



Marine Accident Reconstruction Case Histories - Course 2

An Online Continuing Education Course for Engineers

Course Number: F-6002

Credit: 6 Hours / 6 PDH / 6 CPD

PROLOGUE:

Forensic engineering is the investigation of products, structures, components, or materials that fail or do not function as intended and the investigation of the activities of the people involved in the operation of said items or components.

Forensic science forms a vital part of the entire justice system. The forensic professional, as an expert witness, provides information and expert opinion to attorneys, judges, and juries to assist them in determining the degree of responsibility or innocence of the parties involved in an accident or incident.

Accidents are not expected to happen. Nevertheless, they occur.

An accident is an undesired event that results in personal injury, damage, or loss.

The majority of accidents involve personal injuries and/or fatalities, although continuous improvement in the field of accident prevention is reducing the number of marine- and offshore-related fatalities.

After investigating several hundred marine and offshore accidents, we conclude that marine accidents involving equipment failure have relatively little influence on the rate of personal injury accidents.

Accidents resulting in personal injury are often caused by a condition that is not apparent to the casual observer. Hence, designers and supervisors should be alert instead of assuming that a casual observer would recognize a dangerous situation.

This course describes some of the accidents resulting in injury, death, and/or major financial exposure, as investigated by the author of this course.

When an accident or incident occurs involving two or more parties, there are almost always disagreements that require a resolution through the justice system, often requiring the expertise of a forensic professional who, among other tasks, must determine if there was any violation of applicable regulations.

The purpose of forensic engineering is to determine what happened and why it happened, which party is responsible, and if human actions were a primary or a contributory cause of the accident or incident.

Although civil cases are common, criminal activity is sometimes possible, even in maritime cases. Insurance companies use forensic engineers to determine liability, and alternatively, non-liability. Commonly, initial accident reconstruction is conducted by representatives of the U. S.

Coast Guard, the police, the insurance agency, and/or institutions such as the Occupational Safety and Health Administration (OSHA) – namely, by personnel who may have received supplemental training for this purpose but who may not have the engineering background required to analyze more complex accidents or incidents.

The forensic professional must review all documentation that may be available, such as accident reports, statements, interviews, depositions, drawings, maintenance records, and photographs, and perform (whenever possible) a detailed field inspection, while considering all possible explanations based on facts and also applying multidisciplinary approaches to arrive at independent, unbiased opinions.

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CASE STUDY #1:

RECREATIONAL BOAT ACCIDENTS

The following is a typical type of accident due to manufacturing defects.

Manufacturing Design Defect and U.S.C.G. Recall Campaigns:

A boat or item of associated equipment is subject to a safety recall if it fails to comply with U.S. Coast Guard safety standards or if it contains a defect that creates a substantial risk of personal injury.

The Federal Boat Safety Act of 1971 relates to the manufacture and importation of recreational boats in the United States.

The Act covers any vessel that is manufactured or leased for a non-commercial purpose, as well as any components or associated equipment. Associated equipment includes anything that is an accessory, component, system, or appurtenance of a recreational vessel.

The Act focuses primarily on the obligation of boat builders to correct safety-related defects and imposes the cost of a recall or retrofit campaign on the manufacturer.

There are two types of defects subject to recall or retrofit campaigns:

- When the defect results from the manufacturer's failure to meet any of the minimum safety standards for boats and equipment established by the U.S. Coast Guard.
- When the manufacturer decides that a risk of personal injury exists.

The Coast Guard has no guidelines to identify this second type of defect and determines whether or not a defect exists on a case-by-case basis.

Sample of an accident due to manufacturing defects:

An accident resulting in serious injuries to a boat occupant occurred because the boat was missing handgrips (grab handles) at a very important location.

A 1996 SEA-DOO jet boat (Sportster) had the following warning printed on the maximum capacity label:

