

Grounding after main engine shut down

When moving from one river berth to another one up-river, with a pilot on board, the high differential pressure alarm across the main propeller shaft clutch control oil filter was activated.

Immediately, the chief engineer ordered the engineer on duty to bypass the filter. The engineer did not acknowledge the order and, approaching the duplex lubricating oil filter, wrongly operated the three-way valve, completely stopping the lubricating oil flow. As a result, the main engine shut down automatically on a critical alarm condition.

Having lost control, and despite letting go one anchor, the vessel grounded on a river bank. Propulsion was restored soon afterwards and the vessel refloated under her own power with tug assistance and proceeded to moor to lay-by buoys. Fortunately, subsequent survey of underwater hull by a diver and internal inspection of bottom and peak tanks did not show any damage.

Immediate cause

Sudden activation of reduction gearbox low lubricating oil pressure safety switch when lubricating oil flow to gearbox was inadvertently interrupted by wrong operation of three-way valve of duplex filter.

Root cause/contributory factors

1. Inadequate maintenance instruction: the planned main-tenance system (PMS) did not contain sufficiently detailed instructions on the proper maintenance and testing of filters.
2. Improper maintenance: In the morning of the day of the accident, while moored at the first berth, a routine maintenance of all filters in the clutch control and reduction gearbox lubricating oil circuits was conducted as per ship's PMS. However, after reassembly, the filters were not properly purged of trapped air. This could have affected the proper functioning of the clutch control oil filter differential pressure sensor, leading to the initial alarm.
3. Inadequate testing instruction: Testing of reduction gearbox protection and monitoring sensors were not included in the ship's PMS. (It was subsequently discovered that a gearbox pressure sensor was defective, but this did not directly contribute to the incident.)
4. Failure of communication: Failure to acknowledge and repeat chief engineer's order.
5. Missing safety devices: The locking pin normally fitted on the handle of the lubricating oil filter's three-way valve to prevent its inadvertent closure during propulsion was missing.
6. Inadequate signage/markings: The operating positions three-way valve of the duplex filter was not clearly marked.

Corrective/preventative actions

1. All personnel instructed to acknowledge and repeat verbal orders to ensure proper communication and execution;
2. The operational positions of all valve handles properly marked and locking pins fitted, as appropriate;
3. PMS revised to include testing procedures of gearbox protection and monitoring sensors;
4. New instructions issued for senior engineer on duty to supervise junior engineer.

Editor's note: *For safety and efficiency in the operation, servicing and maintenance of shipboard equipment and machinery, it is essential that the instructions and specifications given in the makers' manuals are strictly followed. As it may be impractical for the PMS to reproduce the information from these manuals in their entirety, mariners must familiarize themselves with these manuals when joining ship and consult them again before planning any work. Photocopies of relevant extracts from the manuals are very useful at the job site.*