that had to be made for the disembarkation of the stowaways. Documents furnished by the shipowners showed that on 10 December, the shipowners owed their Gabon agent some US$22,000 and that on 14 December, the agents informed the shipowners that because they had not received a certain sum of money (the amount is illegible) they could not return the logbooks that the police had taken from the vessel. The shipowners were asked 'please clarify urgently to avoid sailing delays'. The shipowners did not, however, furnish any evidence of when they actually sent the money to the agents and how the sailing date of 18 December related to that remittance.

57 On this issue I find the chief engineer's evidence and Mr Srinivasan's unreliable. I consider it safer to accept the written record which establishes that there were two trials, not just one, and these were sea trials and not just engine try-outs at anchorage.

58 Next, I come to the allegation of breakdowns having taken place after departure. According to the vessel's deck logbook, a generator failure took place on 22 December and the main engine was stopped for some 12 hours from 0520 hours until 1700 hours. The vessel resumed full ahead at 2100 hours that day after a four hour engine trial referred to in the deck logbook as 'main engine tried out ahead and astern'. Some four hours later, at 0100 hours on 23 December, the second breakdown occurred. The main engine was stopped again and the vessel was adrift. At 1200 hours, the main engine was tried out 'ahead and astern' and at 1930 hours, the main engine was full away. According to these entries in the deck logbook therefore, the main engine was not fully functional for some 18 hours.

59 As regards the first breakdown, the chief engineer maintained under cross-examination that it was due to a problem with the no. 2 generator. He was asked why it was necessary to stop the main

engine to deal with that problem. Mr Chandran's answer was that he had two generators working in parallel during the steaming-in period and he did not want to overload the no. 1 generator by working it alone with the main engine while he attended to the problem with no. 2. Thus, the main engine was stopped. He was asked whether he preferred to leave the ship adrift for 12 hours. Mr Chandran agreed that one generator would have been sufficient to take the full sea load of the vessel. He disagreed that he had had to stop the main engine because there was something wrong with it. He was then asked why, if it was a generator problem, it was necessary to do a four hour engine trial. The reply was that the engine had not been tested for four hours. The main engine was on standby and ready at 1700 hours and it was the bridge that decided that the engine should be full away at 2100 hours. He did not give any reason why the master should keep the vessel adrift for a further four hours after the main engine was ready at 1700 hours.

60 As regards the second breakdown, in his affidavit Mr Chandran's only reference to this was that he had had to stop the vessel on 22 and 23 December to effect repairs because of generator failures. Under cross-examination, Mr Chandran agreed that, according to the engineer's log, there had been a problem with the no. 6 exhaust valve in the main engine. He was asked why in his affidavit he had not stated that the 23 December breakdown was due to a main engine problem. His explanation was that '23rd was a slippage. I was dealing with 22nd'. When asked why the vessel stopped for 18 hours when the maximum time taken to change an exhaust valve would be two to three hours, Mr Chandran replied that while two to three hours would be sufficient under normal circumstances, in this case the holding stud broke and some drilling was required to remove it.

61 The last thing that the defendants found suspicious was the vessel's course after leaving Port Gentil. They alleged it was not taking the direct ocean route to its destination, Cape Town. The vessel, they said, was instead proceeding on a course that hugged the coast of west Africa and the only reasonable inference to be drawn from this fact is that those who were on the vessel knew that there was a problem with the main engine and therefore decided to keep close to the coast. The shipowners, however, maintained that the course taken was not one that was hugging the coast but that the vessel was maintaining a safe passage, clear of all known obstructions in the area.

62. Having considered all the evidence, it does appear to me that the chief engineer had experienced problems with the main engine in December 1999, both prior to and after the vessel's departure from Port Gentil. That it was not working properly was indicated first by the low load maintained. Mr Chandran was not able to give a consistent and reasonable explanation as to why he maintained an rpm of 320. He was evasive. The defendants contend that the engine was only working at 20% of its achievable load. I am of the view that that contention is unfair as a 22 year old engine should not be judged on the same basis as a new one. It was clear, however, that the rpm maintained fell substantially short of that which should have been achievable for an engine of its type and age. Secondly, the fact of two engine trials being conducted at sea prior to departure from Port Gentil was a further indication of something being wrong with the main engine. The vessel's delayed departure from that port has not been properly explained. The shipowners could have produced more documents to establish their case that it was due only to non-payment of agents' fees. The absence of such documents and the unsatisfactory nature of the chief engineer's evidence on the necessity for the engine trials adds weight to the defendants' assertions.

63 The two breakdowns in quick succession after the vessel left Port Gentil leading to it being adrift for 12 hours on the first occasion and 18 hours on the second, provide more circumstantial evidence of defects in the main engine. As far as the first breakdown was concerned, it really was not necessary to stop the main engine at all if it was only a generator problem. Further, I do not believe the engine was ready by 5pm on 22 December as, if it had been, the master would have ordered the engine to be full away immediately. There was no reason for him to wait a further four

hours to set sail. It seems improbable that he would have done so had he had a choice since, first, he had asked Mr Srinivasan to tell the chief engineer to increase the speed and, secondly, he was concerned about the vessel's provisions and water running out. As for the second breakdown, the ostensible reason for the stoppage, the failure of the valve, should have been dealt with within three hours as the chief engineer admitted. The problem must have been much more serious to have required 18 hours of repair work. Finally, though on its own this would be slight evidence, the course taken by the vessel en-route to Cape Town gives some indication of a lack of confidence in the engine.

64 It therefore appears to me, on the balance of probability, that there were defects in the main engine from the time the vessel left Port Gentil and, as a result of such defects, the vessel was not in a seaworthy condition at the commencement of the voyage. The question which arises is whether that unseaworthiness is what led to the casualty.

65 The defendants do not assert that those defects in the main engine that led to the low rpm, the frequent engine trials and the stoppage of the main engine on 22 and 23 December were the probable cause of the casualty. Instead, their closing submission is that, on the available evidence, the cause of the main engine failure on 24 December cannot be conclusively established and that it was not due to the fracture of the bottom end bolt of the no. 1 unit of the main engine. I must therefore turn now to an analysis of the evidence relating to this fracture.

