Summary of TOMAC Arbitration

"STAR ISLAND"

Sale of ship – NIPPONSALE 1993 – Construction of MOA Clause 5 - Whether alleged defect was an 'average damage affecting her present class'

Claimants: Buyers (Liberia)
Respondents: Sellers (Panama)
Tokyo, 3 December 2010

Facts and Discussion

Common ground between the parties

1. On 5 August 2006 the Claimants/Buyers inspected the vessel "STAR ISLAND" (container ship built in 1995 by Murakami Hide Shipbuilding Co., Ltd. in Japan; 6,384 gross tons, 8,713 deadweight tons, Loa 115.02 meters, Lpp 105.50 meters, Breadth 18.20 meters, Depth 11.00 meters, Maximum Summer Draft 8.00 meters, powered by Diesel engines capable of producing 6,080 PS; 400 TEU, classed by NK; hereinafter referred to as the Vessel) at Shanghai. On 21 August the Vessel's price was provisionally agreed between the parties to be US$9,200,000. On 30 and 31 August a second inspection was held in Japan after the Claimants were informed by the Respondents/Sellers that the Vessel had once run aground. By a Memorandum of Agreement ("MOA") on the NIPPONSALE 1993 form dated 1 September 2006 the Respondents agreed to sell and the Claimants agreed to buy the Vessel for US$9,160,000.
2. The MOA contained the following clauses:

   Clause 5 DELIVERY CONDITION: The Sellers shall deliver to the Buyers the Vessel substantially in the same condition as when the Vessel was inspected by the Buyers at the place mentioned in the preamble, fair wear and tear excepted, but free from outstanding recommendations/notations and average damage affecting her present class with all her class, national and international trading certificates clean, valid and unextended at the time of delivery.

   Clause 15 ARBITRATION: Any dispute out of this Agreement shall be submitted to arbitration held in Tokyo Maritime Arbitration Commission ("TOMAC") of the Japan Shipping Exchange, Inc. in

accordance with the Rules of TOMAC and any amendments thereto, and the award given by the arbitrators shall be final and binding on both parties.

Clause 16 INSPECTION: The Vessel has been accepted by the Buyers after their superficial inspection of the Vessel at Shanghai, China, on 5th August, 2006 and at Naikai Zosen Corporation, Takuma Works, Japan, on 30th -31st August, 2006 and their inspection of the Vessel's class records. Therefore, this purchase is definite and outright with no further inspection except underwater inspection as per Clause 19 herein.

3. On 13 September the Buyers paid US$916,000-, representing 10% of the purchase price, to the Sellers.
4. Some time on or before 24 September the Buyers suggested that the delivery place should be altered from Innoshima, the original delivery place, to Itozaki, the suggested new place of delivery and that the Buyers' engineer should be allowed to be on board the Vessel during the short voyage. The distance between Innoshima and Itozaki is about 10 miles.
5. On 24 September the Vessel shifted from Innoshima to Itozaki.
6. On 25 September the Sellers tendered the Notice of Readiness.
7. On 26 September the Sellers broker received a notice from Buyers' broker to the effect that on 24 September the Buyers' engineer, who had been allowed by the Sellers to be on board the Vessel during the short voyage from Innoshima to Itozaki, heard an incessant, abnormal and loud noise at the stern and became aware of an irregular or uneven motion of the rudder stock in the steering gear room. (The Sellers do not agree that there was an abnormal noise or an irregular motion of the rudder stock. The Sellers only agree that they received such notice from the Buyers' broker.) On the same day the Claimants gave notice to the Respondents that they were calling off the closing and instructed their Bank not to make payment of the balance of the purchase price. On 27 September and later days the Claimants proposed a joint inspection to the Respondents who, relying on Clause 16 of the MOA, declined to participate in a further inspection.
8. On 5 October the Buyers obtained from the Hiroshima District Court an order for preservation of evidence. A judge of the court attended the same day on board the Vessel lying at anchor off Itozaki, examined the

condition of the upper part of the rudder stock while the rudder blade was turned up to 33 degrees to both port and starboard, the examination of which was video-recorded. The judge also examined condition of the rudder trunk beneath the steering gear room of which the photographs were taken. The judge examined as well deck and engine log books on board of which the photostat copies were taken.

9. On 6 October the Claimants sent a message to the Respondents which read: WE REFER TO SELLERS E-MAIL OF 6TH OCTOBER RECEIVED VIA BROKERS THIS MORNING AND WE SEE THAT YOU LEAVE US NO CHOICE BUT TO ACCEPT DELIVERY OF THE VESSEL AS IS. THIS IS THEREFORE TO CONFIRM THAT WE SHALL PROCEED WITH THE CLOSING AND TAKE DELIVERY OF THE VESSEL WITHOUT PREJUDICE TO OUR POSITION UNDER THE MOA, I.E. THAT THE CONDITION OF THE VESSEL DOES NOT CONFORM TO THE TERMS OF THE MOA. INSTRUCTING OUR BANK TO REMIT THE BALANCE 90% PLUS THE 10 DAYS LIQUIDATED DAMAGES, AT $8,000 PER DAY FOR 10 DAYS AS PER MOA, PLUS BUNKERS ETC. WE ANTICIPATE THE CLOSING TO TAKE PLACE ON 10TH TUESDAY AS MONDAY IS A PUBLIC HOLIDAY IN JAPAN …"
10. On 10 October the protocol of delivery and acceptance was signed by both parties and the Vessel was delivered to the Claimants.
11. On 20 October the Buyers advised the Sellers that as a result of the Russian Maritime Register of Shipping's inspection of the Vessel during the period from 12 to 19 October at Onomichi, Japan, the classification society pointed out that the excessive movements of the rudder stock was observed; required that the excessive movement of the same should be rectified by 19 November 2006; recommended that full inspection after dismantling of the rudder and rudder stock should be carried out; prohibited the Buyers to put the Vessel in commercial operation; allowed her only to proceed in ballast condition under her own power to a dry-dock in China for repairs of the rudder stock. The Buyers suggested that the Sellers should attend the expected inspection in China. The Sellers declined the Buyers' suggestion.
12. The Buyers/Claimants claimed US$502,463.45 for the repairs to the rudder, dry-dock charges and related losses.

