



Marine Safety Forum – Safety Flash 09/17

Issued: 1st June 2009

Subject: A small ER fire which highlights potential issues with PLCs

Summary:

A supply ship was tasked by the charterer to load cargo for a run to an oilfield. Once at the loading berth and safely moored, the Chief Engineer requested permission to carry out fault finding on an intermittent 24v earth alarm which had come up during the move and had also been reported by the previous crew. The Master and the C/E agreed that as the alarm had only appeared whilst the power plants were running on passage then both engines and shafts should be left running during the fault finding to simulate normal running. At the time the outer engine was running and the inner engine was stopped.

On this vessel class both propeller shafts (driven by 2 main engines each via a gear box) are fitted with disc brakes which are designed to engage (stop the shaft) once both engines are de-clutched from the gear box. The shaft brake is fitted so as to be able to stop the shaft in cases, where for example, rig hoses are sucked into propellers to avoid serious damage to nozzle and propeller

The C/E suspected the fault was in the propulsion control system. He switched off power (24v) to the CPU of the propulsion control system of the outer engine and the alarm disappeared. However without warning the shaft brake immediately engaged, resulting in the brake pads overheating and catching fire. This was extinguished very quickly and the only damage was to the brake pads which were destroyed.

It was discovered that the PLC in the propulsion control system was programmed in such a way that if the 24v supply was interrupted whilst the inner engine was stopped both engines were considered stopped and the shaft brake engaged. The PLC has since been reprogrammed.

This incident raises concerns about the verification of programming of PLCs which are used within control systems.

