Republic of South Africa

**IN THE HIGH COURT OF SOUTH AFRICA**
**(CAPE OF GOOD HOPE PROVINCIAL DIVISION)**

In the matter between: Case No: 10092/2005

OJ FISHING (PTY) LTD PLAINTIFF

Versus

BRINK DIESEL CAPE RESPONDENT

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JUDGMENT DELIVERED ON 10 JUNE 2008

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MOTALA J

[1] At around midnight on 14-15 October 2004, while a fishing vessel belonging to plaintiff, the MFV Oosterdam *("the vessel")* was steaming towards Cape Point, a fire broke out in its engine room. Shortly thereafter, and before the fire was extinguished, the engine of the vessel seized. The vessel was towed back to Cape Town. Subsequently, the damage caused by the fire was repaired and the

engine was replaced, the cost of which is claimed by plaintiff in this action.

[2] During April to June 2004, pursuant to an agreement between the parties, defendant had effected a partial overhaul of the engine.

Plaintiff avers that, in breach of the agreement, the overhaul was not carried out in a proper and workmanlike manner and with the requisite care and skill in that, during the re-assembly of the engine, defendant failed to tighten one of the two bottom-end bearing bolts of the number 2 connecting rod of the engine to its correct torque. An alternative averment – that the bolt was overtightened or overstressed – was abandoned during the trial.

Plaintiff avers further that as a result of defendant's failure to tighten the one bolt sufficiently:-

(i) the bolt loosened during the operation of the engine and, as the bolt slackened, the other bottom-end bearing bolt on the number 2 connecting rod was overstressed cyclically, eventually bent and failed, causing the seizure of the engine.

(ii) The engine vibrated excessively which caused the insulation of certain electrical cables to be damaged resulting in an electrical short-circuit which caused the fire in the engine room.

[3] Defendant denies that it breached the agreement. Alternatively, it pleads, (in paragraph 17 of its amended plea) that:-

"(a) If the bottom end bearing bolt was undertorqued or overtorqued or stressed causing it to loosen this would have manifested shortly after repairs were completed by variations in the oil pressure and/or overheating and/or hammering and chattering sounds and/or excessive vibration;

(b) Plaintiff failed to take timeous, adequate or any steps to investigate the cause of the variation in oil pressure and/or overheating and/or hammering and chattering sounds and/or excessive vibrations which occurred over an extended period of time prior to the alleged seizure and/or catastrophic failure of the engine;

(c) Plaintiff failed to effect repairs to the engine timeously, adequately or at all and, in particular, failed to effect repairs

whilst the vessel was in port;

(d) Plaintiff continued to operate the engine up to the moment of the alleged seizure and/or catastrophic failure of the engine;

(e) Plaintiff failed to stop operating the engine prior to the alleged seizure and/or catastrophic failure of the engine."

[4] Evidence on behalf of plaintiff was given by the vessel's skipper, Mr Jaoa Horacio Fernandes, the second engineer, Mr Dawid Aubrey De Wet and two experts, Mr Paul Coxon and Dr Janet Basson.

[5] Mr Fernandes testified that he was asleep in the wheelhouse of the vessel. He was awakened around midnight by his mate, whose name he could not recall, who reported to him that a fire had broken out in the engine room. He slowed down the engine and went down to the engine room. The lights had failed. While the other crew members were busy extinguishing the fire with fire extinguishers, not water hoses, he returned to the wheelhouse, slowed down the engine completely and put it into neutral. He then heard a bang. He went down to the engine room again and discovered that the engine had failed.

Mr Fernandes testified further that he checked the oil pressure each time he started the engine. At no time on that trip or on earlier trips did the oil pressure gauge or the temperature gauge indicate any problems. The vibration of the engine was normal.

Mr Fernandes testified that the engine failed less than 5 minutes after he had been awakened. He was not sure whether he told Mr Coxon that 20 minutes had elapsed.

[6] Mr De Wet testified that he is normally on duty in the engine room between 11h00pm and 06h00am. His duties included checking the temperature and oil gauges. He also assisted the first engineer to change the engine oil and the gear box oil and to replace the oil filters every 250 hours. He said that the engine of the vessel as on all such vessels is extremely noisy, so much so that it was impossible to have a conversation in the engine room.

