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Week Section

Lloyd's Register of Shipping.

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Port Vancouver, B. C.

July 9th, 1934.

This is to Certify that

A. SCOTT

the undersigned Surveyor to this Society did at the request of the Master, (Captain Utting), survey the machinery of the M. V. "KING MALCOLM" 5064 tons gross of London.

It is reported that while on a voyage from the United Kingdom to Victoria, B.C. four coupling bolts at the after crank shaft coupling were found to be broken and four spare bolts were fitted at sea by the ship's engineers, after which the vessel steamed twelve days to Victoria without further difficulty.

During the voyage there was a leakage of cooling water at the distance piece between the pistons and piston rods on Nos. 2 and 5 cylinders.

For further particulars see vessel's official log books.

The undersigned left Vancouver on June 26th, and on June 27th. examined No. 5 piston, distance piece and piston rod at the plant of Yarrows, Ltd., Esquimalt, B.C.

The piston rod showed signs of water action near the flange, and was found to be cracked between the bolt holes and also partly around the fillet.

This Certificate is issued upon the terms of the Rules and Regulations of the Society, which provide that:—

"While the Committee use their best endeavours to ensure that the functions of the Society are properly executed, it is to be understood that neither the Committee nor the Society are under any circumstances whatever to be held responsible for any inaccuracy in any report or certificate issued by the Society or its Surveyors, or in any entry in the Register Book or other publication of the Society, or for any error of judgment, default, or negligence of the Committee or any Member thereof, or the Surveyors, or other Officers or Agents of the Society."

"KING MALCOLM"

There were a number of other small cracks in way of the fillet.

The surface of the flange was uneven and showed indications of water action.

There were signs of corrosion on the top and bottom faces of the water cooling distance piece.

The piston, on examination from the inside, was found to be cracked at the top.

The undersigned recommended that a new piston rod be supplied and fitted, that a new piston be also fitted and the cooling water distance piece be faced up, top and bottom.

Examination was made on board the vessel of the remaining five piston rods and Nos. 1 and 4 rods were found to show cracks in way of the fillet.

A recommendation was made that new piston rods be also furnished for Nos. 1 and 4 cylinders.

There was evidence of water leakage at the distance piece between the piston rod and piston of No.2 cylinder, also two studs were broken.

A recommendation was made that this engine be dismantled, broken studs made good and the surfaces of rod, distance piece and piston be machined to make a watertight joint.

As the vessel was urgently required to load on the Fraser River on June 29th. and 30th, before returning to Victoria on July 2nd., arrangements were made to fit the old rod and a new piston to No.5 cylinder with sufficient rings to allow this cylinder to be used for maneuvering purposes only.

"KING MALCOLM"

but not under power.

On June 27th. and 28th. the Nos. 6, 7 and 8 main bearings were examined with No.5 crank near the bottom centre.

The readings from Lloyd's Gauge were:-

No.6 - forty-eight thousandths down.
No.7 - fifty thousandths down.
No.8 - one and a half thousandths high.

With No.5 near the top:-

No.6 - forty-eight thousandths down.
No.7 - fifty thousandths down.
No.8 - twenty-four thousandths high.

The shaft showed a good bearing at Nos. 6 and 7 but did not appear to be touching the lower brass at No. 8.

There was evidence of the shaft at No.8 touching the upper half shell.

The casing cover below No.8 main bearing, at the after end, was then removed, and it was found that the shaft in way of No.8 main bearing was approximately 41 thousandths above the lower shell.

An examination was made of the shrinkages of No.7 and No.8 main bearing pieces into the crank webs.

There was a very slight sign of oil at the two dowel pins of the after crank web and a similar condition at one dowel pin of the forward crank web of No.6 crank.

It was possible to insert 1-1/2 thousandths between the shaft and the web at the shrink for about 1/4" for the distance between the dowel pins, but there was no indication of any actual movement in the shaft or in the dowel pins themselves.

The main bearings were closed up without alteration to allow the vessel to proceed to the Fraser River and return to Victoria.

In the meantime arrangements were made to take

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"KING MALCOLM"

readings from the forward main bearings while the vessel was on the Fraser River.

The "KING MALCOLM" left Victoria at 9:00 p.m. on June 28th, and arrived at Fraser Mills a.m. June 29th.

The results of the readings taken on June 29th. and 30th, were:-

Forward compressor bearing - 30 thousandths.

No. 1 Main Bearing	- 33	"
No. 2 " "	- 38	"
No. 3 " "	- 40	"
No. 4 " "	- 24	"
No. 5 " "	- 25	"

The readings were the same in each case with No.5 crank down and up.

On July 2nd, when the vessel returned to Victoria, the coupling between the crank shaft and thrust shaft was opened up and two additional coupling bolts found to be cracked.

Both the bolts and the holes were in poor condition.

After the coupling had been broken, No.8 journal rested on the lower shell with a gauge reading taken with No.5 crank on top, bottom, port and starboard, varying from 15 to 18 thousandths.

The coupling faces, after being disconnected, showed an opening at the bottom varying from 50 to 62 thousandths.

In order to bring the crank shaft into reasonable working alignment, the undersigned recommended that the lower shells of Nos. 6 and 7 main bearings be reinstalled, also that the thrust block and the tunnel bearings be lowered as required to give the best alignment to the tail shaft.

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ONIA "KING MALCOIN"

The results obtained are shown on the attached blue prints.

The holes in the after coupling of the crank shaft were reamed and twelve new coupling bolts fitted.

It is reported that before the ship left on her present voyage, a large number of rivets were renewed in the engine seating.

The undersigned examined the riveting of the engine seating, and found same to be good generally.

The work on the shafting was carried out by Messrs. Yarrows, Ltd., and the changing of pistons and rods by the ship's engineers, working continuously.

In No.1 cylinder, the piston was found to be cracked through the second ring groove from the bottom, and a spare piston was fitted, as well as a new rod and spare water cooling distance piece.

In No.2 cylinder, the coupling face on the rod, both faces on the water cooling distance piece, and the piston itself were turned up to correct the leakage of cooling water.

A new piston rod was fitted to No.4 piston.

In No.5 cylinder, the piston which was found to be cracked at the top was replaced by a spare piston and a new rod and spare water cooling distance piece were fitted.

A dock trial was held at Victoria on Sunday, July 1st, 1934, during which the engine ran satisfactorily with very much reduced movement and vibration.

During the progress of repairs and while turning the engine with the turning gear, the bracket for the piston



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"KING MALCOLM"

Water cooling system on No.4 cylinder was broken near the flange.

This bracket was pre-heated and repaired by acetylene welding.

Additional reinforcement was added by fitting 1/8" thick steel bands securing the flange to the ribs of the main casting.

All the surveys and recommendations were made in close co-operation with Mr. F. Robinson, Chief Engineer.

The "KING MALCOLM" left Victoria immediately after the dock trial, and arrived at Port Alberni, Vancouver Island, a.m. July 9th, 1934.

It is reported that the machinery performed satisfactorily on the run to Port Alberni.

A report has been forwarded to the Committee of Lloyd's Register of Shipping, London, recommending that the machinery of this vessel be continued as classed, subject to the alignment of crank and tunnel shafting being again examined before the end of December, 1934.

A. Scott

SURVEYOR TO LLOYD'S REGISTER.



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