

SIMULATION OF INTERNAL BLAST INSIDE SHIPS AND ITS SUBSEQUENT DAMAGE ASSESSMENT

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From recent experiences the effects of internal explosions inside ships were considered devastating. Whenever a ship is incapable of defending itself against hostile missile attacks it should be capable of surviving the effects of a missile hit.

At TNO-PML a simulation model (DAMINEX) has been developed, to assess the damage to a ship from an internal explosion. The results can further be used in analyzing the ship's combat readiness.

The code will be discussed in general and attention is focused on the internal blast effects and structural response and failure. The code is validated by extensive experiments on two decommissioned frigates of the Roofdier-class.

The effects of possible failure of a compartment's wall upon the adjacent compartment are underestimated. The Random-Choice Method (RCM) seems feasible to address this problem in more detail. In the one-dimensional application a failing wall is simulated by a time-dependent varying cross section in a throat. Possible effects of venting can be included as well, by adopting a secondary expansion capability.

The application of the RCM will be discussed in relation to the existing method and to measurements.