66 The shipowners adduced technical evidence on the nature of the fracture. The bolt in question was first examined by one Professor Ball in April 2000. Unfortunately, thereafter Professor Ball died. Therefore, a part of the fractured bolt and, as a reference, an undamaged connecting rod bearing bolt from the same engine, were sent to Dr Huang Xianya of PSB Corporation Pte Ltd for analysis. Dr Huang holds a PhD in materials science and engineering from the University of Stuttgart which he obtained in 1989 and has worked as a research scientist from 1988. He has also held senior positions in the Singapore Productivity and Standards Board and the Singapore Institute of Standards and Industrial Research. Dr Huang was called as the shipowners' metallurgical expert.

67 Dr Huang was sure that the part of the fractured bolt which was sent to him was the same bolt as that examined by Professor Ball because it would be impossible to reproduce the same fracture characteristics in such detail in any other bolt. Dr Huang carried out a visual examination of the fractured bolt followed by a microscopic examination using scanning electron microscopy ('SEM') and energy dispersive X-ray spectrometry ('EDX'). His examination revealed that the fracture occurred exactly at the first thread root of the bolt, and the salient features of the fracture surface suggested that this was a fatigue fracture. Ratchet marks seen by Dr Huang indicated that the fatigue cracking was initiated by multiple crack sites at the thread root caused by hydrogen embrittlement. Beach marks were visible indicating that the fatigue crack propagated sub-critically through about 55% of the cross-sectional area of the bolt before finally leading to the stress rupture. No evidence for over pre-loading (caused by over-tightening) was detected. Apart from corrosion pits detected along the thread root, Dr Huang also noted that a layer of deposits of chemicals including sulphur and chlorine had formed over the thread root and that pitting had occurred under the deposits. Further, deep and sharp machining marks were detected at the thread root surface by SEM. The width and depth of these marks varied. In Dr Huang's opinion, these machining marks acted not only as stress raisers but also as traps for corrosive substances and, along with the deposits, had contributed to the formation of the corrosion pits and, consequently, the initiation of the fatigue crack.

68 Dr Huang's metallurgical analysis of the composition of the failed bolt showed it to be 'of good quality in terms of chemical composition, microstructure defects and mechanical strength'. Dr Huang confirmed in cross examination that there was no evidence of acid attack on the thread root. In his

view, the section of the bolt that had not been given to him to analyse was not likely to have suffered chemical attack or mechanical impact. Had there been such attack or impact, the fracture would have occurred in that section and not at the thread root.

69 The defendants did not offer any evidence to challenge the findings of Dr Huang. They accepted his evidence that prior to the incident, the bolt must have been cracked and corroded. Their position is that it has not been proved that the sudden fracture of the bolt had caused the breakdown of the main engine. They contend that this scenario is merely a theory advanced by the shipowners and their expert, Mr Chay, and that the fracture of the bolt could very well have been the consequence of an explosion rather than the cause of it. Some other main engine defect could have resulted in lube oil starvation of the main engine bearings leading to the explosion in the main engine crankcase. Such an explosion would have caused the bottom end bolt to fracture because it was already cracked and corroded.

70 Mr Chay is a marine engineer who also holds a First Class (Steam and Motor) Engineer Certificate of Competency. He had some 13 years of experience as a ship's engineer and an engineering superintendent and 23 years of experience as an engineering surveyor with the Salvage Association. His opinion was that the engine breakdown was brought about by the fracture of the bolt. According to his reconstruction of the incident, when the bolt fractured it permitted the bearing housing to open slightly. This caused a localised pressure drop in the bearing in-way. As the piston-connecting rod assembly connected to that bearing moved, the bearing shells jawed open even more, causing a drop of oil pressure in all of the other bearings (all of the bearings are lubricated from the same source).

71 The drop in oil pressure then tripped the lube oil pressure alarm and this automatically activated to switch off the main engine. The engine did not, however, come to an immediate stop as it had to go through a series of revolution reductions which brought the engine revolutions gradually down until it finally came to a complete stop. That would have been some 60 to 90 seconds after the activation of the automatic shut down. During this period, the loss of lube oil in the bearings in the crankpin journal would have resulted in metal to metal contact between the bearings and the crankpin. The bearing material would have wiped or melted causing a final seizure of the crankpins/journals. The bearings would then have turned with the crankshaft and caused heavy scouring or abrasion marks on the main engine block bearing pockets resulting in major damage.

72 The shipowners supported this theory by reference to Mr Chandran's evidence that when he inspected the main engine after the incident, he noted that several bearings (nos. 1,2 and 3) had seized onto the main journals and turned with the crankshaft as it was being turned by hand. It was also observed that the main bearing no. 4 had shifted from its place.

73 Mr Chay's opinion was criticised by the defendants on several grounds. They did not accept that the explosion reported by the chief engineer could have been caused by the fractured bolt. As the chief engineer had, at the time of the incident, been asleep in his cabin which was located some three or four decks above the engine room, the defendants submitted that for the explosion to awake him it must have been a loud gaseous one. Mr Chay did not agree. He stated that there was no evidence that a gaseous explosion had occurred on 24 December 1999. If that had been the case, the crankcase doors would have been blown off by the force of the explosion and not just damaged. Secondly, the scale of the damage observed was consistent with the failure of the bolt leading to the shut down of the engine. Such a failed bolt could have, in fact, resulted in far worse damage.

74 Mr Chay considered there was no evidence to support the 'lube oil starvation' theory put forward by the defendants as the cause of the engine failure. He asserted that at all times up to the

moment when the engine was shut down, the lube oil pressure in the engine was found to be satisfactory. There was no evidence of low lube oil pressure or a sudden drop in lube oil pressure before that. As the defendants point out, however, the second engineer who was on duty in the engine room at that time and was the one person with actual knowledge of the situation prior to the breakdown, was not called to testify and any evidence that the chief engineer gave on that situation was hearsay. On the other hand, in support of Mr Chay's opinion, is the fact that the surveyor from the Salvage Association tested the alarms and shut down devices when he attended the vessel in Luanda and found all such equipment to be in satisfactory working condition. Thus, if there had been a drop in pressure to below acceptable limits before the incident, the low oil pressure alarms would have sounded and cut off fuel to the engine resulting in less damage being caused by the failure of the bolt.

