SUMMARY

On voyage from Rostock to Travemünde the crew on PETER PAN suddenly felt heavy vibrations. Close thereafter fire alarm and automatic sprinkler were released in engine room 4, where diesel generator 4 (DG 4) was situated, and from engine room 3, where diesel generator 3 (DG 3) was. It was later evident that a connecting rod in cylinder 6 had broke in the main engine in engine room 3, that was on starboard side.

There was a deflagrating fire in engine room 3. The fire also caused damage in engine room 4 on the vessel's port side. However, no more developed fire occurred there. The fire though caused extensive damage in engine room 3. Cablings and pipe installations, running through engine room 3 to engine room 1, were damaged.

To stop DG 3, the fuel supply to all three engines on starboard side had to be cut off by the crew, and consequently only the two engines on the port side, DG 2 and DG 4, were still available.

The in total five engines (DG 1-DG 5) were each placed in different rooms. The intended fire integrity to other spaces was by class A-0, though this was not required by the regulations at the time when PETER PAN was built. The investigation has however shown that four of the engine rooms were connected with fully opened cross-flooding pipes, amongst other, which in reality broke the A-0 integrity. The investigation also reveals that hot flue gas spread through these pipes from engine room 3 to engine room 4. The cross-flooding pipes were on the other hand a way to fulfil stability regulations, in order to prevent listing in case of water ingress. The occurrence is thus an example on how regulations to handle different kinds of risks may counteract.

Furthermore, the investigation proves that the crankcase ventilation from the main engines on each side of the vessel respectively were combined on deck 10, even though this was not allowed, following the wording in the classification society's own regulations. The classification society has though stated that the arrangement, due to the long pipes and common draining, is accepted and regarded as common practise. SHK, however, is of the meaning that the arrangement is unfortunate from a safety point of view. It may, especially combined with an oil mist detector of the type that was in use, form an increased risk for crankcase explosion or fire spread in or through the system, even though this risk cannot be said to have been realized in this case.

The cause of the broken connecting rod has not been determined. The fire has, however, been caused by fuel and lube oil that sprayed into the failed cylinder. The fire has then been supplied by lube oil, which has fuelled the fire.

The open cross-flooding pipes from engine room 3 was a prerequisite for the damage in engine room 4.

The lacking of fire protection of cablings in engine room 3, and the supply systems for e.g. fuel and cooling water not being redundant enough for individual operation, were necessary conditions for the need to stop all engines on starboard side.

Safety recommendations

The Swedish Transport Agency is recommended to:

- draw attention to the problem of cross-flooding rules in combination with risks of the spread of fire and take suitable action to raise the matter, also internationally. *(RS 2020:01 R1)*

- take action nationally and internationally in order to draw attention to the problem of combined crankcase ventilation. *(RS 2020:01 R2)*

DNV GL is recommended to:

- review its interpretation of the rules concerning crankcase ventilation and ensure that this is applied in the vessels for which the organisation is responsible. *(RS 2020:01 R3)*

TT-Line GmbH & Co. KG is recommended to:

- consider upgrading the vessel's technical engine systems with respect to redundancy and fire protection. *(RS 2020:01 R4)*