

FLYER TO VESSEL OPERATORS USING PROXIMITY SWITCHES ON DAVIT LAUNCHED SURVIVAL CRAFT

TOMBARRA - MALFUNCTION OF A DAVIT PROXIMITY SWITCH RESULTING IN THE FAILURE OF A RESCUE BOAT FALL WIRE WITH THE LOSS OF ONE LIFE

During the final stages of a rescue boat drill on board the car carrier *Tombarra* in Royal Portbury Docks, Bristol on 7 February 2011, the rescue boat was hoisted towards its stowed position on the davit.

The davit proximity switch that should have cut electrical power to the winch motor before the davit arm reached its stops failed to operate. As a result, when the rescue boat reached its stowed position, the winch rapidly overloaded the fall wire. The wire parted, and the rescue boat (**Figure 1**) plummeted about 29m into the water below, killing one of its four crew.



Figure 1: The rescue boat and crew after the fall wire failure

Onboard instructions to test the proximity switch prior to recovering the rescue boat at every drill were not followed. In addition, the davit system manufacturer's operating manual implied that the proximity switch should be used to stop the winch motor. Consequently, the proximity switch and not the control buttons were used by the winch operators to stop the winch motor.

The davit proximity switch (**Figure 2**) did not operate due to a short circuit of its printed circuit board. The short circuit had been caused by either moisture ingress or by transient power surges.

Inductive proximity switches can fail in either the 'ON' or 'OFF' state, depending on the exact failure mechanisms, and therefore both the failure mode, and the time of occurrence, can be unpredictable.



Figure 2: Proximity switch on davit (circled)

Safety Lessons

1. Safety devices (both inductive proximity switches and mechanical limit switches), fitted to davits, are intended to prevent the over-stressing of the falls and davit structure. They are not fitted for ease of operation.
2. Davit safety devices must always be tested prior to a rescue boat being hoisted.
3. Davit safety devices should not be relied upon. The davit winch must be stopped prior to the davit safety device operating.
4. Visual aids to prompt when winch motors should be stopped could be extremely beneficial.
5. Care must be taken when cleaning and painting electrical equipment on deck. High-pressure hoses must be used with caution.

This flyer and the MAIB's investigation report are posted on our website:

www.maib.gov.uk

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**Marine Accident Investigation Branch
July 2012**