The Claimants stated as follows:

1. Pursuant to Clause 5 of the MOA ("Seller's Warranty against Defects"), the Respondents were obligated to deliver the Vessel in a condition free from outstanding recommendations/notations and average damage affecting her present class which in turn means that the Vessel should be delivered in a condition without any defects affecting the seaworthiness of the Vessel.
2. The "superficial inspection" referred to in Clause 16 of the MOA was not an inspection of the efficiency and performance of the Vessel's machinery and appurtenances but of the Vessel's apparent condition only. Furthermore, the words of "this purchase was definite and outright" in the same clause were only meant to confirm that the sale was without routine preconditions such as "Subject to Board approval". Therefore, the sale under this clause was still subject to Clause 5 of the MOA as well as to Article 570 of the Civil Code of Japan.
3. After the Vessel was delivered in October 2006, the Vessel's rudder system was surveyed at Onomichi and the following recommendation was issued by Russian Maritime Register of Shipping.

   NOTE 2: Upon operation test of steering gear excessive movements of the rudder stock have been detected. It was found necessary to submit rudder and rudder stock dismantled completely for the inspection and rectifying aforesaid defect.

   NOTE 3: Taking into account the deficiency mentioned above, in item 2, Conditional Classification Certificate to be issued with validity till 19.11.2006. The Vessel is allowed to proceed to Dry Dock by her own power in ballast condition for repairs of the rudder stock. Any other commercial operation until fulfillment of Requirements #1 is prohibited.

   Requirements 1: Rudder and rudder stock is to be submitted dismantled completely for the inspection and rectification of excessive movements of the rudder stock till 19.11.2006.
4. NK's maximum allowance for clearance with respect to carrier bearing for the Vessel was 3.00 *mm*. Therefore, the clearance of the carrier bearing (F-A 2.32 *mm*; P-S 4.80 *mm*) of the rudder stock as measured by calibration method in China on 23 October 2006 indicates the existence of defects of "average damage affecting her present class" within the

meaning of Clause 5 of the MOA. In addition evidence shows lack of water tightness between the steering gear room and the rudder trunk located there beneath at the time of the delivery in violation of the NK Class Rules.

5. The delivery of the Vessel having such defects without notice to the Claimants was a breach by the Respondents of Clause 5 of the MOA or, alternatively, such delivery without notice was a concealment of the defect for which the Respondents are liable in tort. The damage amounts to US$502,463.45 plus interest of 6% per annum to be accrued from the date following the date of service of this arbitration application until the date of full payment.

The Respondents stated as follows:

1. The Respondents' crew members had never noticed the alleged noise and the Vessel had been operated at all times without any trouble.
2. The Claimants asked the Respondents for their permission to have the second inspection saying: "In view of the Respondents' non-disclosure that the Vessel was in dry dock while the MOA was being negotiated, and the non-disclosure of the reported damage to the vessel, the Claimants would now like to re-examine the vessel which examination will include without limitation:

   Further to the underwater inspection, the measurement of the main engine deflection and the rudder clearance as same is balanced rudder type (easily could be affected by a grounding)."

   The wording of the request indicates that the intention of the second inspection was focused on the rudder. Moreover, the Respondents agreed to reduce the price by US$40,000 in response to the Claimants' demand for a discount of US$100,000 to allegedly compensate for the cost of future possible repairs which might be necessitated by the grounding in the past.
3. The protocol of delivery was signed clean without any reservation of the Claimants' right under the MOA in contrast with the wording of the Claimants' message of 6 October.
4. Clause 5 of the MOA should be read literally. "Present class" in the clause was NK and the Vessel was classed by NK without any recommendation at the time of the delivery. At the time of the sale the Vessel had no

relationship with the Russian classification society, whose recommendations would not affect the parties' obligations under the MOA.

5. "Average damage" in Clause 5 of the MOA meant casualty damage or damage occasioned by a peril which would be covered by insurance as opposed to defects through wear and tear or old age. The Claimants' surveyor wrote in his survey report that the defect was the result of wear and tear caused by passage of time and that the defect was not associated with any external factor such as contact damage to the rudder blade. Therefore, by the wording of Clause 5 the alleged defect was of a kind for which the Respondents were expressly excepted from liability.
6. While NK Rules provide for certain maximum allowance for clearance with respect to neck bearing and bottom bearing, the same are silent on this point with respect to carrier bearing.
7. Water tightness between the steering gear room and the rudder trunk there beneath was maintained at the time of the delivery.

Decision and Reasoning:

1. Although the governing law was not stipulated in the MOA, by choosing to contract under the terms of the NIPPONSALE 1993 form which included a provision for TOMAC arbitration in Clause 15, the Tribunal considers that the parties impliedly agreed that Japanese law would be applicable to this case. This was affirmed by both parties at the first hearing held on 9 July 2007.
2. The main issues here are, first, what is the proper construction of Clause 5 of the MOA and second, whether, at the time of the delivery, "average damage affecting her present class" existed in or on the Vessel. However, the Respondents' submission that the words "(T)he Vessel has been accepted by the Buyers---this purchase is definite and outright with no further inspection" in Clause 16 of the MOA, together with the fact that the protocol of delivery was signed by the Claimants without reservation, deprived the Claimants of their right to claim damages may constitute a third issue. Under the circumstances, if the third issue is resolved in favor of the Respondents/Sellers, then the first and second issues need not be considered. Therefore the Tribunal will consider the third issue first.

3. The Tribunal denies such submission. The wording of "definite and outright" in Clause 16 of the MOA represented only the closure of the negotiation and did not deprive the Claimants of their right to claim damages. And the description of "(T)he Claimants hereby accept delivery, title and risk of and to the Vessel pursuant to the terms of the MOA" in the protocol is construed to mean "delivery ---in accordance with terms of the MOA " and cannot be construed to mean that the Vessel satisfied the terms of the MOA at the time of the delivery.
4. Whether the Vessel satisfied the terms of the MOA depends on the following two issues.
   (1) The proper construction of Clause 5 of the MOA.

   Claimants' Exhibit No. 20 "SHIP SALE AND PURCHASE" third edition published by LLP in 1998 describes to the effect that the words "and free of average damage affecting class" frequently amending Clause 11 of SALESFORM 1987 (issued by Norwegian Shipbrokers' Association and adopted by BIMCO in 1956) have been held by certain English judgments to mean "free from casualty damage which would be covered by insurance" and "free from damage affecting class and occasioned by a peril ordinarily covered by insurance – as opposed to defects through wear and tear or general old age". Claimants' Exhibit No. 55 "Explanatory Notes on NIPPONSALE 1993", suggest that the words "free from … average damage affecting her present class" were introduced to NIPPONSALE 1993 from the said "SHIP SALE AND PURCHASE" and English authorities. The Tribunal, considering that Japanese law follows English law in this respect, concludes that the Vessel was required not only to have a currently unblemished class certificate but also to be physically free of "average damage" which would affect her class. Accordingly, under NIPPONSALE 1993 of which the form was employed in the shipsale in question, even where the Vessel was delivered with a clean class certificate, the Respondents would not be free from liability if the Vessel had, at the time of the delivery, any physical average damage, apparent or latent, affecting her class. (By the way, under NIPPONSALE 1999 such Sellers' liability is by far reduced, as Clause 5 (b) provides that upon the Vessel being delivered to and accepted by the Buyers in accordance with this Agreement the Sellers shall have no liability whatsoever for

any fault or deficiency in their description of the Vessel or for any defects in the Vessel regardless of whether such defect was apparent or latent at the time of delivery.)

