

COPY.

-8 NOV 1935

Lloyd's Register of Shipping.



Port FREMANTLE. W. A.

7th October, 1935.

This is to Certify that

Wm. G. Davies,

the undersigned Surveyor to this Society did at the request of
The Master & Agents & Lloyd's Agents (Gregory & Co. Port Hedland)

Survey the Steel Screw Steamer "MINDEROO" of London, 2720 tons Gross Register, for the purpose of ascertaining the nature and extent of damage to Hull and Engines, which damage is alleged to have occurred when the vessel rested on a sand bank at Port Hedland on 14th September, 1935, during a voyage from Fremantle to Singapore via Ports, and further for the purpose of estimating cost of temporary and/or permanent repairs.
For further particulars see Log Books.

Upon examination with the vessel afloat alongside Jetty at Port Hedland, found:-

ENGINE ROOM.

Port Boiler. Main Steam Pipe pushed in 2" into expansion gland.

Starboard Boiler. Main Steam Pipe pushed in 4" into expansion gland and studs bearing hard up against gland.

Both main steam pipes cracked at neck where they join the breeches pipe. Both main steam pipes buckled where they pass through screw bulkhead.

Main Engine stop valve broken right off at neck of the flange which bolts on to engine.

Main Engines canted up bodily on after end so that, although the cylinders are intact and in line with each other, the L.P. Cylinder is one foot higher than the H.P. Cylinder.

Air Pump foot broken on port side.

Crating upset and canted.

L.P. piston lying aft at bottom but not bent.

L.P. Guides parallel.

H.P. cylinder Starboard foot and column top showing open; (bolts

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appear to be strained.)

Evaporator Valve to Main Condenser fractured at neck on eduction pipe.

Main Engine sanitary discharge pipe (3" diameter Copper) collapsed on both bends.

Main Engine After Bilge Pump discharge overboard (3" diameter Copper) collapsed in two places.

Main Engine Bedplate.

Immediately aft of I.P. Column and between butt flange of Forward section of bedplate, it is cracked in three places on the Starboard side only.

Starboard side of bedplate cracked right through and opened out at a point forward of the Starboard L.P. Column.

Port side of bedplate is cracked and opened out more extensively at a corresponding position.

Aft of L.P. Column on the Starboard side, the bedplate is broken and opened out $1\frac{1}{4}$ " (inch and a quarter), and set up. This fracture is between L.P. Column and No.6 Main Bearing.

A fracture similar in location and magnitude exists on the Port side of the bedplate.

Crankshaft.

The L.P. Crank, when lying at 30° from horizontal on Port side is opened out at top $\frac{3}{4}$ " (three quarters of an inch) between webs and the after web is pulled away from pin, and in addition, the L.P. Crank Pin appears to be bent.

The inner face of the L.P. after crank web appears to be $\frac{5}{8}$ " (five-eighths of an inch) aft of its original position on top in present position of crank, and the pin appears to be $\frac{1}{4}$ " (one quarter inch) in from the web on the outside face.

The After face of L.P. after web is not parallel with the Main bearing ends, but is $\frac{9}{32}$ " more than parallel at the bottom.

Other parts appear to be intact except that the I.P. Crank shaft appears to be bent slightly, but will need to be tested in lathe to prove this.

Starboard H.P. Column cracked at flange on foot at forward Port side. (This appears to be an old crack.)

Thrust Shaft.

Thrust Shaft appears to be bent and lifted 6" above forward thrust bearing and all shoes are broken away at Starboard side, while three shoes are broken right through. Caliper and Line tests of thrust shaft, taken in position later, showed that it is approximately $\frac{1}{16}$ " out of true in entire length.

Adjusting screw bearing caps only on Starboard side of thrust block broken, but block is otherwise intact.

Tunnel bulkhead gland fractured and lifted.

Tunnel Shafting.

First intermediate Shaft bent and lifted 1" clear of No.1 tunnel bearing and cap is pushed up on this bearing.

All other tunnel shafting and bearings are intact and seatings good.

