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Lloyd's Register of Shipping.

Port PIRIE, South Australia.

27th. April, 1937.

This is to Certify that

A. J. McGOWAN, A.J. ELMS and W.D. ACKLAND-HORMAN

the undersigned Surveyor, to this Society did at the request of

- * the Master, O. Stoker-Johnson, and Agents, Messrs Mollwraith McEachern Limited, attend on board the s.s. "KINGSWOOD", 5038 tons gross, of Middlesbrough, afloat at Port Pirie, South Australia, for the purpose of ascertaining the nature and extent of the damage stated to have been caused by the explosion on board the vessel, whilst at anchorage on 3rd. January, last.

For further particulars see ship's log books, from which it would appear that the vessel arrived at Anchorage, Germein Bay, South Australia, on 26th. December, 1936, awaiting orders, that on 3rd. January 1937, (with main and auxiliary boilers under banked fires) steam was being raised in the auxiliary boiler preparatory to moving the vessel to a loading berth on the following day, when about 9 am. a violent explosion occurred in the auxiliary boiler, which was projected through all forward bulkheads and lodged partly in the fore peak tank and partly through the starboard bow plating.

On examination of the vessel on the afternoon of 3rd. January last, the damage was found to be very extensive but could not be fully ascertained until the debris was cleared away. As the large hole in the starboard side of the shell plating forward was very close to the water line and the vessel appeared to be making water, it was recommended that she be placed alongside a berth and that a motor-driven pump be put on board. It was subsequently found, however, that the leakage was coming through the tank tops of the double bottom and the pump was not required.

The vessel was moved to a berth with the assistance of tugs; the anchor was slipped at the 60 fathom shackle and was subsequently placed on board with the assistance of a lighter.

With a view to ascertaining the full extent of the damage, a local firm (S.J. Cheesman & Co) was employed to clear away the debris.

On the 7th. January, 1937, whilst the debris was being cleared, the undersigned made examination of the vessel as far as possible and,

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ON EXAMINATION FOUND:- The vessel's shell plating holed (approximately 30 ft. x 20 ft) on the starboard side in the vicinity of the collision bulkhead - six shell plates being torn and fractured. The first nine frames abaft the collision bulkhead on the starboard side broken and twisted; the tenth frame from bulkhead distorted at its reverse angle; the two middle stringers in way of this damage broken and twisted and the upper and lower stringers distorted.

The collision bulkhead plating and stiffeners on the starboard side of mid-line bulkhead torn and broken. In the forepeak - three frames on the starboard side, forward of collision bulkhead, badly distorted; the panting stringers in way buckled and broken; the chain lockers and three beams in way badly distorted; wash plate in forepeak buckled and two angle pillars from same to floors broken; sounding pipe broken.

The centreline bulkhead in No. 1 Hold torn from its fastenings and with its vertical stiffeners badly distorted at the forward end and to a lesser extent at the after end of the hold.

The bulkhead between No's 1 & 2 Holds torn from midline bulkhead and opened out into No. 1 Hold; five vertical strakes of plating and their stiffeners either torn or badly buckled; the coaming plate of this bulkhead on starboard side slightly distorted; the brackets of stiffeners torn from the tank top at bottom and main deck beam and plating distorted at the top. One main deck beam, second abaft No. 2 Hatch starboard side, distorted.

The centre-line bulkhead forward of No. 2 hatch torn from its fastenings and with its stiffeners badly buckled and distorted.

The centre-line bulkhead between No's 2 and 3 hatchways (under bridge erection) entirely missing - being carried away with the auxiliary boiler and lodged into the forepeak tank; the foundation angle riveting drawn through the tank top in places and rivets sheared in top angle attachment to deck plating and beams. From an examination of store space in bridge erection it would appear that the deck plating and beams at this part were set down about two inches from normal.

The wood bulkhead at frame No. 105, forming the forward end of a reserve bunker, shattered and its wreckage strewn throughout the hold space.

The recess bulkhead around the auxiliary boiler distorted at its sides and its forward end blown out and shattered.

All wood hatch covers for No's 1, 2 & 3 hatchways were blown up and most of them missing, a few found scattered around the decks and in forward holds; a number of hatch beams were lifted by the explosion and fell into the holds, one piercing the tank top at after end of No. 2 Hold starboard side. Wood shifting boards for grain cargoes damaged and strewn throughout forward holds.

Hold ladders, air and sounding pipes, cargo battens and cleats torn away and more or less damaged and missing.

The ceiling in forward holds damaged by falling hatch beams and wreckage, wood ceiling found floating on the port side, where the water was over the tank top level in port bilge; wood lining on stokehold bulkhead damaged and partly missing.

Two frames in No. 2 Hold (No. 120 port side and No. 121 starboard side) apparently struck by the wreckage, are sharply distorted and several shell rivets drawn from the starboard frame.

All pumping connections at the forward end of auxiliary boiler recess torn from their pipe lines and from tank top. Leakage from No. 2 double bottom tank found at this part was stopped by fitting a wooden plug.

