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S/S Bonaccord
abstract of official report of Inquiry.

Report of Court-

Finds, for reasons stated in Annex to report,
Said steamship foundered from one
or more leaks, probably in the ship's
side, on each side of the stoke hold
bulkhead and above the ballast tank.

The Court is unable to find cause of
casualty, but is of opinion that the weight
of evidence favors the view that the vessel
was strained in a gale, through structural
weakness or defective workmanship; but
which of these was operative on this
assumption of the cause of injury to the
vessel, the evidence does not enable
the Court to say.

Annex to Report-

Describes vessel and construction to
Vessel had 4 W.T. Bulkheads extending from main
deck to bottom of ship. In the bulkhead at
fore part of stoke hold there were two openings
fitted with W.T. doors worked from a platform.

There were no lower deck beams but web
frames in their place.

Cellular double bottom fore & aft divided
into four tanks.

Fitted with two main engine bilge pumps and
the ordinary bilge injection. A Worthington
pump was connected with the engine room
and stoke hold bilges and the after well, and
could also be used for draining out the ballast
tanks. There was also a centrifugal pump

for clearing ballast tanks, which as well as the Worthington could be worked from both main and donkey boilers.

The main bilge and Worthington pumps were fitted with an open-bottomed cock. Both ^{the} fore and after compartment were divided by a bulkhead not watertight, forming two holds in each.

There were two deck pumps in each hold, but with the fore compartment there was no connection with any other pump.

To clear this compartment the water was conveyed to the engine room through two sluices in the bulkhead at fore end of stoke hold.

after being launched lay in Aberdeen dock afloat about 3 months fitting out. Left Aberdeen and water ballast on the 5th March for Blyth.

Arrived at Blyth, on pumping out water ballast found some of the joints of the pipe connected with centrifugal pump leaking. This was repaired. Loaded a cargo of 1068 tons of cargo and bunker coal.

Left Blyth on 10th March. Draught forward 16-2 ft - in
" aft 18-3

This gives mean draft 17'-2 1/2".
Mean draft corresponding to draught assigned by Committee would be 17'-3" winter
17'-5" summer

While loading at Blyth, vessel touched the ground with her keel on the flowing tide, but no damage being apprehended, vessel proceeded to sea. All went well, & weather fine till noon of Friday 14th, when it commenced to blow and the weather was at its worst at 4 P.M. of the 15th.

Master also stated vessel behaved well, without labouring.

at about 6.30 P.M. the 2nd Engineer noticed a little more water than usual in the bilges and at once put on the two main bilge pumps. and at 8 P.M. reported this to Chief Engineer who watched the water till 10 P.M. when finding it increasing and as high as top of tanks put on the bilge injection and reported to the Master.

On going into stokehold the Engineer noticed water flowing through the starboard doorway from No 2 hold into the stokehold. Then closed both doors and sluices.

By midnight water had risen & drowned the starboard fires.

Then opened manhole door of the main ballast tank. and so cleared the engine room & stokehold of water, all available pumps at this time being put on.

Chief Engineer then observed water running in to the stoke hold floor from the starboard pocket bunker.

Starboard fires were re-lighted.

after manhole door was taken off the Master appeared to have realised the danger finding 18 inches in No 2 hold which was dry at 8 P.M. when Carpenter last sounded. Then started the deck pumps and changed vessel's course to S.E.

The Bonaccord was stopped for nearly an hour, laying in the trough of the sea, and no engine pumps going, when the engines were set on again and vessel resumed her S.E. course.

At about 6 A.M. steam began to decrease and got as low as 100 lbs pressure.

At 8 A.M. 4/5 Argelia came to their assistance at 9 A.M. the engines of the Bonaccord were stopped for want of steam, the fires being drowned out.

9 hours had elapsed since the Bonaccord bore up during which she was stopped for one hour. The pumps ~~was~~ kept working till noon, when they stopped for want of steam.

at this time there appears to have been about 4 ft. of water in engine-room.

weather had now improved and ^{about} 40 tons of coal were jettisoned out of No 2 hold. Crew began leaving about 4 P.M.

Master & Engineer left about 6 P.M.

Before leaving the Master sounded and found 7 ft. water in the hold and he estimated there was 5 ft. in the engine room.

Put up three red lights before leaving vessel & lost sight of them shortly after 8 P.M.

Extract from Statement by Court before answering questions submitted by Board of Trade.

" We understand the Board of Trade to desire the
" opinion of the Court with reference to the
" particular casualty and the facts and
" circumstances it has brought ~~on before~~ into
" view in the shape of evidence, whether the
" "Bonaccord" in being fitted up with web
" frames instead of hold beams was in
" any respect structurally weak?

" These frames which are practically

girders, present an obvious advantage, through the absence of beams for the stowage of cargo, and in facilitating its discharge, but beyond that, and in particular on the general question how far the rigidity of the vessel is affected or promoted by these different arrangements, I myself, as the Judge trying the case, feel that the Court would not be warranted in expressing any opinion in the meagre state of the evidence, and in that view the Nautical Assessor concurs. It may be pointed out, ^{however,} that Lloyd's Committee have given their sanction to

The Arrangement of web frames in this case by approving of the plans, and particularly that of the midship section of the vessel; and I am desired by the Engineer Assessor of the Court to say that he adopts the view of the Committee.

Re pumping apparatus.