Dynamo.

Dynamo Engine appears to be intact, but lifted bodily with the rising of the tank tops and bearers, without affecting steam and exhaust pipes.

Fan Engine.

Fan Engine lower casing slightly buckled, but Fan Engine appears to be good, but canted slightly in conformity with upset in bearers.

Main Condenser.

Main Condenser delivery gate valve (lying in horizontal position) is cracked 18" (eighteen inches) along after side. Condenser otherwise intact.

Main Injection Valve.

Flange still on ship's skin but neck cracked about one inch away from flange. Now seen blanked off and cement boxed.

Main Discharge Pipe.

Main discharge pipe about $10\frac{1}{2}$ " (ten and a half inches) diameter buckled slightly at two bends, but not seriously. (This is an underwater discharge.)

- General Service. General service discharge valve box broken.
- Main Engine Pumps. After bilge pump Main Engine Suction Valve box broken off at flange.
- Main Bilge line. Main bilge suction lead pipe broken off at neck of flange at distributing box.
Several lead pipe flanges need minor repairs.
- Fresh Water Service. Fresh Water suction pipe to fresh water pump from Tank range and one T piece broken.
- Ballast Line. 6" (six inches) diameter, Cast Iron pipe with a 3½" branch cracked.
1 filling and 1 air pipe on No.4 Port Tank, and 1 filling and 1 air pipe on No.5 Tank cracked near flange on tank top.
1 Suction pipe to No.4 Starboard Tank cracked near flange on tank top.

Structures in Machinery spaces,

Starboard Side. Pillar bent slightly and angle attached to it and supporting Engine Room store, torn off and set up 10" (ten inches).

Port Side. Pillar bent in a wide sweep 22½" out of line.

Bearers for Engine Room floor plates pushed up in conformity with upset in Hull - particularly in way of dynamo and No.6 Main Bearing, which is the point of maximum stress.

HULL STRUCTURE.

No.4 Port and Starboard D.B. Tanks.

Division plate between Nos. 4 & 5 Tanks buckled slightly all over, except in Port & Starboard wing spaces where the plate is fluted sharply - particularly on port side at junction of margin angle, margin plate and ship's skin, where the division plate is torn away, making Nos. 4 & 5 Port Tanks common. Top Angles are open slightly.

NO.4 PORT DOUBLE BOTTOM TANK.

- Intercostals. These are only slightly buckled all over for a space of nine frame spaces forward of After division except the After frame space where the three intercostals are badly buckled.
- Floor Plates. Inner Bay. After floor plate slightly buckled.
Inner Centre Bay. Appear to be good.
Outer Centre Bay. Appear to be good.
Wing Bay. Four floors from Aft badly buckled and torn in way of limber holes and four floors forward of these slightly buckled, while the remaining three floors are good.
- Margin Plates. Slightly buckled for two frame spaces forward of after end of tank and found to leak at this position under tank test.
- Tank Brackets. Five brackets forward of division between Nos. 4 & 5 Tanks (including bracket which is a continuation of division plate) torn away from margin plate; the remainder strained at rivets in way of bracket angle on margin plate.

NO.4 STARBOARD DOUBLE BOTTOM TANK.

- Intercostals. These are slightly buckled all over from a maximum amount at after end of No.4 Tank to a minimum at forward end.
- Floor Plates. Inner Bay. Seven floor plates from aft slightly buckled and the remaining four are good.
Innter Centre Bay. Two floor plates from aft appear to be good
Four forward of these slightly buckled, and remaining five appear to be good.
Outer Centre Bay. Seven floor plates from aft appear to be

good; eighth, slightly buckled; ninth appears to be good; tenth and eleventh, slightly buckled.
Wing Bay. Eight floor plates from aft badly buckled and torn in way of limber holes and remaining three slightly buckled.

Margin Plate. Buckled in way of three frame spaces forward of after end of tank.

Tank Brackets. Six brackets forward of division between Nos. 4 & 5 Tanks (including bracket which is a continuation of division plate) torn away from margin plate, but rivets still holding in margin plates. Remaining six brackets strained at rivets in way of bracket angles on margin plate.