He said that the oil pressure and temperature gauges on that day as on all their earlier trips did not indicate any problems. The vibration of the engine was normal. He confirmed that on 4 October 2004, a crack had developed in the exhaust system of the engine. It was duly

repaired by defendant.

Mr De Wet testified that on assuming duty at about 11h00 pm that night, he checked the gauges as was his routine. They did not indicate any abnormality. He heard no abnormal noises. The engine was running normally.

He then left the engine room for a while. He returned to the engine room at about 11h50 pm in order to pump out water from the hold, a normal task. He left the engine room again in order to have a drink of water. He was about 2 metres away from the engine room when he saw the fire in the engine room.

He raised the alarm and he and other members of the crew began to extinguish the fire using dry powder and CO2 fire extinguishers. They did not use the water hoses. Before the fire was completely extinguished, he heard a loud bang and saw that the engine had failed. He estimated that between 5 and 15 minutes elapsed between the start of the fire and the failure of the engine. He confirmed that he had estimated a lapse of 20 minutes in a report he had made to Mr Coxon.

[7] Mr Coxon, an experienced marine engineer and marine surveyor, acting on behalf of the insurer of the vessel, inspected the vessel on 15 October, 2004 at the Cape Town docks. He took 130 photographs, which were handed in as Exhibit B. Mr Coxon found that the number 2 connecting rod had come out of the side of the engine block and was lying on the deck plates, as depicted on photograph B1. He found the nut on the starboard side and the bottom end bearing cap in the sump pan of the engine. The port bolt had snapped.

In his opinion, the failure of the engine was caused by the progressive loosening of the starboard bolt over a period of time as a result of which the bottom end cap lost its clamping effect and started opening and closing on the starboard side causing the port side bolt, which was still tight, to bend backwards and forwards and eventually fracture. Mr Coxon testified that the holes in the bottom end cap were ovalled or elongated and the surface of the cap was damaged which proved that there had been movement between the mating surfaces and that the cap had rocked backwards and forwards repeatedly.

Mr Coxon said that during the final phase of the engine failure hammering noises and chattering noises (*caused by the movement of the mating surfaces of the cap)* would have become evident. Although he had difficulty in accepting that the crew heard no abnormal noise or excessive vibration, he indicated that he could not say that the crew would have become aware of anything untowards until the final seizure of the engine which would have taken a few minutes only.

Mr Coxon found no evidence of significant fuel dilution or lubrication failure. He did not agree with suggestions that over-revving of the engine or the ingress of water could have caused the seizure of the engine. He also disputed that a sudden external event could have caused the seizure. In his view, such an event would have caused damage to both the port and the starboard bolts, and especially to their threads, but the mating surfaces of the big-end cap would not have been damaged.

Mr Coxon testified that the fire in the engine room was caused by a short circuit which was due to insulation of certain electric cables being damaged by the chafing of the cables against an overhead

beam. The chafing in turn was caused by the vibration of the engine over a period of time, and would have been particularly severe during the final failure of the engine.

Mr Coxon was of the opinion, based on his expertise and on his examination of the relevant parts of the engine, that the basic cause of the fire and the engine failure was that the starboard bolt was not sufficiently tightened when the engine was overhauled some months earlier by defendants.

[8] Dr Janet Basson is a highly qualified and experienced metallurgist. Her consulting company specialises, inter alia, in determining the cause of engine failures.

Dr Basson examined the bottom-end cap and the two bolts. She found that the two faces of the cap showed considerable evidence of chattering which she said proved that the two faces had been impacting against each other for a considerable period of time. She said that could occur only if one or both bolts were loose. If only one bolt was loose, the other bolt would be subjected to a cyclic load or a fatigue failure (*as is caused by repeatedly bending a piece of steel*

*backwards and forwards*) culminating eventually in a ductile failure i.e. failure caused by a massive impact.

She also found that the two holes in the cap had ovalled and the one on the starboard side was almost torn through and showed an imprint of the bolt thread. She stated that because of the nature of the steel, such ovalling could not be caused by one impact but would have occurred progressively over a number of cycles of the engine.