(2) Whether or not, at the time of the delivery, the average damage affecting her present class existed at the time of the delivery:

The Buyers' allegation consists of following two aspects;

(a) aspect 1:There existed a defect in the nature of an excessive clearance between the bushing of the carrier bearing and the sleeve of the rudder stock:

i) As a result of the Tribunal's examination of the Claimants' Exhibit 32-1 (5 minutes 25 seconds long DVD recorded on the occasion of the Hiroshima District Court's preservation of evidence proceedings held on board the Vessel on 5 October 2006) carried out at the third hearing held in Japan Shipping Exchange, Inc. by use of its audio-visual apparatus on 15 May 2008 in the presence of representatives of both parties and also at the fourth hearing held in the office of the Claimants' representatives, at their request, by use of their own audio-visual apparatus on 3 July 2008 in the presence of representatives of both parties, the Tribunal heard constant and slight sound presumably of an electric motor in the steering gear room of which the frequency was about 410 Hz but did not hear any abnormal sound; the Tribunal observed that the rudder stock moved circumferentially up to about 70 degrees while the rudder was ordered from "wheel amidships" to "hard-a-port", then to "hard-a-starboard", then to "hard-a-port", finally to "wheel amidships" including the times of starting of turning and stopping as well, but did not notice a horizontal movement that would suggest abnormal. The Tribunal is not convinced that there was an excessive clearance by the Claimants' Exhibit 32-1. Therefore, the Tribunal is driven to examine in further depth in this regard.

ii) The words "her present class" within the meaning of Clause 5 of the MOA mean NK and do not mean any classification society other than NK. Therefore, the Tribunal considers that whatever the Russian Maritime Register of Shipping may have recommended or required, such does not have any influence upon the dispute in

question.

iii) Claimants' Exhibit 18 (Report of Claimants' surveyor who reportedly conducted survey of steering gear of the Vessel on 23 October 2006 at Chengxi Shipyard in China where the Vessel was dry-docked) shows the clearance of carrier bearing of the rudder stock being F-A 2.32 *mm* and P-S 4.80 *mm*, that of neck bearing being F-A 2.65 *mm* and P-S 3.02 *mm*, that of bottom bearing being F-A 3.93 *mm* and P-S 4.53 *mm* (all measured by way of calibration) of which the credibility the Respondents argue. The Tribunal goes on to deal with the issue on assumption that the reported values above are reliable for the time being.

iv) While the Claimants assert that NK's maximum allowance for clearance with respect to carrier bearing for the Vessel was 3.00 *mm*, Respondents rebut that NK Rules are silent on the clearance with respect to carrier bearing.

v) Respondents' Exhibit 13 (NK's Manual: Rudder) partly reads "the allowance for clearance at pintle bushing is, depending upon diameter of the pintle, is not to exceed 6 *mm* in diameter in case of Rudder Type D and E or 7.5 *mm* in case of Rudder Type A, B and C . The standard neck bearing clearance is to be 4 *mm*."

vi) Claimants' Exhibit 24 (General Arrangement Plan) shows that the Vessel was installed by Type B rudder as classified by NK in reference to Respondents' Exhibit 13;

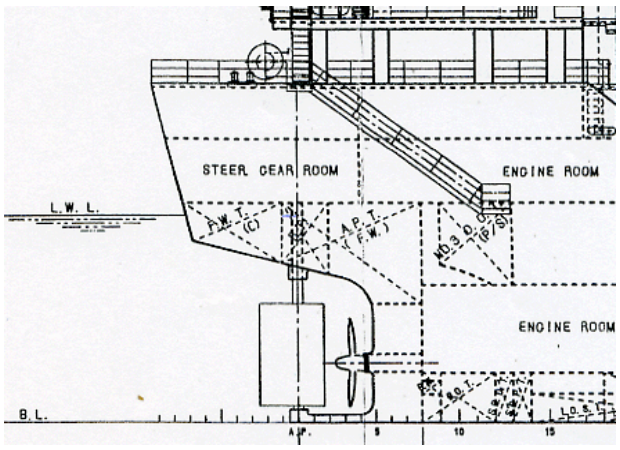

Diagram 1: profile of the stern section of the Vessel

It follows that the allowance for clearance at pintle bushing is, depending upon diameter of the pintle, is not to exceed 7.5 *mm* in this case.

vii) Now, while it is noted that the values of clearance measured in iii) above fall within the allowance applicable to Type B Rudder as shown in v) above, NK's Manual is silent on the maximum clearance to be allowed with respect to carrier bearing.

viii) Claimants' Exhibit 43 (An expert [identified here as "Mr. A"] guidance by Mr. A to marine engineering open to the public through his website) partly reads that "clearance of carrier bearing, which is located upper most of the rudder stock not being subject to corrosion, is normally seen less than 2.00 *mm* evenly F-A and P-S around even in case of an old age. It would appear that if it is less than 2.00 *mm*, it remains in a safety zone; if it is 2.00～3.00 *mm*, it requires attention; if it is in excess of 3.00 *mm*, it requires repairs. "

ix) Claimants' Exhibit 44 (The same expert A's opinion) partly reads that "after having graduated from naval architecture section of a university I have had an employment with NK for the period of 44 years---my opinion on allowance of carrier bearing presented in Claimants' Exhibit 43 is based upon my data collected from about 160 vessels surveyed during the period from 1970 to 1982---having examined Claimants' Exhibit 32-1, I presume that the clearance between bearing bush and the rudder stock was much greater than 3.00 *mm* and if I had been the surveyor in charge in active service on the spot, I would for sure have recommended that condition of various sections, including pintle and neck bearing, should, either immediately or soon, be inspected in order to ascertain the extent of wear and tear."

x) The Tribunal pays its high respect to Mr. A for his having made his accumulated knowledge and experience of ship surveying open to the public for many years. The Tribunal still does not deem his opinion in this respect equivalent to one of the rules of NK. The Tribunal finds that NK rules or manual are silent with respect to allowance of carrier bearing.

xi) For the reasons above, the Tribunal reaches a conclusion that there was no damage to carrier bearing affecting her present class at the time of the delivery even if there existed a clearance of 4.80 *mm* at the carrier bearing.