75 The defendants sought to cast doubt on the chief engineer's account of the incident by reference to a letter written by Alpha Emirates on 25 December to the hull underwriters. That letter informed the insurers that the vessel was totally immobilised and drifting and quoted a radio message from the ship stating 'While the vessel was on her way … Chief Engineer noticed some unusual sound from the main engine and the vessel stopped … Initial inspection revealed that out of seven main bearings three got seized …'. Mr Chandran was shown this letter and he was unable to explain why the radio message did not refer to an explosion. Mr Srinivasan, too, had no explanation as to why the letter did not describe the incident as an explosion. The actual radio message referred to in that letter was not disclosed by the shipowners.

76 Mr Chandran testified that his thorough inspection of the main engine after the explosion led him to conclude that it was beyond economic repair. He admitted that he had reached this conclusion even before there was any opportunity to dismantle the engine and inspect the extent of damage to the bedplate. He had issued a report describing the incident as a 'main crankcase explosion'. The report did not, however, mention any theory regarding the cause of the explosion and the damage. The report stated various matters that the chief engineer had no personal knowledge of. It said the explosion occurred suddenly in circumstances where the temperature and pressure were normal. It also stated that the second engineer had shut down the engine manually. The chief engineer also testified that there was no automatic shut down of the main engine and that the low lube oil pressure alarm and the oil mist detector alarm were not activated. That evidence was, of course, hearsay. Mr Srinivasan testified, on the other hand, that Mr Chandran had told him that the main bearing was rotating and some serious problems had been experienced by the main shaft.

77 The earliest indication that the shipowners regarded the failure of the bolt as being the cause of the main engine damage is found in The Salvage Association Report of 24 January 2000. The chief engineer had drawn the attention of the surveyor to the relevant bolt and showed him how it had failed and burst through the crankcase door and alleged that the damage to the main engine was due to the failure of the bolt. The surveyor agreed that the initial damage of the crankpin and portside unit were reasonably attributable to the failure of the bolt but commented that the cause of the general failure of the main bearings could only be determined when the engine had been dismantled.

78 The surveyor also commented that damage to main bearings is usually associated with loss or partial loss of lubricating oil pressure. He took a sample of the lubricating oil and kept it on board for analysis at the vessel's repair port. It is interesting, however, that this sample was not subsequently analysed. The expert witnesses of both parties agreed that if the lube oil was contaminated, the damage in the main engine would first manifest itself in damage to the soft metal coating of the bearings. Mr Srinivasan, however, testified that on 4 June 2000, he decided against sending the lube oil sample for analysis after seeing the damage to the bedplate and getting astronomical repair quotations.

79 Mr Hastings said that on the available evidence, the actual cause of the main engine failure could not be determined. He too, however, had a theory about its cause. This was that there were serious problems with the lube oil system leading to lube oil starvation of the main bearings. He contended this theory was supported by the following:

(1) that with medium speed engines like that of the 'Pep Nautic' there is a propensity for products of combustion to enter the crankcase and contaminate the engine oil especially if the engine is run at a low load on fuel oil of higher viscosity for extended periods of time as was the case here;

(2) no analysis was carried out of the lube oil present in the system when the shipowners took over the vessel and there were no analysis records of the lube oil on board. Such analysis is important to ensure that the alkalinity of the oil is sufficient to absorb the products of combustion and sulphuric acid and also to determine health of the main engine;

(3) no proper records of the lube oil consumption of the vessel were kept even though such consumption would have been a good indicator of the engine's performance and condition;

(4) the chief engineer had testified that when the vessel was taken over there was a lot of lube oil on board, much more than was required but subsequently requisitioned even more lube oil. This evidence suggests that the engine consumed more lube oil than had been anticipated;

(5) the chief engineer had no prior experience with a medium speed engine;

(6) the viscosity of the fuel oil in use was not determined by the shipowners or the chief engineer and the chief engineer had no basis for alleging that the fuel oil was 60 cst. Mr Needham had testified that he had inspected the fuel oil record book at Cape Town and noted that the oil in use was 180 cst. The shipowners had not disclosed the fuel record book and other bunker records; and

(7) the scouring of the crankpin journal occurs when the quality and condition of the lube oil are not maintained.

80 There are difficulties with this theory. Among them is the fact that it has not been established that the vessel used high viscosity fuel oil. Mr Chandran's evidence was that 60 cst oil was used. It was Mr Needham who asserted in court in July 2002 that the vessel used 180 cst fuel oil. He said the chief engineer told him this when he visited the vessel. Mr Needham's evidence on this point is suspect because only the quantity of the fuel oil was mentioned in his notes not its viscosity. How did he remember such a fact in court without the aid of notes when he had only been on the vessel once for no longer than a few hours at the most?

81 Secondly, the criticism of the shipowners' failure to keep lube oil consumption records may not have been warranted. According to Mr Abdul Rahim bin Zan, an expert on lube oil, who gave evidence for the shipowners, lube oil consumption is not a good indicator of the engine's performance and condition. These are matters which would have been better monitored by checking other parameters of the engine such as exhaust temperature. According to Mr Rahim, any attempt to use lube oil consumption to track the engine's performance and condition would have been too late in the day. Mr Rahim's view is supported by engine log extracts produced by Mr Hastings of ships managed by him that indicate there was no practice of regularly monitoring lube oil consumption on board those ships.

82 Further, there was no evidence of combustion by-products in the crankcase. It was not mentioned either by the Salvage Association surveyor in his report or by Mr Needham. There was also no evidence of combustion by-products or other foreign material embedded in the bearings or that any such material scoured the crankpin journal as suggested by Mr Needham. The chief engineer denied machining the crankpin journal and, under cross-examination, Mr Needham who had first made this allegation, clarified that he did not think that it would have been possible to machine the crankpin by hand on board the vessel. In any case, as Mr Needham conceded, if the crankpin had been machined to the degree alleged, the vessel would not have been able to have sustained a voyage for long after sailing from the first load port.