Margin Angles. Port and Starboard sides appear to be in good order except near After end, which leaked under Tank test.

Keelson. Appears to be reasonably good and not buckled, but is inclined upwards towards after end of No.4 Double Bottom Tanks in conformity with the upset of ship's bottom.

(No.4 Tank floor plates and intercostals have all standard size limber holes.)

No.5 PORT DOUBLE BOTTOM TANK.

Intercostals. There are only two intercostals in the width of each of the wing tanks, and both are badly buckled in the first frame space aft of the division plate between Nos.4 & 5 tanks.

Floor Plates. The floor plates in the first three bays (i.e. Inner, Centre & Wing Bays) are badly buckled, but the damage does not extend aft of this. (The floor plate in the inner bay has standard limber holes, while the floor plates on centre and wing bays have extra wide limber holes.)

Margin Plate. First bay buckled slightly and did not leak under tank test.

Tank Brackets. All intact.

No.5 STARBOARD DOUBLE BOTTOM TANK.

Intercostals. Inner row of intercostals are badly buckled for two spaces aft of the forward division plate and slightly buckled on two intercostals aft of this.

Outer row of intercostals similar to the inner row.

Floor Plates. In the inner bay there are three floor plates badly buckled aft of the division plate and one slightly buckled aft of this. In the Centre bay there are three floor plates badly buckled and one slightly buckled aft of these.

In the Wing bay there are four badly buckled floor plates, and one slightly buckled aft of this.

The floor plate nearest to the division plate in the wing bay is very badly buckled and the wide limber hole brought together, so that it is difficult to crawl through.

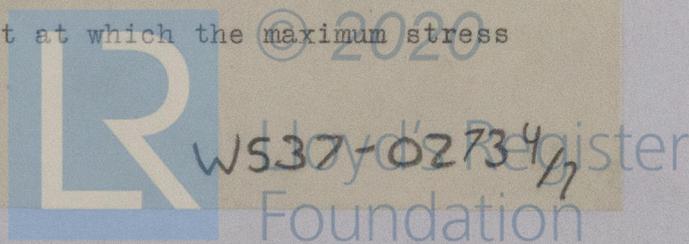
Margin Plate. First bay buckled slightly and did not leak under tank test.

Tank Brackets. All intact.

Margin Angles. Port and Starboard angles appear to be good, except near forward end when the angle leaked under tank test.

Keelson. In No.5 Tank in first space aft of the division plate between Nos. 4 & 5 tanks, the Keelson is badly torn and buckled towards bottom centre between old holes which had been plugged up some time previously.

This appears to be the point at which the maximum stress was realised.



No.3 HOLD PORT SIDE.

Lower Stringer Gusset on Engine Room bulkhead slightly buckled.

When the vessel is at draught 16 feet aft and 12½ feet forward, there is a vertical bulge in the ship's side plates, extending upwards from the bilge to the bottom of the second strake below the sheer strake, approximately 12 feet forward of after break of bridge deck and corresponding to one frame space aft of Engine Room bulkhead in No.3 Hold. At above draught the bottom on 3rd strake below sheer strake, is on Water Level.

Tank brackets - good.

Tank bracket forming watertight division between No.3 bilge and Engine Room bilge - good.

Engine Room bulkhead 4 feet in from ship's side - good. At this distance, it has started to buckle at bottom and extends into thrust recess bulkhead.

Engine Room bulkhead buckled at top and rivets broken in places.

Tunnel recess screen bulkhead buckled 3 feet aft of Engine Room bulkhead.

Engine Room bulkhead gussets - 2 slightly buckled.

No.3 HOLD STARBOARD SIDE.

Ship's side buckled in a similar manner to Port side.

Tank brackets good.

Tank bracket forming water-tight division between No.3 bilge and Engine Room bilge - good.

Tween deck floor set down slightly in first bay aft of Engine Room bulkhead.

Engine Room bulkhead buckled - a minimum 6 feet from Starboard side to very badly at corner of thrust recess.

