UNTERSTÜTZUNG

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Accident on a RHIB:
Why research on shock impacts is important

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BUNDESWEHR

Agenda

- Accident on a RHIB DEU Navy in July 2023
- Analysis of the Accident Commission DEU Navy
- Data from the study HFM RTG-344 MASHIEN
- Occupational health perspective

Accident on a RHIB of the DEU Navy in July 2023

Initial situation

- In July 2023 the DEU frigate MECKLENBURG-VORPOMMERN (MVP, F 123 class) was part on a NATO mission in the sea area off the Lithuanian coast.
- Due to the good weather conditions and the operational tasks, the day should be used for general nautical training.
- The ship's command authorized training with the Fast Rescue Boat FRB 700/Bw-2 which is used on the frigates of the classes 123 and 124.

Fast Rescue Boat FRB 700/Bw-2

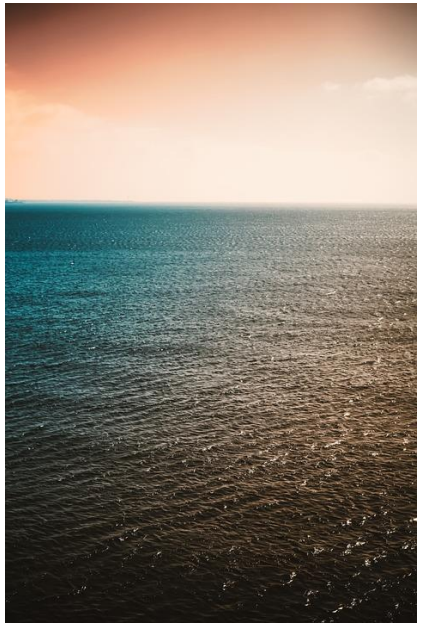
- Designed as „rapid crisis response and emergency boat”
- Complies with specifications SOLAS Chapter III 41, 42, 47
- Length 7,10 m, width 2,54 m, weight 2,1 tons (incl. fuel)
- Engine 147 kW/200 hp, speed max 30 kn (2 persons)
- Crew 2-6 persons (FRB):
  - 1 seat for the helmsman/skipper
  - crew members: all-round tube fender with ropes and foot straps
- The crew consisted of skipper, security officer and sailor.

Conditions

Environmental conditions

- Time 09.00 a.m. (CEST) → daylight, slightly cloudy, good visibility
- Wind 10-12 kn
- Sea state 0,5 m
- Primary wave (highest ship-generated wave) approx. 0,5 m +/- 0,2 m
- Temperature 17°C (air + water)

→ Good conditions.



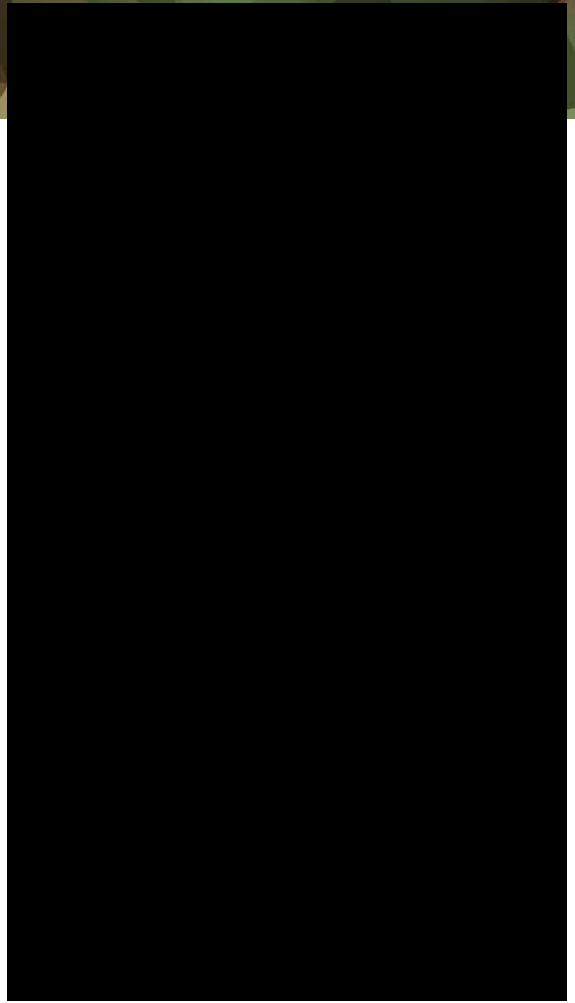
Accident

Sequence

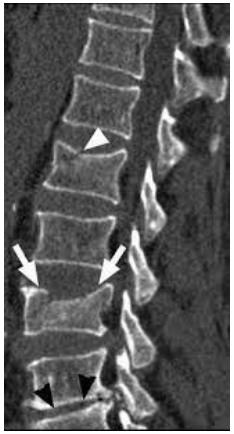
- The boat was launched on the port side, turned 270° to the left and was crossing the stern wave of the MVP from its port side to its starboard side around 100 m behind the ship. The boat captain reduced the speed (unknown, estimated 10-12 kn).
- The boat was lifted out of the water and landed hard in the trough, making it impossible for the sailor to hold on and remain seated. He was initially thrown upwards. As he moved downwards, the boat was already moving upwards again, so that the impact was amplified.
- The sailor secured himself by holding onto the designated ropes. Whether he used the designated foot loops could not be determined. He landed with his tailbone on the cleat.

