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TITLE

TAIL SHAFT STRUTS ON AN ALUMINUM PLANING CRAFT: PROBLEMS AND REPAIRS

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Tail Shaft Struts on an Aluminum Planing Craft: Problems and Repairs

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ABSTRACT

The m/v "Marine Courier" was built for passenger transport along the southern coast of Newfoundland, from Port-aux-Basques to Terrenceville, serving such intermediate communities as Burgeo, Ramea and Grey River. The vessel is a triple screwed all aluminum planing craft with a normal operational speed of about 18 knots. Each of the three tail shafts is supported, at its after end, by a strut from the bottom plating. Two of these three struts failed after only a few weeks of service. This article describes the continuing problems with the breaking of the struts by fatigue cracking and with measures taken to prevent them from breaking. These measures included strut design changes, propeller balancing and propeller changes and local weld treatment. The design changes and propeller modifications did reduce the cyclic stresses on the struts. Also, the local treatment of aluminum alloy welds showed that this treatment could be successful in increasing resistance to fatigue cracking at welds. However, success depended on the simultaneous elimination of even minor welding flaws. This flaw elimination could not be achieved sufficiently consistently to provide reliable service and, eventually, stainless steel struts replaced the aluminum struts.