Dr Basson found also that the last few threads of the starboard bolt had stripped.

Dr Basson found that the fractured port bolt had suffered a fatigue failure followed by a ductile failure i.e. the bolt had been bent back and forth for a considerable time until the failure of the engine when it sustained a massive impact.

The chattering marks on the face of the big-end cap, the ovalling of the bolt holes, her finding that the port bolt had sustained fatigue failure before the ultimate ductile failure and the fact that nut on the starboard bolt was found in the engine persuaded Dr Basson that the

cause of the engine failure was a failure to tighten the starboard bolt nut sufficiently. She stated that the engine would have continued working for a considerable time, perhaps in excess of 100 hours after the nut began to loosen.

[9] Defendant called two diesel mechanics, Mr Gerrit Visser and Mr Graham Aldis and two experts, Mr Peter Brinkley and Mr John Press.

[10] Mr Visser is a diesel mechanic with 40 years experience. He testified that he effected the partial overhaul of the engine with the assistance of two apprentices. He said that he did the required work in accordance with the manufacturer's specification. More particularly he tightened the bottom end bolts, a four stage procedure, to the required torque.

[11] Mr Aldis is also a qualified and experienced diesel mechanic. He testified that if the plaintiff's experts are correct and the starboard bolt had progressively loosened the resulting chattering motion would have been very noisy. In his opinion, the engine should have been stopped immediately and would have required comparatively minor

repairs.

[12] Mr Brinkley is an experienced marine engineer and marine surveyor. He examined some of the engine's components and was furnished with copies of the reports of plaintiff's experts and the photographs taken by Mr Coxon.

His initial opinion was that the engine failed because it had been over-revved or because of water ingress. However, as a result of acquiring further information and further research, he conceded that neither hypothesis was correct. Nevertheless he disagreed with plaintiff's experts. In his opinion, if the starboard bolt had not been sufficiently tightened, it would have unwound completely in about two hours, and not after 1400 hours, being the number of hours the engine had operated since the overhaul. Furthermore, in his opinion, hammering and chattering noises would have been heard by the crew before the engine failed.

In his report, Mr Brinkley stated also that the oil pressure gauge and the temperature gauge would have alerted the crew if the bolt was loosening. However, during his testimony, he was unable to say

when the oil pressure gauge would have done so and conceded that the temperature gauge did not play a significant role.

[13] Mr Press is a highly qualified and experienced mechanical engineer whose area of expertise includes the analysis of engine failures. He examined the connecting rod, the two bolts and the big-end cap. Mr Press found no chattering marks on the big-end cap.

It is common cause that the starboard bolt had become elongated and eventually necked i.e. its diameter had decreased. It was also flattened. In Mr Press's opinion, the elongation of the bolt is a vital clue as to why the engine failed and was not consistent with the explanation of plaintiff's experts. He testified that the elongation of the bolt was due to an external event – a load which caused the nut to loosen and the engine to fail.

Mr Press identified four possible such external events. He pointed out, however, that two of them would occur after the elongation of the bolt. The remaining two are:-

(a) a seizure or partial seizure of the number 2 piston; and

(b) a seizure of the liners of the bottom-end bearing, which he referred to as wedging.

During cross-examination by Adv McClarty SC who appeared for plaintiff, Mr Press conceded that there had been no seizure of the piston.

As submitted correctly by Adv Wragge SC who appeared with Adv White for defendant, defendant is under no obligation to prove the cause of the engine failure. For that reason, I do not find it necessary to set out Mr Press's reasons for his opinion that wedging may have caused the engine failure, or to consider the challenges thereto by Adv McClarty. Suffice it to say that the opinion is merely a theory, a hypothesis unsupported by any evidence. Indeed, all indications are to the contrary. Mr Coxon was present when the engine was dismantled. He would surely have noticed immediately if wedging of the bearing liners had occurred. Mr Press conceded that Mr Coxon was in the best position to do so. Furthermore, Mr Brinkley also did not agree with the wedging theory.

[14] Mr Press's evidence as to the elongation and necking of the

starboard bolt is of crucial importance. He disputed the evidence of Dr Basson as to how that elongation was caused.