Accident

For better understanding



Patient care



- First Aid by the security officer
- Transport to the frigate MVP
- Examination by the ship`s doctor
- Transport by on-board helicopter under medical supervision to Klaipeda Hospital
- Further diagnostics: Compression fracture in the lumbar spine
- Transferred to the Bundeswehr Hospital Koblenz three days later for further treatment

Qualifications of the crew members

- The boat operator was the deckmaster of the MVP, a soldier in his 18th year of service.
- The security officer was in his 10th year of service. He did not actively participate in the preparation or conduct of the boat training.
- The sailor had participated in several boat training sessions prior to the accident and had been briefed and instructed.

Assessment of the Commission

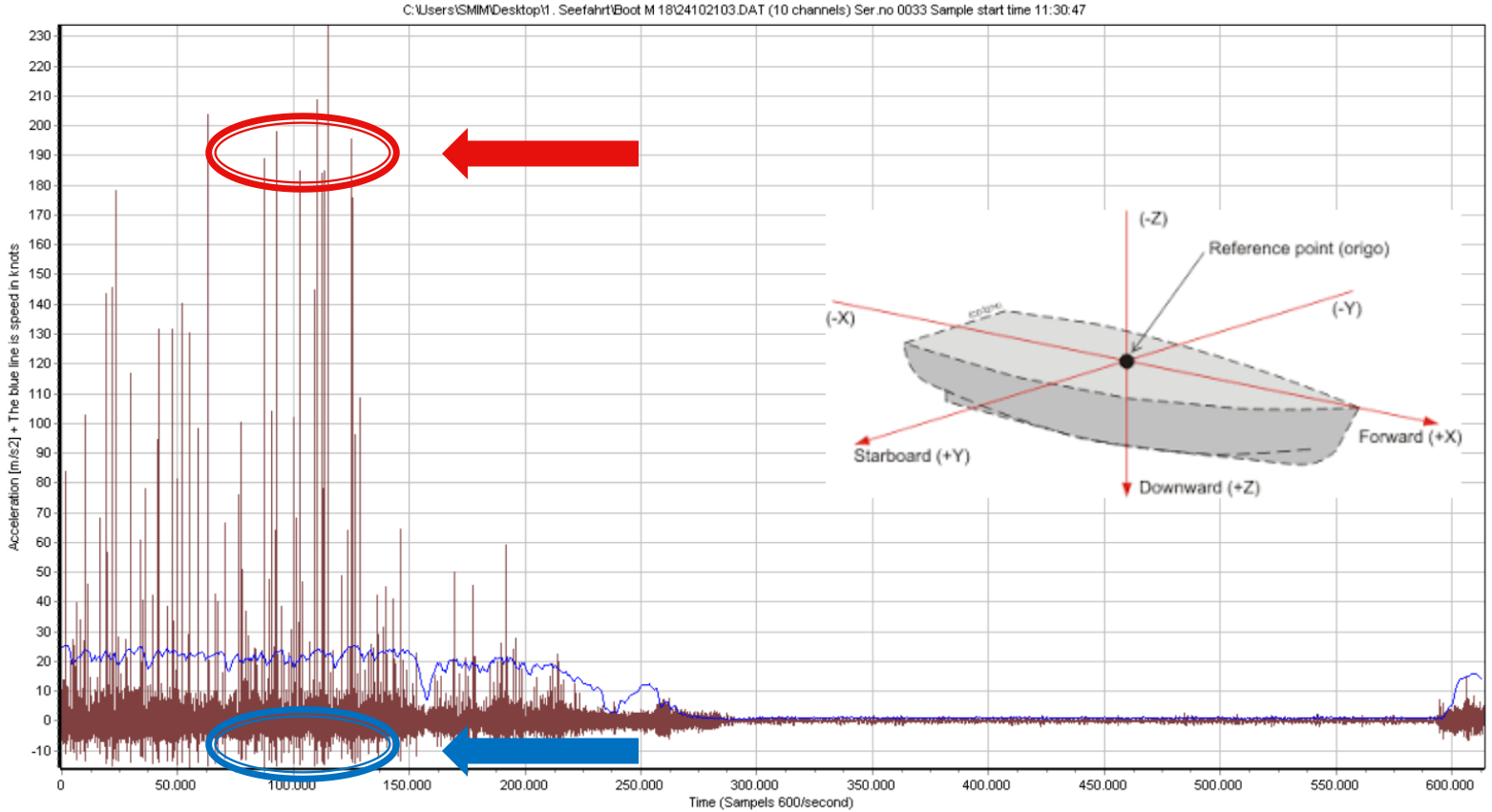
- Participants of RHIB trainings are instructed on existing hazards and have to wear their personal protection equipment.
- This accident is not an isolated case. Spinal injuries can be considered typical for accidents involving RHIBs.
- Even in good weather conditions high speeds can cause impacts so severe that they can cause acute injuries to the boat's occupants.
- The “seats” on the wraparound fender provided the boat’s occupants only partially absorbing the shocks and do not offer sufficient protection against lifting and impacts.