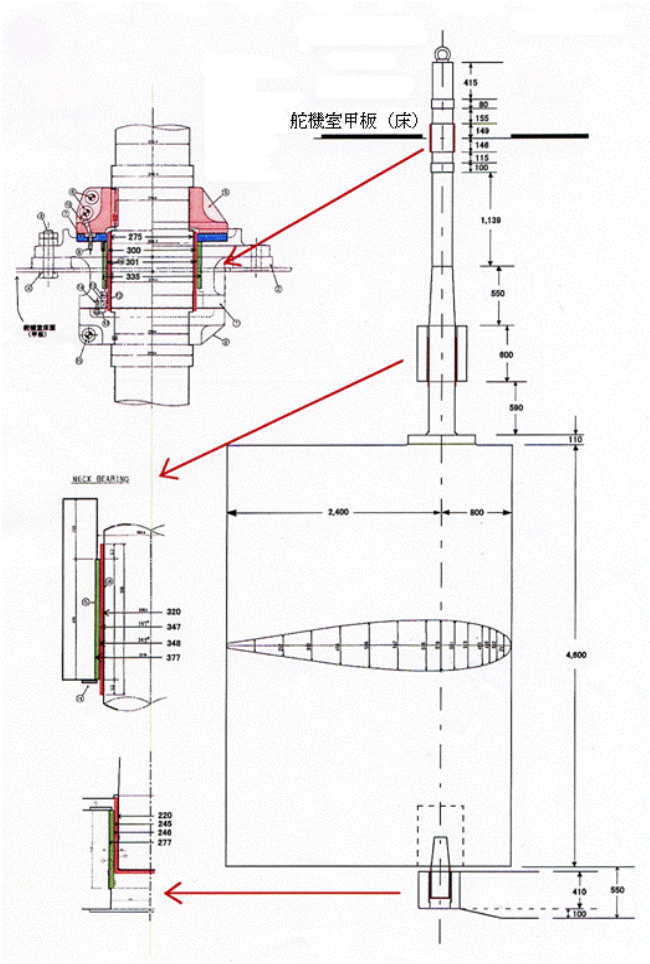

Diagram 3: Rudder Construction of the Vessel

(b) aspect 2: There existed a defect due to lack of water tightness between the rudder carrier and the rudder trunk:

i) Claimants' Exhibit 47 (NK's GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS) 〔C3.10.1-3(1)〕 provides that "(I)n rudder trunks which are open to the sea, a seal or stuffing box is to be fitted above the deepest load waterline to prevent water from entering the steering gear compartment and the lubrication from being washed away from the rudder carrier."

ii) “rudder trunks which are open to the sea”: From Claimants’ Exhibit 30 (MO disc containing still photographs taken on the occasion of the Hiroshima District Court’s preservation of evidence proceedings) and Claimants’ Exhibit 24 (General Arrangement Plan of the Vessel) it is understood that on board the Vessel a rudder trunk of which the dimension was 120 *cm* fore-and-aft, 140 *cm* port-and-starboard, approx. 200 *cm* high was fitted beneath the rudder carrier separated by 2nd deck steel plate in between and the rudder stock penetrated vertically almost in its middle. The position of the rudder trunk as recognized by the Tribunal is indicated in red in the diagram shown hereunder;

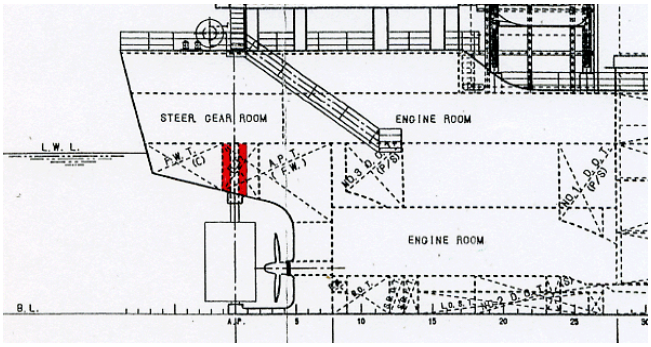

Diagram 4: Position of Rudder Trunk and its form

iii) “steering gear compartment”: It indicates the steering gear room in the Diagram 4 above.

iv) “rudder carrier”: they are normally understood to mean the full set of components as indicated in Diagram 3 shown above and Diagram 5 shown hereunder but the same as employed by the above provision of 〔C3.10.1-3.(1)〕 of Claimants’ Exhibit 47 are understood by the Tribunal to, in its context, mean rubbing surface between BEARING DISC and CARRIER as indicated by Diagram 5 shown hereunder;

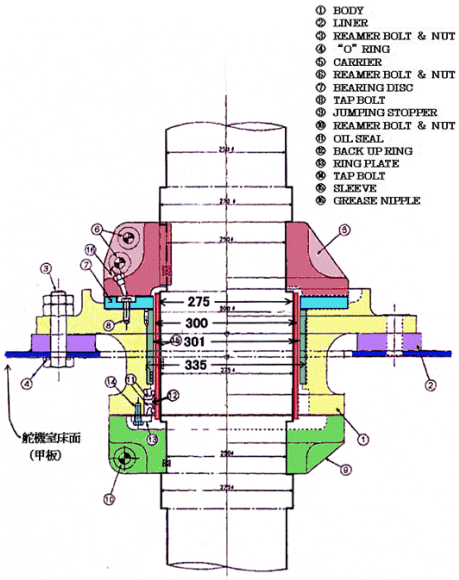

Diagram 5: Rudder Carrier and its components

v) "deepest load waterline" is indicated by L.W.L.(Load Water Line) in Diagram 7 hereunder. Claimants' Exhibit 24 (General Arrangement Plan) indicates it to be 8.00 meters.

vi) "seal or stuffing box": Claimants' Exhibit 35 (RUDDER CARRIER CONSTRUCTION) indicates that it was not a stuffing box but a seal that was equipped on board the Vessel, which corresponds to OIL SEAL appearing at lower left hand side of Diagram 5 hereinabove. Diagram 6 (DET. OF WATER SEALING) is shown hereunder;