" Speaking generally, we are of opinion that that was sufficient; but we make two exceptions, both of which we regard as of first rate importance. The fore compartment including the holds described in the evidence 2. W1 and W2 depended entirely on sluices and deck hand-pumps, and had no suction from the engines. The after hold was in a different position, being connected with the Worthington pump in the Engine room, and it is in our opinion a defect that both compartments were not fitted up in this respect in the same manner. Further, the engine room pumps were

" provided with an open bottomed cock
 " instead of a valve chest, and we concur
 " in the opinion expressed by Lloyd's Surveyor
 " Mr Hindmarsh, that the latter would have
 " been a better arrangement, as admitting
 " of the donkey being worked separately from
 " the main engine pump. In this
 " connection also we think it would have
 " been an improvement, if there had been
 " an elevation of the donkey, who resorted
 " to in the event, which proved to be the case
 " here, of the main engine fires being
 " drowned out. All the Assessors have
 " pressed upon me to make it a part of the
 " judgment of the Court to express surprise
 " that with such defective pumping arrangements
 " ~~the~~ as have been pointed out, the
 " "Bonaccord" should have received the
 " highest class at Lloyd's; but I feel that
 " I would not be warranted in doing so.

As to the cause of the Casualty

" " We incline to the view, as
 " deserving most support from the evidence,
 " that the vessel was injured in two
 " places in the ship's side, on each side of
 " the stoke hold bulkhead, accounting for
 " the water being found in large quantity
 " in the side pocket and in the fore compartment,
 " and we are further of opinion that the
 " damage was above the ballast tanks.

" It is beyond doubt the
 " vessel took the ground at Plymouth although
 " that does not appear to have been generally known
 " on board, indicating that it was not very

appreciable, but beyond that we think this cause of injury is reasonably excluded for two reasons - first because no damage appears to have been received by the bottom of the ship, as shown by the ballast tank being dry until the manhole in the engine room was torn off, and the water allowed to run into it; and secondly because the injury would have been sooner discovered when sounding the tanks which according to the evidence was regularly done.

The theory that the vessel was injured by floating wreckage is, in our opinion highly improbable

Excluding the cause of injury ~~which~~ that have already been dealt with, as at any rate highly improbable, we do not see that there is anything else to fall back upon to account for the casualty but the straining of the vessel - a result not to be naturally looked for in a perfectly new and first class ship; but beyond indicating that that points either to structural weakness somewhere, or faulty workmanship, we do not feel ourselves justified in expressing any opinion.

It is also proper to point out as a rider on this abstract view that, according to the evidence of Lloyd's Surveyor at Aberdeen, the workmanship of the vessel was tested and checked in the most rigid manner without any flaw being discovered, and

that no evidence has been put before us in the course of the inquiry from which the Court would be warranted in coming to a finding either way, in the issue of the structural unsoundness of the vessel. In short we cannot account for the straining of the vessel except on one or other of these two hypotheses, but we are unable, on the proof led, to say which of the two causes led to that condition of the ship, and, of course, in this connection it will be considered that the Engineer Assessor of the Court holds the view that the arrangements of web frames is not a source of weakness.

Questions submitted by Board of Trade.

1. Whether, when the Bonaccord left Blyth, she was in all respects in good seaworthy condition?

2. Whether the steel plates and other material used in the construction of the vessel were properly tested and examined? and whether she was so constructed as to be free from structural weakness?

Answer of Court.

1. We answer this question in the affirmative, subject to the limitations contained in the foregoing statement.

2. The steel plates and other material used in the construction of the vessel were properly tested and examined. We refer to the foregoing statement for our answer to the second part of the enquiry.



3. Whether the soil pipes and sea connections were properly fitted, and whether they were so arranged as to prevent the possibility of the vessel making water through them without its being discovered?

3. They were

4. Whether the bulkheads were properly constructed, and whether the openings in them were so arranged that they could be effectually closed?

4. They were

5. Whether the ventilators and all other deck openings were properly covered and secured?

5. They were

6. What was the cause of the vessel making water on the 15th March 1850, and thereafter?

6. We are of opinion that the weight of the evidence favors the view, above all other suggestions, that the vessel made water on the 15th of March, and thereafter, through being strained in the bad weather which prevailed on that and the preceding day, but what was the cause of the straining, we are not able to say.



7. Was a proper and sufficient examination then made of the soil pipes, sea connections, deck openings, and did the water find its way into the vessel through any of these?

7. A proper and sufficient examination was made of the soil pipes, sea connections, and deck openings, and the water did not find its way into the vessel through any of these.

8. Were the openings in the bulkheads and the sluices closed; and if so how did it happen that the water was not confined to one compartment?

8. The openings in the bulkheads and the sluices were closed, but the water was not confined to one compartment. In explanation of this ~~view~~ we consider it a probable view, upon the evidence, that there was a leak in the vessel's side on each side of the bulkhead.

9. Was the ship so subdivided as to enable her to remain afloat with one compartment full of water; and if she was so subdivided, what occasioned her loss?

9. The ship was not so subdivided as to enable her to remain afloat when loaded, if any one of her compartments had been full of water.

10. Were the pumps sufficient, properly placed, and fitted for all requirements, and in good order?

10. The pumps were sufficient and properly fitted and placed, with the exceptions made in the foregoing statement.

Question 11, 12 & 13
deal with conduct of
Officers &c