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The internal fittings of the accommodation spaces abreast the machinery casing more or less damaged, wood partitions, doors, tables, bunks, settees, bookcases, wardrobes, drawers, wash-basins, lamps, mirrors, sidelight glasses and fittings.

The wood lining in charthouse and Captain's accommodation sprung and started. The wood decking of upper and lower bridge, the decking over accommodation spaces abreast engine room and over accommodation space on top of refrigerating machine, sprung and leaking.

Cast iron shutters and glasses of engine room skylights broken.

Main funnel and top cowl badly distorted; funnel casing distorted and sprung at its base. The tops of the two stokehold ventilators with their connecting grating and ladder carried away and broken; ventilator to fiddley badly damaged; fiddley gratings and storm covers damaged and broken; galley skylight damaged; two lifeboat covers torn; water service pipe at after end of saloon house distorted; starboard door and six sidelight glasses on after end of saloon house damaged and broken; cowl for store-room ventilator at port side fore end of saloon missing; cast iron funnel for saloon stove fractured; cowl for 6" ventilator on port side of bridge missing; six awning spars and two staunchions (wood) on port side of bridge broken; teak rail, seat with air tanks, handrails and staunchion on lower bridge more or less damaged; four awning spars on upper bridge broken; wireless connection adrift; foot attachment of ladder, teakwood rail, mouldings and bridge front woodwork on upper bridge damaged; wood decking of bridge damaged in several places by falling hatches; handrail at fore end of bridge deck and on port side forward broken and distorted.

Steering engine control rods and staunchion in way of No. 3 hatchway bent and distorted and the bearing bracket for same on bridge house broken.

One staunchion in No. 2 tween decks slightly distorted; casing for engine-room telegraph controls disturbed.

ON EXAMINATION of the vessel's machinery FOUND:- The auxiliary boiler wedged between the centre-line bulkhead and the ship's side stringers at the forward end of No. 1 Hold, starboard side, with the wreckage of bulkhead plating and stiffeners wrapped around it. On cutting away the wreckage and lowering the boiler into the hold an examination was made of this boiler, externally and internally. The shell plating and ends were found intact but indented where the boiler had struck the bulkheads, etc. The front tube plate and back plate badly "bulged". The back tube plates were found collapsed and combustion chamber tops depressed. All the tubes (plain and stay tubes) were out, about three dozen were found in the bottom of the boiler, the others were ejected or blown out of the boiler and strewn throughout the engine-room, boiler room and forward holds. A few of the stay tubes had parted near the combustion chamber ends and there was evidence that a number of the stay tubes had been fitted with stoppers; all others had their threads intact, both at the stay ends and at the tube plates. The two corrugated furnaces of this boiler appear undamaged. All mountings were broken off, furnace fronts firebars etc. blown out; uptake and funnel wrecked.

The two main boilers were blown backwards off their forward stools and carried against the main engines.

The whole of the fittings in the boiler room more or less damaged or wrecked - the smokeboxes, uptakes, casings, gratings, ladders and fittings, stokehold plates and bearers, pumping connections, valves and fittings, W.T. doors, ash hoist and ventilators etc.

The main boilers were resting on their after stools and against the engines; the furnace fronts, superheaters, valves and fittings all more or less damaged; mountings and steam pipes broken.

The main engines found badly damaged, all cylinders broken at their attachment to columns and all columns broken at their feet; the front columns bent and all motion work of engines bent; the H.P. slipper broken; the spare L.P. piston ring broken; the water ends of condenser broken; the supporting brackets for condenser broken; the main eduction pipe for reciprocating engines and to the L.P. turbine broken; the circulating water pipes to and from the main condenser broken; the centrifugal circulating pump broken; the main engine air pump on L.P. column broken and its slipper broken; the air vessel on bilge pump broken; the filter tank damaged; the lower half of L.P. turbine casing broken, its primary shaft from flexible coupling broken; the cover of flexible coupling broken; the forced draught fan casing and engine crushed between the starboard boiler and bunker casing and could not be examined but appears to be completely wrecked; the two independent feed pumps broken; steam pipes and pumping connections in engine-room broken or damaged.

All engine-room auxiliaries and fittings more or less damaged by steam, moisture or dirt.

The electric light installation throughout the engine and boiler rooms damaged and short circuited.

From this examination it was evident that nothing could be done in the way of temporary repairs to the propelling machinery, but it was considered that temporary repairs could be effected at Port Pirie to the vessel's hull, to enable her to be towed to a port of repair.

At the request of Owners Agents a specification was drawn up with conditions of contract, both for temporary and permanent repairs, and tenders invited from all likely contractors in Australia.

At the request of Owners an approximate estimate was made of the cost of these repairs and the Agents were advised that, based on previous charges and Australian costs, the figures would be roughly in the vicinity of £40,000 for permanent repairs, and £3,500 for the temporary repairs.

