

The Investigative Process

The National Transportation Safety Board was established in 1967 to conduct independent investigations of all civil aviation accidents in the United States and major accidents in the other modes of transportation. It is not part of the Department of Transportation, nor organizationally affiliated with any of DOT's modal agencies, including the Federal Aviation Administration. The Safety Board has no regulatory or enforcement powers.

To ensure that Safety Board investigations focus only on improving transportation safety, the Board's analysis of factual information and its determination of probable cause cannot be entered as evidence in a court of law.

The NTSB "Go Team"

At the core of NTSB investigations is the "Go Team." The purpose of the Safety Board Go Team is simple and effective: Begin the investigation of a major accident at the accident scene, as quickly as possible, assembling the broad spectrum of technical expertise that is needed to solve complex transportation safety problems.

The team can number from three or four to more than a dozen specialists from the Board's headquarters staff in Washington, D.C., who are assigned on a rotational basis to respond as quickly as possible to the scene of the accident. Go Teams travel by commercial airliner or government aircraft depending on circumstances and availability. Such teams have been winging to catastrophic airline crash sites for more than 35 years. They also routinely handle investigations of certain rail, highway, marine and pipeline accidents.

During their time on the "duty" rotation, members must be reachable 24 hours a day by telephone at the office or at home, or by pager. Most Go Team members do not have a suitcase pre-packed because there's no way of knowing whether the accident scene will be in Florida or Alaska, but they do have tools of their trade handy -- carefully selected wrenches, screwdrivers and devices peculiar to their specialty. All carry flashlights, tape recorders, cameras, and lots of extra tape and film.

The Go Team's immediate boss is the Investigator-in-Charge (IIC), a senior investigator with years of NTSB and industry experience. Each investigator is a specialist responsible for a clearly defined portion of the accident investigation. In aviation, these specialties and their responsibilities are:

OPERATIONS: The history of the accident flight and crewmembers' duties for as many days prior to the crash as appears relevant.

STRUCTURES: Documentation of the airframe wreckage and the accident scene, including calculation of impact angles to help determine the plane's pre-impact course and attitude.

POWERPLANTS: Examination of engines (and propellers) and engine accessories.

SYSTEMS: Study of components of the plane's hydraulic, electrical, pneumatic and associated systems, together with instruments and elements of the flight control system.

AIR TRAFFIC CONTROL: Reconstruction of the air traffic services given the plane, including acquisition of ATC radar data and transcripts of controller-pilot radio transmissions.

WEATHER: Gathering of all pertinent weather data from the National Weather Service, and sometimes from local TV stations, for a broad area around the accident scene.

HUMAN PERFORMANCE: Study of crew performance and all before-the-accident factors that might be involved in human error, including fatigue, medication, alcohol. Drugs, medical histories, training, workload, equipment design and work environment.

SURVIVAL FACTORS: Documentation of impact forces and injuries, evacuation, community emergency planning and all crash-fire-rescue efforts.

Under direction of the IIC, each of these NTSB investigators heads what is called a "working group" in one area of expertise. Each is, in effect, a subcommittee of the overall investigating team. The groups are staffed by representatives of the "parties" to the investigation (see the next section - The Party System) - the Federal Aviation Administration, the airline, the pilots' and flight attendants' unions, airframe and engine manufacturers, and the like. Pilots would assist the operations group; manufacturers' experts, the structures, systems and power plants groups; etc. Often, added groups are formed at the accident scene - aircraft performance, maintenance records, and eyewitnesses, for example. Flight data recorder and cockpit voice recorder teams assemble at NTSB headquarters.

In surface accident investigations, teams are smaller and working groups fewer, but the team technique is the same. Locomotive engineers, signal system specialists and track engineers head working groups at railroad accidents. The specialists at a highway crash include a truck or bus mechanical expert and a highway engineer. The Board's weather, human performance and survival factors specialists respond to accidents of all kinds.

At least once daily during the on-scene phase of an investigation, one of the five Members of the Safety Board itself, who accompanies the team, briefs the media on the latest factual information developed by the team. While a career investigator runs the inquiry as Investigator-in-Charge, the Board Member is the primary spokesperson for the investigation. A public affairs officer also maintains contact with the media. Confirmed, factual information is released. There is no speculation over cause.

At major accidents, transportation disaster assistance specialists also accompany

the team to fulfill the Board's responsibilities under the Aviation Disaster Family Assistance Act of 1996 and the Rail Passenger Disaster Family Assistance Act of 2008. See the Disaster Assistance section of the NTSB's web site for details on this activity.