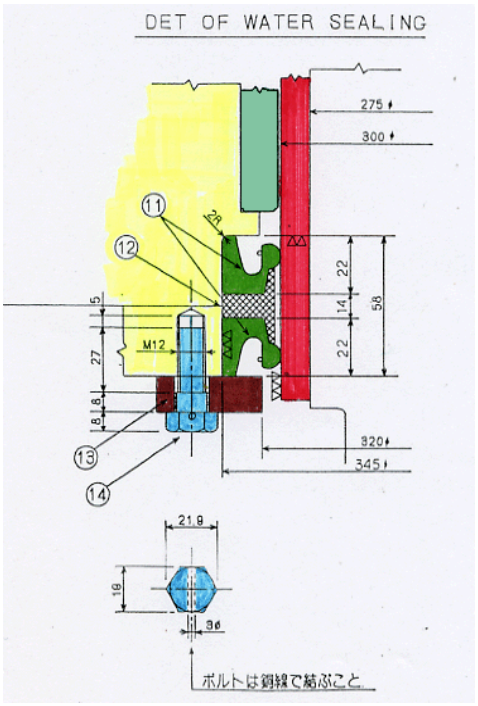

Diagram 6: Details of water sealing

On this diagram the part ⑪ colored in blue is the OIL SEAL of which the component is designated by Claimants' Exhibit 35 to be of Nippon Oil Seal K.K.

vii) Next, the Tribunal deals with the question to what condition the "rudder trunk which is open to the sea" was exposed.

a) Claimants' Exhibit 33 (STERN FRAME CONSTRUCTION) shows that the stern frame is installed with a staunch steel cylinder of which the vertical height being 600 *mm* ; outer diameter being 600 *mm* ; inner diameter of upper 1/3 of the cylinder being 363 *mm*, i.e., 118.5 *mm* thick; inner diameter of lower 2/3 of the cylinder being 377 *mm*, i.e., 111.5 *mm* thick.

b) Claimants' Exhibit 34 (RUDDER CONSTRUCTION) shows that a bushing of which the outer diameter being 377 *mm* and the inner diameter being 348 *mm* is inserted in the lower 2/3 of the above cylinder and supported by RETAINING RING from below. The same exhibit shows that the outer diameter of the sleeve of the rudder stock is 347 *mm*. It follows that the clearance between the sleeve and the bushing is 0.5 *mm* around the sleeve of which the total area is calculated to be

about 5.4 cm^2 . Because there is no seal between the sleeve and the bushing, water freely comes in and goes out through the interstices while the neck bearing section is submerged under water.

c) On assumption that the Vessel is fully loaded and even keel, the surface of water in the rudder trunk is about 50 *cm* below the 2nd deck level (floor of the steering gear room) as shown in Diagram 7 hereunder;

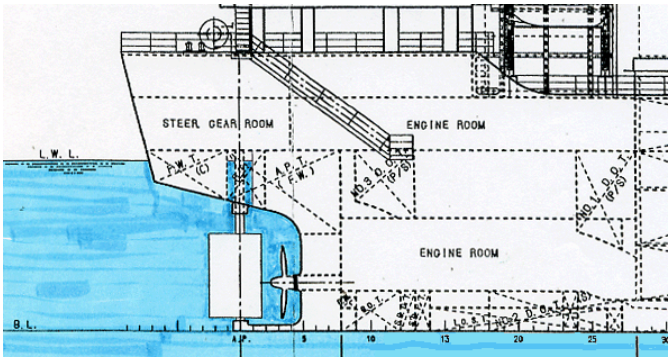

Diagram 7: load water line (even keel) and the surface of water in the rudder trunk

d) On assumption that the Vessel is fully loaded with the trim by the stern (stern draught being 75 *cm* greater than that of even keel, as is normally the case of a vessel such as this), the surface of water in the rudder trunk reaches the ceiling (lower side of the 2nd deck plate) of the rudder trunk. That is to say, the level of the floor of the steering gear room in the vicinity of the rudder trunk is lower than the sea-water level outside by about 20 *cm* at aft of the steering gear room and about 15 *cm* at fore of the steering gear room. It follows that if the water tightness between the rudder trunk and the steering gear room is lost, sea-water enters, with the water-head-pressure of about 20 *cm*, the steering gear room, which is flooded with sea-water of which the depth being about 20 *cm* at aft and about 15 *cm* at fore. This condition is indicated by Diagram 8 hereunder;

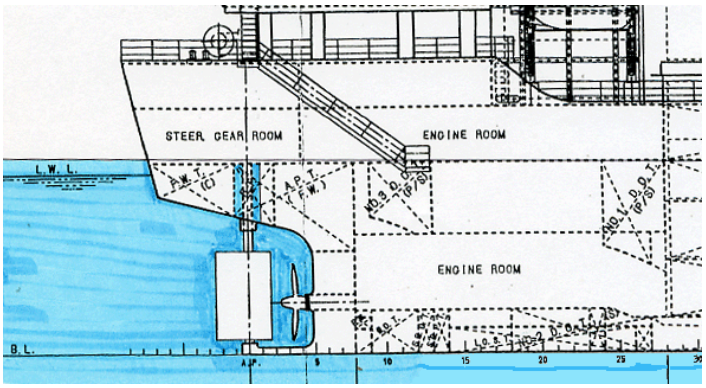

Diagram 8: load water line (trim by the stern), surface of water in the rudder trunk and level of steering gear room

e) When the Vessel is in ballast condition, the rudder trunk is filled up with air alone since water in the rudder trunk, if any, drops through interstices of the neck bearing, as described hereinabove, onto the sea surface. This condition is indicated by Diagram 9 hereunder;

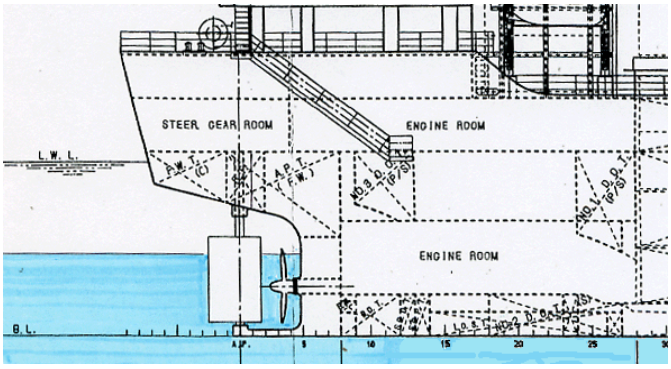

Diagram 9: rudder trunk in ballast condition

viii) Next, the Tribunal deals with the question what was used on board the Vessel as "lubricant" referred to by〔C3.10.1-3(1)〕of Claimants' Exhibit 47 (GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS).

