National Transportation Safety Board's Safety Studies Program

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The National Transportation Safety Board (NTSB) is an independent agency charged with determining the facts, circumstances, and probable causes of transportation accidents and with promoting transportation safety. The board investigates accidents, conducts safety studies, evaluates the effectiveness of other government agencies' programs for preventing transportation accidents, and reviews appeals of adverse actions by the administrators of agencies of the U.S. Department of Transportation involving certification of airmen and seamen.

Most important, the board makes safety recommendations on the basis of investigations and studies to federal, state, and local government agencies and to the transportation industry on actions to be taken to prevent accidents or reduce their severity.

The U.S. Department of Transportation Act of 1966 created the Safety Board "in the image of a respected civil aviation investigative agency" (NTSB 1989 Report to Congress). The Independent Safety Board Act of 1974 formally established NTSB as an independent agency, separate from DOT. Funding for the program is included in DOT appropriations, but as a separate line item. The authorizations for fiscal years 1991–1993 are $32 million, $38.6 million, and $38.8 million, respectively.

NTSB is best known for its investigation of catastrophic accidents, such as the grounding of the *Exxon Valdez* in Alaska and the crash of United Airlines Flight 252 in Sioux City, Iowa. However, an important part of the board's activities is its safety studies program.

Safety Studies Program

A safety study is a research project on a topic of national significance. In selecting subjects for safety studies, NTSB considers the potential for reducing accident losses and for improving the safety effectiveness of other government agencies. Examples of recently completed safety studies include crashworthiness of large post-standard school buses; performance of lap and shoulder belts in motor vehicle crashes; oversight of rail rapid transit safety; transport of hazardous materials by rail; cruise ship safety; and commercial emergency medical service helicopter operations.

The data gathered to support a safety study can come from a review of existing NTSB accident reports, a set of new accident investigations conducted specifically to support the study topic, or a review of existing literature on a particular safety issue. Safety studies can take from a few months to a few years to complete. Once a study is completed, the findings and recommendations are discussed by the board at a public meeting.

POLLOCK/NTSB

Delta Air Lines accident at Dallas-Fort Worth Airport resulted from pilot error.

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Safety Studies in Progress

The following are brief descriptions of five of the safety studies in progress:

Alcohol and Other Drugs in Aviation Accidents

NTSB is conducting a review of all aviation accidents investigated since 1982. The review involves examination of the use of alcohol and other drugs, applicable operating rules, type of accident, phase of operation, and environmental factors. An accident cause and factor analysis will be used to compare accident and pilot characteristics for cases in which alcohol involvement was cited with those cases in which no alcohol involvement was cited.

Flight Crew Involvement in Part 121 Air Carrier Accidents

NTSB is conducting a detailed assessment of 38 air carrier accidents involving large transport airplanes in which the board cited deficiencies in flight crew performance in a major accident investigation report. Flight crew errors will be classified according to the type of error, using a model of pilot decision making, action, and feedback. Each error will be evaluated according to crew-related factors. These factors will include measures of work load, fatigue, stress, experience, training, communications, crew member at the controls (captain or first officer), and other factors related to human performance.

Fatigue in Commercial Transportation Accidents

In a recent study, Fatigue, Alcohol, Other Drugs, and Medical Factors in Fatal-to-the-Driver Heavy Truck Crashes, NTSB found fatigue to be the most frequently cited probable cause of these accidents (31 percent), followed by alcohol and other drug impairment (29 percent). Under the current study, the factors that are believed to increase the likelihood of driver fatigue will be examined. Information on work and rest cycles, sleep patterns and environment, and requirements to load and unload cargo will be collected in about 90 accident investigations in which single-vehicle heavy trucks run off the road or overturn, and in which the truck driver is seriously injured (transported to the hospital by ambulance). A four-month pilot test of the study methodology began in February 1992 along with reliability and validity testing of a data-collection instrument designed to measure a driver's level of fatigue.

POLLOCK/NTSB

Crew fatigue led to Conrail accident at Thompsontown, Pennsylvania.

Recreational Boating Safety

Recreational boating continues to result in a high level of fatalities (approximately 900 per year), second only to highway fatalities. Intoxicated boat operators and operators unfamiliar with the boating rules are major contributors to accidents. States are concerned that no effective mechanism exists to determine that vessel operators have an adequate minimum level of knowledge before they can operate a vessel. Similarly, citation and conviction for hazardous vessel operation carries no effective sanction because recreational boat operators are not required to be licensed, and no system exists to identify and deal with operators who are repeatedly convicted of hazardous vessel operation. Boating accident investigations reported by 18 states will be reviewed for information such as operator training, accident causal factors, and operator violations. Issues related to boating education and training, licensing of operators, use of safety equipment, and boating while intoxicated will be discussed in this study.

Locomotive Fuel Tank Integrity

During railroad accident investigations, NTSB investigators have observed instances of locomotive fuel tanks that ruptured during collisions; however, little significance was attributed to these occurrences because diesel fuel spills rarely resulted in serious injury. In two accidents in 1990, one at Sugar Valley, Georgia, and another at Corona, California, crew fatalities were at least partly the result of fires that occurred following the rupture of fuel tanks. This study will document the events that led to loss of fuel tank integrity in accidents. Causes of fuel tank rupture and disengagement and ignition sources will be examined in approximately 30 derailments that the board investigated during 1991 and several accidents that are being investigated in 1992.

Safety Study Availability

Safety study reports are adopted by the board at public meetings. These meetings are held at the NTSB office in Washington,

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