83 There was little positive evidence to support Mr Hastings' theory. He was relying on conjectures derived from the general propensity of medium speed engines, the lack of hard information on the condition of the lube oil or its consumption and the alleged lack of experience on the part of the chief engineer in dealing with medium speed engines. On the other hand, I also have difficulty in accepting the shipowners' theory that the damage to the main engine was caused by the fracture of the bolt. Their theory is stronger than the defendants' theory in that there is the physical evidence in the form of the fractured bolt and the technical evidence of Dr Huang that fatigue in the bolt led to cracks propagating to a critical level so that the bolt fractured. It has not, however, been established to my satisfaction that, on the balance of probabilities, the bolt fractured of its own accord rather than from external stress arising from some other defect. In this regard, the observations of both Professor Ball and the Salvage Association surveyor are material.

84 A prime cause of my inability to come to a conclusion on the probable cause of the engine failure is the lack of sufficient evidence of the circumstances in which it took place and of the physical condition of the engine prior to and after the casualty. It would be recalled that the Salvage Association surveyor opined that the cause of the damage to the main engine could only be established when the bedplate was dismantled and the whole engine examined. This was not done. Instead, the shipowners sold the ship for scrap without conducting any deeper investigation to find out whether there was any cause for the damage apart from the broken bolt. They did not even conduct an analysis of the lube oil sample which was one simple investigation that the surveyor recommended. The shipowners had control of the ship and the crew and all the records. They had the best ability to obtain and preserve evidence about the incident. Yet, they did not produce many of the records of the ship including full deck and engine room logbooks. No satisfactory explanation was given for this; Mr Srinivasan's evidence on the loss of the records was hearsay. They did not call the engineer on duty at the time of the incident. Nor did they call the Salvage Association surveyor who was the first independent person to see the engine room and the damage after the incident.

85 I have, however, been able to conclude that the vessel was unseaworthy by reason of the defects in the engine. Even if the exact cause of the damage is not known, it is probable that this unseaworthiness contributed to it. In this regard, I accept the submission of the defendants that since the vessel did encounter a completely disabling engine breakdown on 24 December 1999, about six days after the commencement of the voyage and without the intervention of any external matter, the natural inference must be drawn that the vessel was unseaworthy when the voyage commenced.

86 Further, even if I am wrong on this finding and the cause of the damage was the fracture of the bolt alone, such cause would also lead me to the conclusion that the vessel was unseaworthy at the commencement of the voyage. It was Dr Huang's evidence that the crack in the no. 1 bottom end bolt was not something that had developed quickly but a matter that would have developed over many months or even years. That being the case, the crack must have been present well before 18 December 1999 when the vessel left Port Gentil. It is not in dispute that had this crack been discovered, the bolt would have been replaced. Since the bolt was defective in that it had a crack

that was only six days short of propagating to the critical point of causing a fracture, the vessel must have been unseaworthy at Port Gentil.

(ii) Did the shipowners exercise due diligence to make the vessel seaworthy?

87 The argument on this point centred on the few days following delivery of the vessel to the shipowners at Owendo. That was when the shipowners first had control of the vessel and the power to carry out detailed inspections and effect the repair of defects revealed by the inspection. The shipowners rely on what was done during that period to satisfy their due diligence obligation. They say that they had undertaken all that a reasonably prudent shipowner would have done to put the vessel in a seaworthy condition prior to commencement of the intended voyage to Tuticorin. They had commissioned a survey which was undertaken by a class surveyor, following which the vessel was classed without qualifications. The vessel then undertook various journeys and sailed for some 440 miles before the failure of the main engine.

88 The burden of showing the exercise of due diligence lies on the shipowners and is a relatively heavy one. In *The 'Fjord Wind'* [2000] 2 LLR 191 the English Court of Appeal had to consider a case in which the main engine was automatically stopped due to a crankpin bearing failure. The vessel had had bearing failures previously and before the start of the relevant voyage, the owners had asked the engine builders, MAN, to investigate the cause of such bearing failures. The investigations, however, never succeeded in discovering the cause of the problem which led to the defects in the crankpin bearing which in turn led to failure of the engine on the relevant voyage. Both the court of first instance and the Court of Appeal held that the owners had not exercised due diligence to make the vessel seaworthy. In a passage that was subsequently approved by the Court of Appeal, Moore-Bick J stated:

It is for the owners to show that they themselves and those for whom they were responsible exercised due diligence to make the ship seaworthy, or that any failure to do so, if there was one, did not cause or contribute to the casualty. Since the cause of the casualty remains unknown, the owners can only discharge that burden by showing that they and M.A.N. between them did not overlook any lines of enquiry which competent experts could reasonably be expected to have pursued, but in the absence of evidence as to what investigations were in fact carried out and why I cannot be satisfied that that is so. In these circumstances the owners are unable to discharge the burden of showing that they exercised due diligence to make the ship seaworthy.

89 What steps did the shipowners take to ensure that the vessel was seaworthy? They first became interested in purchasing the vessel in May 1999. From information given to their shipbroker at that time the shipowners would have learnt that Lloyds Register of Shipping required the vessel to undergo its five year special hull and machinery surveys by July 1999. According to Mr Hastings, a special machinery survey would include opening up all the units of the main engine, inspecting all its component parts including bottom end bolts, recommending the renewal of parts as found necessary and the taking of all clearances upon boxing up. With respect to checking of the bottom end bolts, the following would be carried out:

(a) checking the bolts for original class and engine maker markings;

(b) checking the elongation of the bolts; and

(c) ringing the bolts to determine from their tone whether the bolt was cracked (though Mr Chay's evidence was that this would not be a good method and instead a dye penetration test should be used to detect cracks).

90 When the vessel was bought over by the shipowners from SMC, it was no longer classed by Lloyds but had been re-classed by INSB. Mr Srinivasan confirmed that he knew at the time of purchase that the Lloyds special hull and machinery surveys had not been completed by their due date but nevertheless was happy to purchase the vessel. SMC had issued an interim certificate of class for hull and machinery dated 12 June 1999. This certificate was valid for three months only and therefore, as confirmed by the INSB surveyor, Mr Hashmi, the vessel was out of class when the shipowners took delivery of it on 24 September 1999.