a) C3.10.1-2(3) of Claimants' Exhibit 47 provides that (T)he bearing part is to be well lubricated by dripping oil, automatic grease feeding, or a similar method.

b) Parties agree that grease was used as "lubricant". The presence of GREASE NIPPLE on Claimants' Exhibit 35

indicates that grease was injected by hand by use of grease gun, to which parties agree.

ix) The Tribunal's understanding as to general practice of lubrication by use of hand-grease-gun is as follows;

a) Grease is a kind of lubricants and is a soft solid at room temperature. Typical grease looks amber color and semitransparent. The Tribunal assumes for convenient purposes that such typical grease was used on board the Vessel since neither of type nor ingredients nor property of the grease are at issue here.

b) A typical hand grease gun is of a form of metal cylinder of which the length being about 40 *cm* and the diameter being about 6 *cm* to which a lever of about 40 *cm* long is attached alongside. On the tip of the cylinder a nozzle adaptable to the grease nipple is fitted. As the lever is operated up and back, a small plunger mechanism pushes out about one (1) *cc* of grease per stroke, having the pressure of about 200-500 Kgf/cm^2.

c) Inside the tip of a grease nipple a small steel ball is pressed outward against an opening by spring from inside, of which the pressure is normally about 5 Kgf/cm^2.

d) On the other hand, the space in the machines in need of lubrication is devised to form a sort of semi-closed space, in that if it forms an open space, grease would drop or leak outside before it reaches the desired location or, if reached, would drop by gravity or be washed away in short period of time, and if it forms a complete closed space, freshly injected grease (looking amber and semitransparent) is unable to extrude and replace the old grease, which normally looks stained black in color, in the location in need of lubrication. For these reasons, the semi-closed space is devised to keep closed until a certain pressure is applied and allow grease to be extruded out of the space when more pressure is given.

x) The semi-closed space for grease lubrication observed on the rudder carrier equipped on board the Vessel is indicated in red in Diagram 10 hereunder;

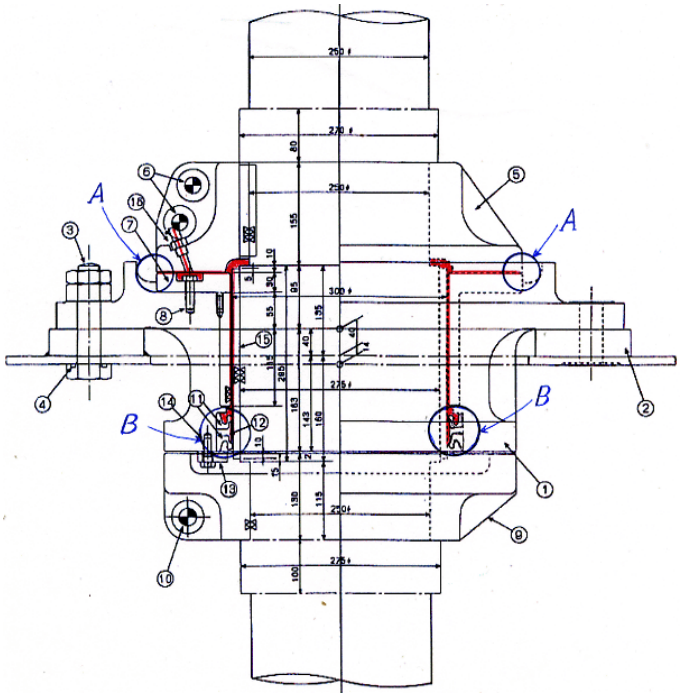

Diagram 10: semi-closed space for grease lubrication

On this diagram, *A* represents the location where old black-stained grease is extruded peripherally, at the final stage of the grease-up operation, from the rubbing surface between the bearing disc and the carrier as pressure is applied by fresh amber/semitransparent grease injected through the grease nipple which is numbered ⑯. On this diagram, *B* represents the location where old black-stained grease is extruded down, at the final stage of the grease-up operation, through interstice between 2 seal rings and sleeve of the rudder stock as pressure is applied from above by fresh amber/semitransparent grease which has come down between bush and sleeve on the rudder stock.

xi) *Translation of the arrangement of circular as well as radial lubrication grooves engraved on the upper surface of the horizontal bearing disc (See Diagram 11 hereunder) and axial and circular lubrication grooves engraved on the inner surface of the cylindrical /vertical bush (See Diagram 12 hereunder) is omitted.*

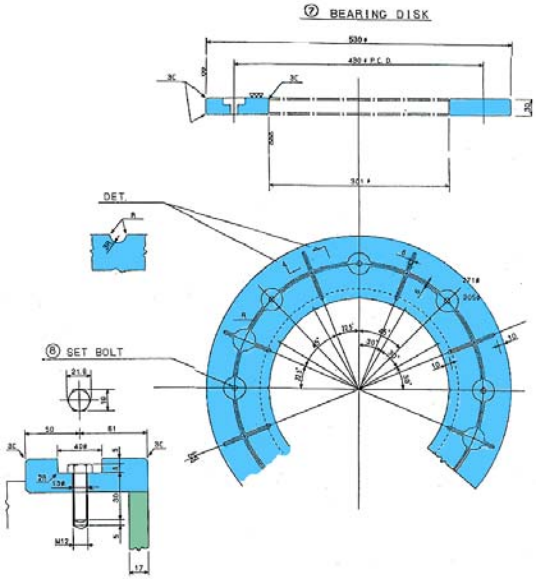

Diagram 11: bearing disc and circular as well as radial lubrication grooves engraved thereon

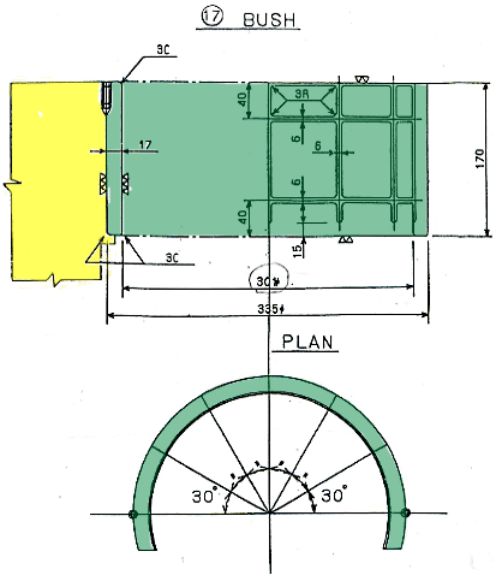

Diagram 12: cylindrical/vertical bush and axial and circular lubrication grooves engraved thereon

xii) Diagram 6 above shows ⑪OIL SEAL having 2 rings in contact with the sleeve on the rudder stock, of which the component is designated by Claimants' Exhibit 35 to be MG Type Nippon Oil Seal K.K. The material property of the OIL SEAL is not known to the Tribunal, but from its form and similarity to widely

known stern-tube sealing rings of Simplex type, it is estimated to be of rubber or synthetic material of elasticity.

