

INCIDENT

Incident: Emergency anchoring manoeuvre after engine failure

What happened?

A bulk carrier's (GT: 93.565) main engine failed during estuary trading on the river Elbe and could not be started again. The ship had to carry out an emergency anchoring manoeuvre. Through the concerted action of several tugs, it was possible to shift the anchored vessel to a deeper position on the river. The ship could be prevented from running aground or grounding with adverse effects for the ship or the environment in the course of the onset of the low tide after the engine failed.

Why did it happen?

- Two days before the incident, the main engine's fuel supply was changed from heavy fuel oil to low-sulphur diesel operation on entering the Sulphur Emission Control Area (SECA) in the North Sea.
- The seizure of an injection nozzle resulting from this led to the main engine only working with limited performance.
- Increasing the ship's speed for the estuary trading and sailing in high tide resulted in the main engine's overload and its failing.
- The investigations revealed that the fuel changeover was not carried out in the time of 45 minutes as stipulated but instead within 30 minutes.
- The instruction manual for the changeover procedure did not comprise a clear indication that the time of 45 minutes is a minimum period, which must absolutely be adhered to.
- The changeover is inevitable associated with a temporary mixture of fuels characterized by different viscosities and operating temperatures. The thermal stress of the injections system's components resulting from this can inter alia, lead to a seizure of injection nozzles.

What can we learn?

- The changeover between different fuel types leads to a special thermal stress of the fuel injection systems components because they might have very different chemical and physical properties. In order to ensure the operability of all components, it is absolutely necessary to adhere to the minimum period for the changeover procedure stipulated in the instruction manual.
- The instruction manual for the changeover procedure describes a process which uncompromising compliance must be ensured for the safe operation of the main

engine and thereby the safe operation of the ship overall. Therefore, the instruction manual must be worded unambiguously and clear. This applies especially for the time specifications.

- Within the framework of the organisation on board as well as the education and advanced training of the technical staff, sufficient attention should be paid to the transfer of background knowledge with respect to technical procedures associated with the fuel changeover in order to sensitize the technical staff for the risk and dangers associated with this.

Who may benefit?

Technical staff on board, technical inspectors, maritime education and advanced training institutions.