91 Mr Hashmi emphasised in court that the survey he conducted from 24 to 29 September 1999 was a periodical survey under INSB rules and not a special hull and machinery survey. Mr Srinivasan's position was that the special hull and machinery surveys had been carried out by INSB in June 1999 prior to the issue of the INSB interim certificate. He relied on an e-mail dated 28 June 2002 from INSB to Alpha Emirates stating that the special hull and machinery surveys had commenced on 4 June 1999 and were completed on 11 June 1999 at Istanbul, Turkey. The reliability of that information, however, is doubtful given that the vessel's movement records show that between 4 and 12 June 1999 the vessel was never at Istanbul and therefore could not have been surveyed there. Further, Mr Hashmi's evidence was that the survey in June 1999 marked the commencement of the special hull/machinery surveys and not their completion. This further undermined the e-mail of 28 June 2002. Mr Srinivasan was unable to explain the discrepancy between the e-mail and the vessel's movements. He could only say that he himself had not done the survey and had not been on the vessel at the time.

92 It therefore appears that despite knowing that the vessel was overdue for special hull and machinery surveys by September 1999, the shipowners did nothing to ascertain whether such surveys had actually been effected or to arrange for such surveys. They did bring Mr Hashmi to the vessel to survey it but that was necessary because the interim class certificate had expired (and the fact that the class certificate was interim only must have informed them that full surveys had not been completed) and Mr Hashmi himself was somewhat evasive about the nature of the survey he conducted. He testified that he had kept records of his survey but refused to furnish these documents when requested to do so. All that he furnished was an attestation by him dated 5 March 2002 that repeatedly referred to the 'satisfactory condition' of various items surveyed and that the class and statutory certificates were issued 'after completion of surveys with satisfactory results'. There was no reference in his attestation to the actual physical observations made by him or the measurement of engine part clearances.

93 Mr Hashmi was not in fact well qualified to conduct a machinery survey. He had joined INSB in April 1999 and that was his first job as a surveyor. Before then he was a deck officer. He had no engineering qualifications. He maintained that he had supervised the survey on the main engine and requested the opening up and overhauling of its no. 3 and no. 5 units. However, it was apparent that he had had to rely completely on the chief engineer and the engine room crew and was not himself able to verify the correctness of what had been done or what had been observed in the process, about the condition of the main engine and its parts. He admitted that the checking of the bearings, pistons and all the items of machinery which he had referred to in his affidavit as having been checked, had been done by Mr Chandran and not by himself.

94 Mr Hashmi testified that he checked the clearances of the bearings and maintained records. When asked for these, he replied that 'they may be in my office' and said he would try to furnish them to the court. The records have not been produced. He also said he checked the bottom end bearing clearances with a feeler gauge. That was an impossible thing to do and when this evidence was cross-checked with Mr Chandran, the latter replied that Mr Hashmi must have been confused. As regards checking the ovality of the bearings, after some prevarication, Mr Hashmi admitted he had

relied on Mr Chandran to do this. He could not recall whether any parts had been renewed when units 3 and 5 were overhauled and depended on Mr Chandran who told him that everything was within satisfactory limits. At the end of his survey, the engine was tested when the vessel was at anchor. No sea trial was carried out to test the engine performance.

95 In *W. Angliss and Co v Peninsular And Oriental Steam Navigation Company* [1927] 2 KB 456, Wright J observed that when a shipowner buys a ship he must take all appropriate steps to satisfy himself by surveys and inspections that the ship is fit for the service in which he intends to put it. Here the shipowners intended to sail the vessel from west Africa around the Cape of Good Hope and across the Indian Ocean to Tuticorin. This would be a long voyage during which difficult sea conditions could be anticipated. The vessel was then 22 years old and over the course of its operations had experienced major engine breakdowns.

96 According to the shipowners themselves, when they took over the vessel there was a paucity of records on board. There were no logbooks or other ship's documents. There were no maintenance/ repair records of the main engine. There were no class special machinery records to show whether any special survey had been commenced under the Lloyds class since 1994. The chief engineer testified that he had extracted whatever vital information was required about the main engine and other machinery by questioning the chief engineer of the former owners. There was, however, difficulty in conducting a proper hand-over because the SMC engine room crew spoke only Syrian and even the SMC chief engineer could only speak broken English.

97 In all the circumstances enumerated in ¶ 95 and 96 above, when they took over the vessel, did the shipowners exercise due diligence to make the vessel seaworthy by simply arranging for the class surveyor to survey the vessel over four or five days at the delivery port? In my judgment, they did not. They should have ensured that the entire engine was opened up and the parts carefully inspected as there was no history of maintenance of the engine and the previous class special surveys were overdue. They should also have arranged for a proper technical inspector. Whilst the shipowners may argue that they relied on the INSB to do the necessary, they are responsible if the surveyor sent by the INSB was not competent to carry out a full engine survey. Many authorities including *The Fjord Wind* and *Union of India v N.V. Reederij Amsterdam* [1963] 1 LLR 223 have made it clear that the duty to ensure seaworthiness is not delegable and the shipowner is responsible for any failure to exercise due diligence on the part of those whom he has relied upon to make the vessel seaworthy. In this case INSB had not carried out the special hull and machinery surveys before the vessel reached Port Owendo and therefore should have sent both a general surveyor and a technical surveyor to ensure that a full inspection was carried out by competent surveyors. Mr Hashmi, through no fault of his own, did not have the necessary qualifications to carry out a proper inspection of the engine.

98 Whilst the shipowners maintain that they did exercise due diligence they argue, in the alternative, that the defect in the bolt was a latent one and therefore even if I find against them on the due diligence point, the casualty was not due to their fault. It is agreed that a latent defect is one that cannot be discovered by due diligence. It was observed, albeit obiter, in the case of *Corporacion Argentina de Productores de Carnes v Royal Mail Lines* [1939] LLR 188 that when a latent defect exists, it is immaterial to consider whether due diligence was exercised or not because even if it had been exercised, it would have been useless. I accept that. The burden of proving the defect was latent lies on the shipowners as the Hague Rules, Article 4, makes plain. In this connection, the shipowners are not disputing that the relevant time when due diligence had to be exercised was the period between delivery of the ship and commencement of the voyage. They do not contend that the time when the due diligence to find the defect had to be exerted was only just prior to departure from Port Gentil.