Three gussets buckled badly on tank top.

Engine Room bulkhead buckled slightly at top corner near thrust recess.

Starboard screen bulkhead of thrust recess buckled at bottom for eight feet aft.

Hole in Starboard side immediately above bilge in first bay of No.3 Hold.

Keelonn Generally.

The existing join is 12 feet aft of division plate between Nos. 4 & 5 tanks and another join 24 feet forward in No.4 Tank in first bay aft of division between Nos. 3 & 4 tanks.

GENERAL.

Unsheathed decks in side bunker spaces have been examined and do not appear to have been strained. Hull plates do not appear to have been strained on upper strakes. Generally the damage is confined to double bottom in way of Nos. 4 & 5 Tanks between frame No.58 and frame No.74, reading from aft to forward, both inclusive, i.e. 16 frame spaces at 2 feet each - 32 feet or approximately 10% of vessel's length. Old cement cracked more or less seriously in way of damage.

RECOMMENDED.

The following temporary repairs are recommended in order to place the vessel in a seaworthy condition so that she would be fit to be towed to Port of repair.

Main Engines.

Disconnect intermediate tunnel shafting from tail shaft and prepare oil ways on tail shaft bearing to enable towing collar to be well lubricated.

Ballast Line.

Cement box to be placed round six inch Cast Iron Pipe which constitutes the main ballast range.

One filling and one air pipe on No.4 Port Tank and one filling and one air pipe on No.5 Starboard Tank, which were cracked near flanges to be cut away and plugged.

One suction pipe to No.4 Starboard Tank which was cracked near flange on tank top to be wrapped and cement boxed.

Bilge Lines.

All Engine Room and Hold bilges to be cleaned and bilge lines flushed and made clear, so that all bilges can be pumped out, if required.

HULL.

Cement box Port and Starboard Wing Bays in Nos.4 & 5 double bottom tanks, each side of the division plate between these tanks.

Cement box inside tank in way of tank brackets where these have been torn away from margin plate in No.4 Port and Starboard double bottom tanks.

Cement box inside No.4 Port and Starboard double bottom tanks in way of margin angles, where leaks were seen during testing of tank.

Cement box inside No.5 Starboard double bottom tank in way of margin angle in first bay aft of the division between Nos. 4 & 5 tanks, where this margin angle was seen to leak during testing of tank. Also cement box in bilges adjacent to the above cement box.

Cement box each side of the Keelson in the first bay of No.5 double bottom tank aft of the division between Nos.4 and 5 double bottom tanks, to prevent No.5 Port and Starboard Tanks from becoming common.

Cement box in first frame space aft of the Engine Room bulkhead in No.3 Lower Hold where the hull plating is bulged vertically on the Port and Starboard sides. The Cement boxes to extend the full depth of the Lower Hold, down to the bilges.

The whole of the above temporary repairs have now been seen satisfactorily completed, and Nos.4 & 5 double bottom tanks, Port and Starboard, tested and found tight, also all bilges have now been seen quite dry and the Snip seen to be water-tight as regards Hull and Tanks, and an interim Certificate has been issued to the effect that the Vessel is fit to be towed to Port of Repair and that she be continued as classed, subject to permanent repairs to Engines and Hull being carried out at the earliest opportunity.

The items relating to Engines and Hull as shown in the foregoing report are clearly due to damage, with the exception of two items here specified, namely, the Main Condenser Delivery Gate Valve, which appears to have been

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cracked at some time previous, but which crack appears to have extended at the time of grounding; also the Starboard H.P. Column, the crack at the foot of which appears to be an old one.

Attached to this report also is an outline of the particulars and sequence of work to be done to Engines and Hull in order to place the vessel in the same condition as she was in prior to grounding at Port Hedland, together with an approximate estimate of the cost of such permanent repairs, which information was requested by the Ship's Agents and Lloyd's Agents.

Wm. G. Davies.

SHIP & ENGINEER SURVEYOR
TO LLOYD'S REGISTER.



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