Dr Basson testified that the elongation was caused when the crankshaft pin struck the lobe in which the bolt was housed – what she called a rolling-pin effect.

Mr Press said that explanation could not be correct, as a measurement of the lobe showed that it had lengthened by about 2 to 5mm, whereas the bolt had lengthened by 20 to 24 mm. He could not understand how the bolt could have lengthened without a similar lengthening of the lobe, and used the analogy of attempting to elongate a sausage inside a hotdog without elongating the bread roll.

I think the analogy is inappropriate as Dr Basson's explanation is that the lobe and the bolt were struck, not that they were pulled. Furthermore, the measurement relied on by Mr Press cannot be accepted as accurate. He admitted that it was very difficult to measure the elongation of the lobe. Dr Basson testified that the bolt could not be elongated by more than 17mm before it breaks.

[15] That debate and the many other debates between the parties' experts such as whether or not, on Mr Press's hypothesis, the engine would have stopped or other bolts would also have been affected obscure the central question before me and that is whether the failure of the engine was the result of a long process commencing after the overhaul of the engine or was the result of a sudden external event which occurred immediately before the failure of the engine.

In my view, the former explanation is the correct one. That conclusion is based on the evidence of Dr Basson. As stated above, she testified that because of the nature of the material used, the ovalling of the bolt holes cannot be caused by a single impact but would occur over a number of cycles of the engine. That conclusion is reinforced by the fact that only the last few threads of the starboard bolt had stripped. The upper threads were undamaged, a clear indication that the nut had unwound freely.

[16] Adv Wragge SC submitted that there are four factors which indicate that plaintiff's experts are incorrect.

First, it is an essential component of their opinion that prior to the

failure of the engine the vibration of the engine would have increased and hammering sounds would have been audible. Both Mr Fernandes and Mr De Wet stated that they noticed no such abnormality.

The undisputed evidence as to the cause of the fire – that the insulation of the electric cables wore away as a result of vibration – must, in my view, mean that the engine must have vibrated excessively.

In addition, Mr De Wet testified that the engine was always so noisy that it was impossible to have a conversation nearby. As the vibration must have increased gradually it is understandable that it was not noticed. The hammering sounds must have occurred during the final phase of the engine failure. At the time, Mr De Wet's attention was focused on extinguishing the fire. I do not think that the evidence of Mr Fernandes and Mr De Wet is sufficient to cause doubt as to the validity if plaintiff's experts explanation of the engine failure.

Secondly, Adv Wragge drew attention to the evidence of Mr Press that there were no chattering marks on the face of the big-end cap

contrary to the evidence of Dr Basson.

I am unable to understand how two highly qualified experts could give such conflicting evidence.

In the circumstances I can only regard this aspect of the evidence as a neutral factor.

Thirdly, Adv Wragge pointed out that according to Mr Press the port bolt fractured as a result of a ductile failure and that Dr Basson eventually agreed with that evidence, although she had originally ascribed the fracture to fatigue failure. However, Dr Basson emphasised that there was evidence of fatigue failure before the final ductile failure.

In my view, the evidence of Mr Press on that aspect does not raise significant doubt as to plaintiff's case.

Lastly, Adv Wragge referred to the evidence of Mr Press that the surface of the big-end cap was covered with an unbroken layer of pyrolised or burnt oil which he would have expected to be chipped if

the starboard nut had repeatedly struck it. In my view, Dr Basson's evidence that there was burnishing of the surface renders Mr Press's evidence unacceptable.

[17] I may be incorrect in not accepting Mr Press's criticism of plaintiff's case and in not upholding Mr Wragge's submissions. However, even if those criticisms and submissions are correct, the question that arises in whether, taken together, they are of sufficient weight to justify a finding that plaintiff has not discharged the onus resting on it.

In my view, the cumulative effect of the factors relied upon by defendant is outweighed by two basic factors – the unchallenged evidence of Dr Basson that the ovalling of the bolt holes occurred over a long period and that the starboard bolt unwound freely. Those two factors are, in my view, decisive. The other factors relied on by plaintiff's experts – the chattering marks, the damage to the face of the big-end cap, the burnishing of the rear of the cap and evidence that the port bolt showed signs of fatigue failure – seem to me to be subordinate factors relied on by plaintiff's experts to support their theory.