99 As the case of *Charles Brown & Co v Nitrate Producers' Steamship Co* [1937] LLR 188 held, latent defect does not mean latent to the human eye. It means latent to the senses ie that the defect would not be discovered in spite of any other test that it may be reasonable to apply in the circumstances. In that case, Justice Porter said that it was not obligatory on the commencement of a voyage for a ship's officer to go and tap every rivet to find out if it had a defect or not. What was required was 'such an examination as a reasonably careful man skilled in that matter would make' (see p 191).

100 Those words were echoed by Lord Evershed in *Union of India v N.V. Reederij Amsterda.* He said at p 231 of the report that the question for decision was two-fold namely:

> (1) did the [shipowners] establish that the examination carried out by them was, in the circumstances, of a character such as a skilled and prudent shipowner should reasonably have made, and (2) if so, was the examination in fact carried out with reasonable skill, care and competence?

The shipowners rely on Lord Reid's observation in the same case that there must be some compromise in deciding what steps to take in any particular case because it would 'plainly be impractical to make elaborate scientific tests for every defect that could possibly be present in any part of the machinery surveyed' (at p 230-231).

101 The shipowners submitted that in this case hydrogen embrittlement, a rare phenomenon affecting metal products, appeared as the latent defect which eventually caused the bolt failure. They pointed to Dr Huang's evidence that the crack in the bolt would not have been discovered on visual examination or with a ringing test as suggested by the defendants. Therefore, they submitted, even if they had dismantled all of the engine units and inspected all of the connecting rod bearing bolts, they would not have detected the crack in the subject bolt.

102 It is not in dispute that whenever an engine unit is opened up, all parts including the bottom end bolts would have to be inspected carefully to determine if there are any cracks. Any cracked bolts would have to be replaced. Mr Hashmi was at pains to say in his affidavit that he had found the bottom end bolts to be in satisfactory condition at the time of his survey and therefore had not made any recommendation to the shipowners that they should replace the same.

103 Dr Huang testified that the crack in the no. 1 bottom end bolt could have been there for some time. He also said that it was very difficult for an engineer to see it using his naked eye because the opening of the crack was very small and it was located at the thread root where it was covered with foreign deposits, oil and the products of corrosion. He did, however, state that an engineer who was focussed on the thread root for the purpose of checking it for cracks should have been able to detect this crack by using non-destructive tests such as dye penetration or magnetic particles.

104 The dye penetration test was not something unfamiliar to the shipowners. Mr Chandran had conducted such tests on board to determine whether there were cracks in the cylinder heads. Mr Chay was questioned on this issue too. He testified that if you were told where the crack was and you focussed on that area, you would find the crack using a dye penetration test. Otherwise, he maintained that the chances of finding a crack at the root of the bolt thread using the dye test would be 50-50. Mr Hastings averred that the crack could also be detected by a ringing test. Dr Huang considered that the ringing test would have been unlikely to have detected this particular crack because it was located close to the end of the bolt rather than at the middle of the bolt. Mr Chay took a similar view.

105 The defendants submitted that the crack in the no. 1 bolt was not a latent defect as it could have been detected by a dye penetration test if the no. 1 unit had been opened up and the bolt inspected for cracks. They further submitted that since a special class survey of the bolts was long overdue and there were no maintenance record to show when the bolts were last replaced or whether or not there was any propensity for bolt failures, a proper inspection of the bottom end bolts should have been carried out prior to the commencement of the voyage.

106 I accept the defendants' submission. The dye penetration test is a well known test for the detection of cracks and it is non-invasive and not extremely difficult to administer once the units of the engine have been opened up. The circumstances in which the shipowners took over the vessel were such as to require them to carry out thorough and extensive checks on the engine to ensure the seaworthiness of the vessel. If they had opened up the whole engine and applied the dye penetration test to all the bottom end bolts they would have had at least an even chance (on the basis of Mr Chay's evidence) of detecting the crack in the bolt concerned. In the light of this evidence, I cannot hold that the defect in the bolt was not discoverable by due diligence.

(iii) Does the exemption clause in the bills of lading protect the shipowners in relation to the on deck cargo?

1 0 7 *Scrutton on Charterparties* (20th Ed, 1996) at Article 51 makes plain, at common law a shipowner who contracts to carry goods on board his vessel impliedly undertakes that his ship is seaworthy. This is an absolute undertaking of seaworthiness. A breach of the undertaking would amount to actionable fault of the shipowners and would accordingly deprive the shipowners of a general average contribution from the cargo owners. The undertaking applies to deck cargo unless, contractually, a different regime has been provided for which is possible when the cargo concerned is deck cargo not covered by the Hague Rules. The Hague Rules only cover 'goods' as defined in the Rules. Under Article 1(c) the term does not cover cargo 'which by the contract of carriage is stated as being carried on deck and is so carried'. It is accepted by both parties that in this case 430 logs were stated in the relevant bills of lading to be carried on deck and were actually stowed on deck.

108 In this case, I have found that the vessel was not seaworthy at the commencement of the voyage. Prima facie therefore, the shipowners are in breach of the contract of carriage in respect of the deck cargo. The shipowners contend, however, that they are excused from the consequences of such breach by clauses in the relevant bills of lading as follows:

(1) bills of lading nos. 1 to 6 contain a provision reading 'pieces shipped on deck at Shipper's risk; the Carrier not being responsible for loss or damage howsoever arising';

(2) bills of lading nos. 102A and 104A to 108A contain a provision reading 'Logs with … cbm loaded on deck at the shipper's and receiver's risk, expense and responsibility without liability on the part of the vessel or her owners for any loss, damage, expense or delay howsoever caused'.

The shipowners submit that by these provisions, they have excluded liability for any and all losses arising in respect of their carriage of cargo on deck, including any liability for unseaworthiness of the vessel.