Safety recommendations

- The reason for the accident was primarily a misjudgment of the environmental and physical conditions by the boat operator.
- No adjustments of the safety equipment or the safety regulations are recommended.
- The use of RHIBs for military tasks is a military necessity. High speeds and maneuverability of the boats are required in specific situations, also to protect the crew.
- Soldiers naturally have to accept the associated risks. Speedboating is dangerous!

Safety recommendations

Occupational health perspective - Data of HFM RTG-344 MASHIEN



Occupational health perspective

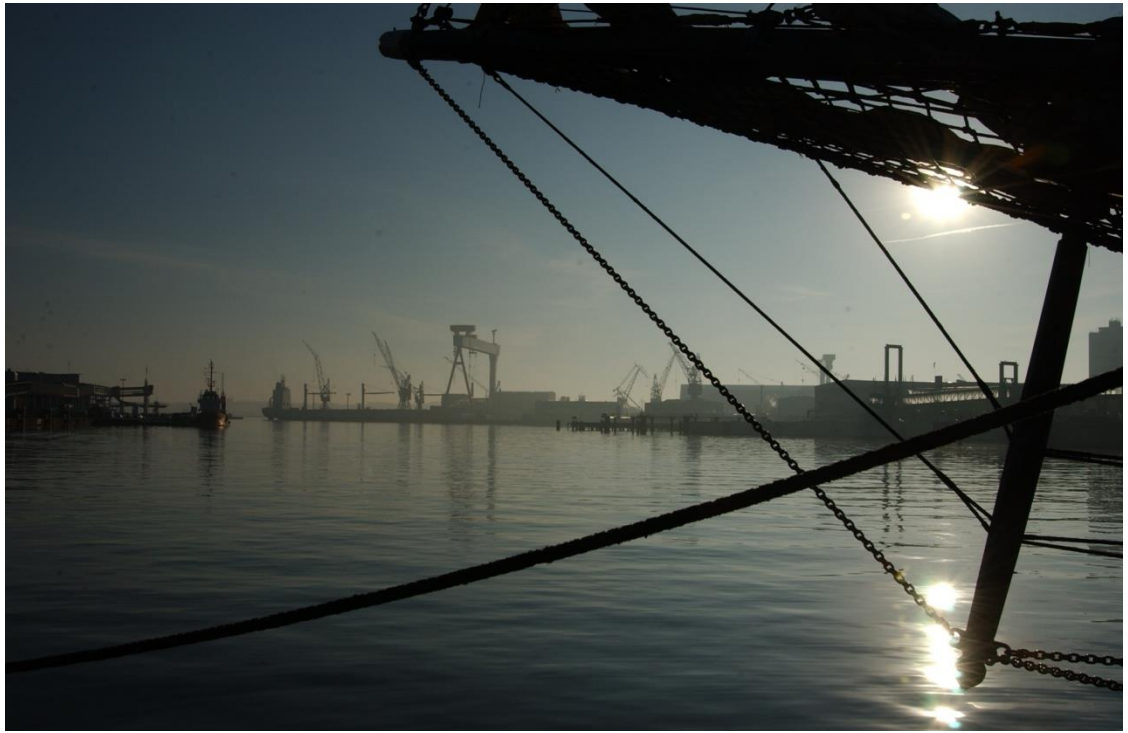
Recommendations for the improvement of Occupational Safety and Operational Fitness

- Understanding of the forces acting through shock impacts and their effects:
  - 10-15 kn → Compression fracture in the lumbar spine
  - 30 (+) kn → Musculoskeletal system, Central nervous system…**?!**
  - Need for follow-up studies after ending RTG-344

- Training of boat operators with user manuals based on the evaluation of load and stress data and the knowledge of accidents.

- No procurement and no use of (military) RHIBs without suspension seats or comparable safety devices for all crew members. (DEU Naval Institute of Maritime Medicine 03/2025)

Thank you very much for your attention.



Pictures DEU Navy, Pixabay, author