The individual working groups remain as long as necessary at the accident scene. This varies from a few days to several weeks. Some then move on - power plants to an engine teardown at a manufacturer or overhaul facility; systems to an instrument manufacturer's plant; operations to the airline's training base, for example. Their work continues at Washington headquarters, forming the basis for later analysis and drafting of a proposed report that goes to the Safety Board itself perhaps 12 to 18 months from the date of the accident. Safety recommendations may be issued at any time during the course of an investigation.

Aviation Go Teams respond only to accidents that occur on U.S. territory or in international waters. Elsewhere, the investigator is the government in whose territory the accident occurs, usually assisted by a U.S. "accredited representative" from the NTSB's staff of IICs if a U.S. carrier or U.S. manufactured plane is involved.

More information about Aviation investigations is available:

The Party System

The Board investigates about 2,000 aviation accidents and incidents a year, and about 500 accidents in the other modes of transportation - rail, highway, marine and pipeline. With about 400 employees, the Board accomplishes this task by leveraging its resources. One way the Board does this is by designating other organizations or companies as parties to its investigations.

The NTSB designates other organizations or corporations as parties to the investigation. Other than the FAA, which by law is automatically designated a party, the NTSB has complete discretion over which organizations it designates as parties to the investigation. Only those organizations or corporations that can provide expertise to the investigation are granted party status and only those persons who can provide the Board with needed technical or specialized expertise are permitted to serve on the investigation; persons in legal or litigation positions are not allowed to be assigned to the investigation. All party members report to the NTSB.

Eventually, each investigative group chairman prepares a factual report and each of the parties in the group is asked to verify the accuracy of the report. The factual reports are placed in the public docket.

[NTSB Investigation Party Form](#)

Investigations Involving Criminal Activity

In cases of suspected criminal activity, other agencies may participate in the investigation. The Safety Board does not investigate criminal activity; in the past,

once it has been established that a transportation tragedy is, in fact, a criminal act, the FBI becomes the lead federal investigative body, with the NTSB providing any requested support.

One example would be the crash of a Pacific Southwest Airlines flight in San Luis Obispo, California on December 7, 1987. All 43 persons aboard died in the crash of the Bae-146. Because of information conveyed over the radio by the flight crew shortly before the crash, the FBI instituted its own investigation, parallel to the Safety Board's investigation, to determine if a crime had been committed. Within days, it was learned that a former employee of the airline had boarded the plane with a gun and, while the plane was in cruise flight, had shot the flight crew, causing the aircraft to crash. When that was made evident, the FBI assumed control of the investigation.

More recently, on September 11, 2001, the crashes of all four airliners were obviously the result of criminal actions and the Justice Department assumed control of the investigations. The NTSB provided requested technical support.

As the result of recent legislation, the NTSB will surrender lead status on a transportation accident only if the Attorney General, in consultation with the Chairman of the Safety Board, notifies the Board that circumstances reasonably indicate that the accident may have been caused by an intentional criminal act.

Safety Recommendations

Safety recommendations are the most important part of the Safety Board's mandate. The Board must address safety deficiencies immediately, and therefore often issues recommendations before the completion of investigations.

Recommendations are based on findings of the investigation, and may address deficiencies that do not pertain directly to what is ultimately determined to be the cause of the accident.

For example, in the course of its investigation of the crash of TWA flight 800, once it was determined that an explosion in the center fuel tank caused the breakup of the aircraft, the Board issued an urgent safety recommendation and three other recommendations in 1996, four years before completion of its investigation, that were aimed at eliminating explosive fuel/air vapors in airliner fuel tanks. The Board issued an additional recommendation in 1997 regarding the detection of explosives and six recommendations in 1998 to improve fuel quantity indication systems. When the Board issued its final report on the TWA 800 accident in 2000, four additional safety recommendations were issued that focused on the aircraft wiring systems.

Public Hearing

The Board may hold a public hearing as part of a major transportation accident investigation. The purpose of the hearing is two-fold; first, to gather sworn testimony from subpoenaed witnesses on issues identified by the Board during the course of the investigation, and, second, to allow the public to observe the

progress of the investigation. Hearings are usually held within six months of an accident, but may be delayed for complex investigations.

The Remainder of the Investigation and Final Report

More months of tests and analysis eventually lead to the preparation of a draft final report by Safety Board staff. Parties do not participate in the analysis and report writing phase of NTSB investigations; however, they are invited to submit their proposed findings of cause and proposed safety recommendations, which are made part of the public docket. The Board then deliberates over the final report in a public Board meeting in Washington, D.C. Non-Safety Board personnel, including parties and family members, cannot interact with the Board during that meeting.

Once a major report is adopted at a Board Meeting, an abstract of that report - containing the Board's conclusions, probable cause and safety recommendations - is placed on the Board's web site under "Publications". The full report typically appears on the web site several weeks later.