109 The shipowners rely on the holding in *The Imvros* [1999] 1 LLR 848. There, a charterparty required that where cargo under the charter was carried on deck, the bills of lading issued should be claused: 'Carried on deck at Shippers' risk without responsibility for loss or damage however caused'. Timber cargo was loaded both above and below deck in Brazil but the bills of lading were not claused as required. In the course of the voyage, part of the deck cargo was lost. This loss was due to

unseaworthiness in that the cargo had been insufficiently lashed. One of the issues considered in an action between the owners and the charterers was whether if the bill of lading had been claused as required it would have been effective to exclude the owners' liability to cargo interests for the loss of the timber. The charterers contended that it would not as the words 'however caused' were insufficient to relieve the owners from liability for damage arising from unseaworthiness. Langley J disagreed. He held that the exclusion covered any cause and there was no justification for excluding unseaworthiness as a cause; in respect of deck cargo, the parties were free to exclude the carriers' liability under the Hague Rules and the words 'however caused' were clear and could not be qualified by in effect adding 'but not if the loss is caused by unseaworthiness of the vessel'.

110 The defendants submitted that *The Imvros* is distinguishable because the type of unseaworthiness complained of in that case was the improper lashing of the cargo. Further, the lashing of the cargo was the charterers' responsibility and this fact, the defendants said, influenced the judge when he construed the exclusion clause to exclude the shipowners from liability for such improper lashing by the charterers. The defendants also submitted that *The Imvros* should not be followed because it had been criticised as being inconsistent with the Court of Appeal decision in *The Galileo* [1913] P.9 and the House of Lords' decision in *Steel v State Line SS Co.* [1877] 3 AC 72.

111 Those two cases are, however, not exactly on point. In *The Galileo* the words used were 'at shippers risk'. It was held that those words were clearly referable to other risks than that of a breach of the fundamental obligation of the shipowner in respect of seaworthiness and therefore did not protect the shipowner from liability for cargo loss caused when a lighter into which the goods had been transhipped sank due to unseaworthiness. The main discussion in the case centred around whether the shipowners had warranted the lighter's seaworthiness. Once it was held that they had, the court quickly disposed of the argument (in no more than one sentence) that the clause in question relieved the shipowners from liability for breach of that warranty. It would seem from the dismissive way in which the court dealt with the construction of the clause, that simply telling the shipper that the goods are shipped at his own risk without specifying the risk for which the shipowner will not be liable is insufficient to escape liability for unseaworthiness. The clauses in the present case, however, go further than 'at shipper's risk' by adding 'damage howsoever arising' or 'damage … howsoever caused'.

112 In the *State Line* decision, a cargo of wheat was damaged when sea water burst through a porthole that had been insufficiently fastened by a negligent crew member before the vessel left port on its contractual voyage. One of the grounds on which the shipowners contested liability for the damaged cargo was the presence of the following exemption clause in the bill of lading:

Not accountable for leakage, breakage … however caused. Not responsible for the bursting of bags, … or for any of the following perils … namely, risk of craft or hulk, or transhipment, explosion, heat or fire at sea, in craft of hulk, or on shore, boilers, steam or machinery, or from the consequence of any damage or injury thereto, however such damage or injury may be caused, collision, straining, or other peril of the seas, rivers, navigation or land transit, of whatever nature or kind soever, and however caused, excepted.

The House of Lords considered that this clause would not exempt the shipowners from liability for unseaworthiness. Lord Selborne found that the clause exempted the shipowners from liability for perils encountered subsequent to the loading of the cargo on board the ship and did not nullify and destroy the implied obligation of the shipowners to provide a seaworthy ship. It would seem from this finding that that obligation had to be complied with before loading of cargo. Lord Blackburn also found that the contract did not provide at all for the case of an unseaworthy ship producing damage. He said at p 89:

The shipowners might have stipulated, if they had pleased (I know no law that would hinder them), we will take the goods on board, but we shall not be responsible at all, though our ship is ever so unseaworthy; look out for yourselves; if we put them on board a rotten ship, that is your look-out; you shall not have any remedy against us if we do. I say they might have so contracted, and perhaps in some cases they may actually so contract … I think that when this contract is fairly looked at it appears they do not so contract as to apply it to this case. I think … that they have here sufficiently expressed in the contract they will not be responsible or answerable for the consequences of a loss by perils of the seas or either of the excepted perils, even though it may be produced by the negligence of the mariners.

The other two Law Lords agreed that the exemption clause did not protect the shipowners from the consequences of unseaworthiness but did not give reasons for that construction of the clause. It can be seen that Lord Blackburn and Lord Selborne differed in their approach. Lord Selborne construed the clause as applying to perils encountered after loading and Lord Blackburn construed it as applicable to perils of the seas not arising from unseaworthiness. He did, however, envisage the possibility of a clause expressly exempting liability for unseaworthiness. He made it plain that if such a clause was drafted it would be effective.

113 It appears to me that the point at issue is a question of construction of the particular clause in issue. The clause before me is similar to the one that was before the judge in *The Imvros* and given that the Hague Rules did not apply to the deck cargo, there was no law or contractual agreement operating to prevent the shipowners from limiting their liability for unseaworthiness. To me, the clause is plain. It provides that the shipowners are not liable for any damage however the same may have been caused. The words 'however caused' are wide enough in my view to cover unseaworthiness. I therefore find that in respect of the cargo on deck, the shipowners are not at fault despite failing in their obligation to provide a seaworthy vessel as a result of which the casualty occurred. As there is no actionable fault on their part, they are entitled to recover the general average contribution from the deck cargo.

(iv) Was the general average expenditure reasonable?

114 The defendants contend that the expenditure incurred by the shipowners at and from Luanda was not reasonably incurred for the common safety or for the purpose of preserving the cargo and ship from peril. Their stand is that the cargo could have been discharged and transhipped at Luanda, alternatively, at Cape Town and alternatively, at Durban. There was no need for the vessel to be towed all the way to Tuticorin; the shipowners did this to take advantage of the market for scrap vessels in India and they should not be able to recover any part of the cost incurred from the cargo interests.