xiii) Although Claimants' Exhibit 35 (Diagram 5) indicates as if both of the two rings served as oil seals, from page 13 of Claimants' Exhibit 43, the fact that the lower ring looks to be devised to cope with pressure from below, that is to say, water from a splash and/or of a certain water-head-pressure in the rudder trunk, the Tribunal understands that these two sealing rings serve as water seals as well as oil seals. The heading of "DET. OF WATER SEALING" (Diagram 6) as appearing on the Claimants' Exhibit 35 endorses the above Tribunal's understanding.

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xiv) The total approximate weight of the rudder is calculated to be 7,200 Kgs , consisting of pintle section (approx. 230 Kgs), rudder stock (approx. 2,300 Kgs), outer rudder blade (approx. 3,600 Kgs) and internals of rudder blade (approx. 1,070 Kgs). While the Vessel is underway, most of the rudder blade is, whether fully loaded or in ballast condition, under water and the rudder receives buoyancy equal to the weight of water it displaces. The volume the rudder displaces is roughly estimated, from Claimants' Exhibit 34, to be 5.5 m^3 resulting in the buoyancy of 5,500 Kgsf disregarding the gravity of sea-water. Thus, the total load of the rudder while the Vessel is underway born by the horizontal bearing disc is roughly 1,700 Kgs. The area of the upper surface of the bearing disc is, from Claimants' Exhibit 35, calculated to be about 1,494 cm^2. Similarly, the area of the lower surface of the carrier is known to be about 1,400 cm^2. On board the Vessel no bearing that sustains weight of the rudder is equipped on the shoe piece. Therefore all load of the rudder is born by rubbing surface between lower surface of the carrier and upper surface of the bearing disc. It follows that load per cm^2 of the rubbing surface is known to be approx. 1.2 $Kgsf/cm^2$.

xv) *Translation of the Tribunal's understanding of practical operation of injecting grease by use of hand-grease-gun is omitted.*

xvi) With respect to the Claimants' assertion that presence of rust on jumping stopper and bearing disc (Claimants' Exhibits 30 and 18) suggests that the water tightness was lost there and it is therefore highly likely that sea-water entered the steering gear room from the rudder trunk and lubricant leaked out of the Vessel, the Tribunal finds as follows: A Jumping Stopper is located at the uppermost in the rudder trunk and is exposed to water splash or is completely submerged in water depending on draught and trim, as stated above. Therefore, contact with sea-water was assumed from the time of construction. Claimants' Exhibit 35 indicates that the material property of the jumping stopper is SC42 (a type of cast steel). The jumping stopper takes the form of a deep dish of which the thickness is about 40 *mm*. Thus rust, if any, over the jumping stopper can do no harm.

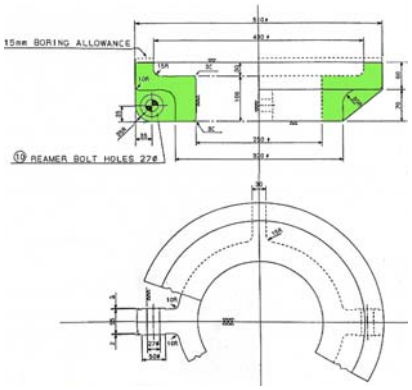

Diagram 13: Details of jumping stopper

The material property of the bearing disc is known to be BC3 (a type of bronze alloy) which is in turn known to be pressure-resistant, abrasion-resistant, corrosion-resistant and of good mechanical property. It is doubtful if the images like rust on the photographs 7, 8, 9 and 15 of Claimants' Exhibit 18 represent rust. Even if they represent rust on the bearing disc, the Tribunal does not consider that the rust falls in the "damage affecting her present class". Some photographs produced suggest that certain apparatus in the steering gear room were rusty. But the Tribunal has noted no evidence of water having entered the steering gear room from the rudder trunk through

the 2nd deck. Experience has taught us that some metals including iron and steel tend to get rusted even in the room air, particularly in a marine environment with corrosive spray and sea air. Presence of certain rust in the steering gear room neither prove water having entered there nor prove defect allowing water to enter there.

xvii) With respect to the Claimants' assertion that presence of grease on the jumping stopper as evidenced by 5 photographs of Claimants' Exhibit 30 suggest that water tightness between the rudder trunk and the rudder carrier was lost in violation of NK Rule [3.10.1] (Claimants' Exhibit 46) and NK's GUIDANCE [C3.10.1-3(1)] (Claimants' Exhibit 47), the Tribunal finds as follows; The Tribunal, having had an opportunity of examining 5 photographs of Claimants' Exhibit 30 as well as A-3 size still photographs printed from the MO disc of the same exhibit, assumes that images of a substance adhered to the surface of lower part of the jumping stopper are those of grease. The Tribunal's understanding of practical operation of injecting grease by use of hand-grease-gun is, however, to continue pumping until old black-stained grease has been extruded by fresh amber/semi-transparent grease through interstices of rubbing surface between the rudder carrier and the bearing disc (shown as ***A*** by Diagram 10 above) and, in addition, through oil/water seals (shown as ***B*** by Diagram 6 above), the fact that grease was adhered to the surface of lower part of the jumping stopper is understood to be a piece of evidence for the lubrication operation having been properly carried out. The rudder trunk being inaccessible most of the time, the fact that the grease adhered to jumping stopper remained unwiped is not to be blamed. It was, however, possible that the oil/water seals fractured and grease short-circuited the seals resulting in adhesion to the lower part of the jumping stopper. In this case, however, grease had not reached every part of the system and therefore, the rubbing surface of the bearing disc sustaining the rudder weighing about 1,700 Kgsf, after lapse of certain period of time, must have been abnormally worn down. The bearing

disc before us was found to be more or less normal as is examined in detail hereafter. Claimants' Exhibit 18 reporting the condition of the rudder after it was dismantled in China is silent about the condition of the oil/water seals.