In my view, plaintiff has discharged the onus of proving that the cause of the engine failure was a failure by defendant to tighten the starboard bolt sufficiently.

[18] **PLAINTIFF'S DAMAGES**

Plaintiff claims R114 348.79 excluding *VAT* being the agreed cost of repairs to the damage caused by the fire.

Mr Brinkley testified that the fire would inevitably have occurred as the electric cables had not been correctly installed. They should have been secured in a cable tray with no sharp edges.

However, there is no evidence before me as to when that *"inevitable"* fire would have occurred.

Mr Coxon's evidence on the cause of the fire is set out in paragraph 2(ii) above.

In my view, the increased vibration was the proximate or effective

cause of the fire.

[19] Plaintiff claims R730 611.67 being the agreed cost for the replacement of the engine which could not be repaired.

Defendant avers that plaintiff has not taken reasonable steps to mitigate its damages. In that regard defendant relies on Exhibit A84, a letter from Columbine Marine Engineering dated 18the August 2007 which states that a used engine block was available in December 2004. The admissibility of such hearsay evidence and the weight to be given thereto is in terms of section 6(3) and (4) of the Admiralty Jurisdiction Regulation Act, 105 of 1993 *("AJRA")*, within the discretion of the Court.

In my view, the letter should be admitted in evidence.

Mr Coxon, whose primary function was to ensure that the damaged engine was dealt with as economically as possible testified that neither the engine's agents nor firms to whom the agents referred him were able to furnish a used engine block.

In the absence of direct evidence that the availability of the used engine block was known in the industry, or ought to have been known, I cannot find that Mr Coxon's efforts to find such a block fall short of what is required of a reasonable man. It is accordingly, unnecessary to determine whether or not a used engine block was available in December 2004.

Accordingly, I am of the view that defendant has failed to discharge the onus of proving that plaintiff has failed to mitigate its damages.

[20] Plaintiff also claims payment of the fees of Mr Hiles and of Mr Coxon. Mr Hiles is a loss adjustor acting on behalf of the insurer of the vessel. I cannot see on what basis defendant can be held liable for his fees.

Part of Mr Coxon's fees fall in the same category. The remainder appear to me to be part of his qualifying expenses. It is more appropriate for the Taxing Master to determine what part, if any, of those fees should be allowed on taxation.

[21] PLAINTIFF'S CLAIM FOR INTEREST

Section 5(2)(f) of AJRA provides that a court, in the exercise of its admiralty jurisdiction, may

> "make such order as to interest, the rate of interest in respect of any sum awarded by it and the date from which interest is to accrue, whether before or after the commencement of the action, as to it appears just;"

The section confers a wide and unfettered discretion on the Court.

See Mt Argun v Master and Crew of the MT Argun and others 2004(1) SA 1 (SCA) at p12 G-H.

No evidence has been placed before me as to the basis on which I should exercise my discretion. Accordingly, I think the rate of interest prescribed in terms of the Prescribed Rate of Interest Act, 55 of 1975, which at present is 15.5% per annum should apply.

In my view, it is just that the interest be calculated from the date of service of the summons.

[22] Costs of Suit

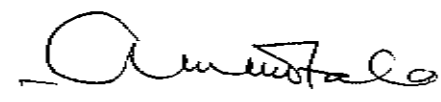
At the commencement of the hearing, plaintiff opposed an application by defendant for an amendment to its plea. I granted the amendment. Plaintiff is not entitled to the costs of its opposition.

[23] Defendant is ordered to pay plaintiff

(a) The sum of R844 960.46 excluding *VAT*;

(b) Interest on the said sum at the rate of 15.5% per annum calculated from the date of the service of the summons to date of payment;

(c) Costs of suit, including the qualifying expenses of Mr Paul Coxon and Dr Janet Basson, but excluding the costs occasioned by plaintiff's opposition to defendant's application for an amendment to its plea.



**JUDGE A.M. MOTALA**