115 The shipowners' position is that all expenses were reasonably incurred. Regarding the tow from Luanda to Cape Town, this was done on the advice of the Salvage Association surveyor who indicated that Luanda did not have adequate repair facilities for the type of damage sustained and that the vessel should be towed to Cape Town where the repairs could be undertaken. When the vessel arrived at Cape Town, however, the port authorities imposed unreasonable conditions in order to allocate it a repairing berth and, in any case, were not able to say when such a berth would be available. According to the minutes of a meeting which the shipowners and other parties held with the port authorities, there was a mention of a deposit of 10 million Rand for berthing charges which the shipowners objected to and, at the end of the meeting, it was concluded that the vessel would only be allowed in the port provided the shipowners gave a deposit for costs, the South African Port State Authorities were allowed to carry out a thorough inspection of the vessel including cargo holds (this would have required discharge of the cargo) and the vessel would have to be repaired in

accordance with that authority's recommendations. Finally, berthing would be possible only approximately 20 days after the meeting. One Captain Peter David Stowe, the marine safety and environment manager at the Port of Cape Town, who was present at that meeting, testified. He said that the minutes reflected the meeting and that at the time of the vessel's arrival at the anchorage there was no berth available. It was possible a berth would have been available after about 20 days. It was also possible that it would have been available earlier or even much later. Captain Stowe personally inspected the vessel and noted certain defects. He agreed that these defects could have all been rectified if the vessel had berthed for its main engine repairs. He also agreed that his inspection did not reveal any water ingress into the ship though he did not take soundings of any of the tanks. The vessel, however, was upright at the time of his inspection.

116 Whilst the vessel could have been towed to Durban and repaired there, as recommended by the Salvage Association, Mr Srinivasan's evidence was that the shipowners decided not to take this course. They were concerned that the Durban port authorities would impose equally unreasonable conditions as those imposed by the Cape Town authorities. They therefore decided to tow the ship directly to Tuticorin.

117 The general average adjuster, Mr Syed Marican, testified that he had calculated the general average contribution adjustment based on the following costs:

(1) towage expenses from immobilised position to Luanda;

(2) towage from Luanda to Cape Town;

(3) towage from Cape Town to Tuticorin; and

(4) credit of normal voyage expenses saved.

He was satisfied that these costs had been reasonably incurred for general average purposes. The defendants did not call any other average adjuster to challenge the manner in which the adjustment had been carried out or Mr Marican's conclusions.

118 Mr Marican gave more details of the adjustment in testimony. In relation to the towage from Luanda to Cape Town, the full costs of towage had been allowed but an amount had been deducted representing the savings of ordinary voyage expenses that would have otherwise been incurred between Luanda and Cape Town. No such savings were provided for the voyage between Cape Town and Tuticorin. This was because Mr Marican had instead allowed the costs of savings of general average expenses ie the costs that had been saved by not towing the vessel to Durban. Mr Marican estimated that towing the vessel to Durban would have cost US$100,000; repairs at Durban would have cost US$155,931 and the cost of discharge and reloading cargo in connection with the repairs would have been US$106,906. Therefore US$362,838 was saved by not going to Durban.

119 Despite the carping of the defendants, the evidence was that the decision to tow the vessel to Cape Town was a reasonable one. The shipowners had acted on the advice of the Salvage Association in doing so. Secondly, they could not have known at that stage that the engine was beyond economic repair since the Salvage Association had recommended further investigation and repairs. The chief engineer may have thought that economic repair was impossible but that conclusion was arrived at early and before detailed investigation had been undertaken. Whilst Captain Needham considered that it would have cost only US$200,000 to tranship the cargo from Luanda, it does not appear to me that at that stage the shipowners were remiss in not exploring this possibility. Mr Marican who was independent and did not make his determinations in reliance on the

shipowners' view point, considered that Luanda was a difficult port and that in the circumstances the 58 day stay at Luanda and the tow to Cape Town were not unreasonable. It should be noted that while the vessel was under arrest in Luanda, the arrest delayed the commencement of the tow by only two days and so had little effect on the duration of the stay.

120 The next question is whether it was reasonable to tow the vessel to Tuticorin with the cargo on board instead of repairing it at Cape Town or towing it to Durban for repairs or discharging and transhipping the cargo at Cape Town. It should be noted that the cargo interests did not express any views at that time on the course to be taken and they only sent their surveyor on board just before the vessel was about to depart Cape Town. It was left to the shipowners to decide on the best course. The circumstances were that the port authorities were not receptive to the vessel. As Captain Stowe confirmed, they were afraid that it would sink or catch fire. They demanded a high deposit for berthing facilities, indicated that all cargo would have to be discharged (and not only the cargo in way of the engine) and wanted additional repairs effected on the basis of their inspection of the ship. All this would have been expensive. Further, there was no guarantee that a berth would be available soon or even within the period of 20 days mentioned by the port authorities.

121 Apart from the above, however, the shipowners must have been influenced by the estimates that they had obtained from Wartsila, the engine makers, as to the costs of repairing the main engine. By their revised quotation of 14 February 2000, Wartsila stated that the costs of repairing the main engine without the replacement of the engine bedplate would be US$390,576. If the bedplate was to be replaced, the cost would be US$599,629. This quotation excluded the cost of worn parts. Taking the costs of berthing, the likely delays to be experienced while waiting for a berth, the costs of discharging all the cargo and reloading it and the costs of repairing the vessel into account, it would appear that the shipowners considered it cheaper to tow the vessel with cargo on board to Tuticorin. The defendants gave no evidence of what it would have cost the shipowners to discharge the cargo at anchorage in Cape Town and to thereafter tranship it to Tuticorin. Whilst they contended that the shipowners must have been attracted by the well established scrap market at Tuticorin, they gave no evidence of what scrap price could have been obtained for the vessel at Cape Town or Durban. The vessel was sold for approximately US$400,000 in Tuticorin. To get it and the cargo there, the shipowners had to incur towage costs of some US$380,000, a not inconsiderable sum. In the absence of evidence as to transhipment costs at Cape Town or Durban and the scrap market prices (or lack thereof), I cannot find that the shipowners acted unreasonably in taking the course they finally adopted.

Conclusion

122 For the reasons given above, I hold that the shipowners are entitled to recover from the defendants the deck cargo's share of the general average expenses incurred by the shipowners. They are not entitled to recover any contribution in respect of the under deck cargo. As 75% of the cargo was carried below deck this means the defendants have largely succeeded in their defence and thus must affect costs. The parties shall see me as regards the appropriate orders to be made in respect of:

(1) costs of the shipowners' claim and the defendants' defence;

(2) the calculation of the deck cargo's share of the general average expenses. As regards the counterclaim, the defendants withdrew it at a very late stage in the proceedings. The plaintiffs are therefore entitled to the costs of defending the counterclaim up to the date of withdrawal.

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