xviii) *Translation of the Tribunal's reasoning for disallowing Claimants' assertion with respect to alleged dry condition of grease recess in reference to NK's GUIDANCE [C3.10.1-2(3)] is omitted.*

xix) *Translation of the Tribunal's reasoning for disallowing Claimants' assertion that a gap between the inner surface of the back-up-ring and the outer surface of the sleeve on the rudder stock was greater than 2 mm as deemed to be normal, is omitted.*

xx) With respect to the Claimants' assertion that while the clearance between bottom plate of the rudder blade and the upper surface of the shoe piece is 40.0 *mm* on the Plan at the time of building, the Claimants' surveyor found it to be 34.0 *mm* in China before repairs and that the same surveyor concluded that it indicates that "the rudder blade has been shifted downwards", the Tribunal finds as follows; The Tribunal notes that Claimants' Exhibit 18 carries an article to that effect. Claimants' Exhibit 34 (RUDDER CONSTRUCTION) shows that the distance between the two is 40 *mm*. It follows if the surveyor's measurement was correct, the distance between the two was decreased by 6 *mm*. But it does not necessarily follow that the rudder blade had dropped.

xxi) With respect to the Claimants' assertion that the decrease of the distance by 6.0 mm was caused by drop of the rudder which was caused by wear of the bearing disc, the Tribunal finds as follows;

Because the material property of the bearing disc was BC3 (a type of bronze alloy) and that of the carrier was SC42 (a type of cast steel), if the lubrication of the rubbing surface had been insufficient, most of the wear would have occurred on the upper surface of the bearing disc. Did such wear occur? The bearing disc has a circular lubrication groove and eight radial lubrication grooves crossing the circular groove both engraved on the upper

surface. See Diagram 11 above. As the Claimants' Exhibit 35 indicates, the cross section of the groove takes a form of a semicircle with the radius of 3 *mm*. It follows that the depth of the groove when new was 3 *mm*.

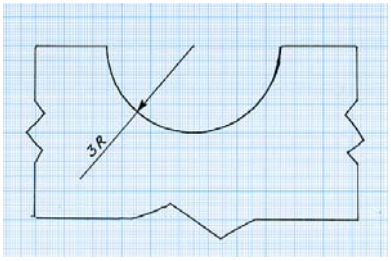

Diagram 14: cross section of the lubrication groove

Therefore, if the upper surface of the bearing disc had been evenly worn by 3 *mm* or more in depth, one would no longer have been able to observe grooves on its surface at all. Photograph 9 of Claimants' Exhibit 18 show presence of lubrication grooves as Diagram 11 illustrates. (In contrast, the photograph 6 on page 15 of Mr. A' s website of Claimants' Exhibit 43 shows an example where lubrication grooves have completely vanished .) Diagram 14 above indicates that the width of the groove on the surface of the bearing disc is 6 *mm* at the time of building. Photograph 9 of Claimants' Exhibit 18, taken in October 2006 in China shows that the width of the groove was approximately 1/8-1/7 of the diameter of the recess for set bolt of which the diameter is precisely known to be 40 *mm* by Diagram 11 above. It follows that the width of the groove in October 2006 was approx. 5.0-5.7 *mm*, which in turn suggests that the bearing disc was not worn more than 1.0-1.5 *mm* downward. From a different angle, Diagram 5 indicates that the distance from the surface of the bearing disc to the top of the set bolt in the recess was 5 *mm* when new, which follows if the surface of the bearing disc had worn in excess of 5 *mm*, carrier (of cast steel) would have started metal contact with eight set bolts (of steel) resulting in destructive damage on both surfaces, which, if any, could not have been overlooked by Claimants' surveyor when the rudder system was dismantled in

October 2006 in China. Claimants' Exhibit 18 is, however, silent in this respect.

xxii) With respect to the Claimants' assertion that the drop of the rudder by 6 *mm* must have rendered the water seals ineffective and it is highly likely that water entered the steering gear room from the rudder trunk through ineffective seals in violation of NK's rules concerning seaworthiness, the Tribunal finds as follows; The Tribunal considers that while there is negative evidence in support of drop of the rudder by 6 *mm*, there does not exist evidence that sufficiently proves drop of the rudder by 6 *mm*. Even if the rudder had dropped by 6 mm, the result would have been that the contact point of the seal rings on the surface of the sleeve on the rudder stock relatively shifts upward by 6 *mm* only and water tightness remains unaffected. See Diagram 6 above. The reason why the Tribunal considers that the oil/water seals allow grease to pass downward but do not allow water to pass upward is as follows. If and when the Vessel is fully loaded even keel, the surface of the water in the rudder trunk is about 50 cm below the floor of the steering gear room (2nd deck), and, therefore, the steering gear room receives no pressure of water from below. (See Diagram 7 above.) On assumption that the sea is calm, it is the only occasion that the Vessel is fully loaded with the trim by the stern as illustrated by Diagram 8 above. The maximum difference of draught between that of fore and that of aft practically being 1.5 meters, the aft draught is estimated to be 8.75 meters. This condition is illustrated by Diagram 8 above on which the distance between the top of the rudder trunk and the then load line is about 20 cm, which in turn means that the floor of the steering gear room immediately above the rudder trunk receives upward water-head-pressure of 20 cm equivalent to 0.02 Kgsf/cm^2 disregarding the gravity of the sea-water. Since the level of the seals in question is deemed to be equal to the level of the top of the rudder trunk, the pressure that the seals receive from the sea-water is deemed to be 0.02 Kgsf/cm^2. On the other hand the maximum pressure that a conventional hand grease gun can produce is 200-500 Kgsf/cm^2 as already explained above

and the minimum pressure for fresh grease to pass the grease nipple is approx. 5 Kgsf/cm^2 as explained above. Even taking into account that the lubricating space is semi-closed, the pressure that grease applies to seals from inside is estimated to by far exceed 0.02 Kgsf/cm^2. This explains why seals of elasticity deform under pressure of 5 Kgsf/cm^2 to allow grease to pass downward but the same seals do not deform under pressure of 0.02 Kgsf/cm^2 to allow water to pass upward. If and when the Vessel encounters rough weather where stern section submerges, for example, 5 meters under water for a few seconds but repeatedly, the water-head-pressure is 0.5 Kgsf/cm^2, which is 1/10 of the pressure that fresh grease applies to the seals from inside.

5. Based upon the foregoing, the Tribunal finds no average damage in or on the vessel at the time of the delivery and, therefore, the Claimants are not entitled to claim damages under Clause 5 of the MOA or Article 570 of the Civil Code or in tort.

   The Claimants' claim is hereby denied.

TOMAC sole arbitrator: Ikuya Fujii

[The complete arbitration award, rendered in Japanese, is 153 pages in length.]