At the request of the several repairing firms who proposed to tender for these contracts the closing date of tenders was extended to 27th. January last.

Whilst the vessel was berthed at Port Pirie awaiting Owners instructions it was found necessary on two occasions to move her to make room for another vessel - 22nd. January and 10th. February. On the latter date whilst moving with assistance of tug, the propeller fouled a pile on the wharf, broke off the tip of one blade and slightly damaged the wharf, the bow then swung in and the projecting portions of the damaged shell plating forward fouled the wharf. It was then decided to obtain the services of a local firm (S.J. Cheesman & Co.) to burn off the projecting shell plates in way of the damage.

Advice was received by cable on the 16th. February last that the Owners had decided to tow the vessel to U.K. and desired temporary repairs effected for that purpose.

As recommended, the lowest tender (that submitted by Messrs Robison Bros. Pty. Ltd., of Melbourne) was accepted and work commenced on 2nd. March last.

The work of repairs was carried out in accordance with specification except for modifications agreed upon. The Contractors stated that they were unable to obtain channel sections for the

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temporary frames and constructed these of built-up sections 4" x 4" x $\frac{1}{2}$ " angles to shell, $\frac{1}{2}$ " web plates and double reverse angles 3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x $\frac{1}{2}$ ". As this arrangement made a stiffer repair than specified at that part, it was possible with safety to reduce the amount of timber shores arranged for between the port and starboard panting stringers.

The shoring up of main engines and boilers was satisfactorily carried out; all wreckage, including the auxiliary boiler in forward hold and all loose fittings etc., were securely lashed and fastened.

Double bottom tank tops in forward holds repaired and tested with a head of water; air and sounding pipes repaired as necessary; all pumping connections to tanks and bilges repaired; bilges cleaned out and pumps tested on tanks and bilges.

Timber supports fitted under the main deck in way of the bridge erection where the plating and beams appear to be set down slightly.

The collision bulkhead temporarily repaired with $\frac{3}{8}$ " plating and efficient stiffeners, tested with a head of water up to the level of the forepeak tank top and found sound and tight; sounding pipe repaired and pump suction tested.

Steering engine controls from bridge repaired and made workable; steering gear examined and tested under steam.

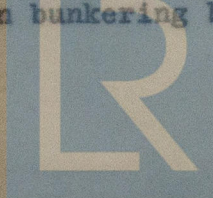
Hatch shifting beams faired and refitted; wood hatch covers renewed as necessary for No's 1, 2 & 3 hatchways.

The donkey boiler which was procured and shipped from Adelaide was installed by the Contractors. This boiler was the only suitable one available, being a horizontal, marine type, with single furnace and 100 lbs. working pressure. It was satisfactorily tested on pumps, windlass, steering gear, winches and dynamo. With steam on deck and on steering gear, however, there was little or no reserve for dynamo or pumps. The boiler was lagged and its funnel removed from main boiler uptake and led up the starboard samson post, but with little improvement. As repairs to the Hull were, at the time, fully a week off completion, it was considered advisable to obtain and install a vertical donkey boiler to work in conjunction with it when necessary, and thus ensure a sufficient supply of steam for all reasonable contingencies. On account of impurities in the water supplied at Port Pirie, it was also considered advisable to install a 400 gallon feed tank for treatment purposes. Pipe connections from the general service pump to this tank and to the boiler feed line were also fitted. When the vertical donkey boiler was completed, opportunity was taken of opening up and cleaning the marine type donkey boiler which was installed and used by the Contractors during the repairs.

In accordance with advice from the Towage Contractors, and instructions from Owners, the four cast iron propeller blades were cut off as close to the boss as possible. This contract was carried out by S.J. Cheesman & Co. of Port Pirie; three of the blades were placed on board the vessel, the other was lost by the breakage of a shackle.

The starboard life-boat was found to be sprung and leaking badly when tested. It has now been repaired by caulking as necessary.

The tug "GANGES" arrived at Port Pirie wharf on the 21st. April, placed approximately 130 tons of bunker coal aboard the "KINGSWOOD" and completed her own bunkering by midday, Saturday, 24th. April.



At the request of the Tug Master, steam was connected to the whistle of the "KINGSWOOD".

Repairs by the Contractors were completed on the evening of Sunday, 25th. April, stores taken on board, hatches battened down, all auxiliaries tested under steam and the vessel ready for sea on the 27th. April.

The foregoing TEMPORARY REPAIRS, as recommended, have now been carried out under our supervision and to our satisfaction and were, in our opinion, necessary to enable the vessel, with safety, to proceed in tow to a port in the United Kingdom, where permanent repairs will be required to be effected - Interim Certificates issued accordingly.

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Surveyor to Lloyd's Register, SYDNEY

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Surveyor to Lloyd's Register, PORT PIRIE

[Signature]
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Surveyor to Lloyd's Register, ADELAIDE

PORT PIRIE, 27th. April, 1937



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