

The NTSB's Role in Aviation Safety

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Whenever there is an aviation crash involving civil aircraft in the US, the National Transportation Safety Board (NTSB) is called upon to investigate. The NTSB is an independent federal agency, charged by Congress to investigate transportation accidents, determine probable cause, and issue safety recommendations to prevent similar accidents. The agency's scope extends beyond aviation crashes, as it also investigates selected rail, marine, highway, and pipeline accidents, as well as those involving transportation of hazardous materials.

NTSB was founded in 1967 and originally had ties to the US Department of Transportation (DOT). Because accident causation may sometimes involve issues of inadequate oversight by DOT modal agencies, however, such as the Federal Aviation Administration (FAA), questions arose regarding NTSB's ability to investigate and remain entirely impartial. In response to those concerns, Congress passed the Independent Transportation Safety Board Act of 1974; as the name implies, that Act severed NTSB's ties to DOT and made it a completely independent agency. Independence is one of the Safety Board's greatest virtues – it allows the agency to conduct investigations and explore safety issues without being encumbered by actual or perceived political pressures.

The primary role of NTSB is improving safety of our nation's transportation system. The agency determines the probable cause of accidents and issues safety recommendations to prevent similar occurrences. It does not determine fault or liability. In fact, according to 49 U.S.C. § 1154(b), "No part of a report of the Board, related to an accident or an investigation of an accident, may be admitted into evidence or used in a civil action for damages resulting from a matter mentioned in the report."¹

With headquarters in Washington, DC, the agency employs approximately 400 workers. Around 250 of these employees are assigned to headquarters, while the remainder are stationed throughout the country in one of four regional offices. Of the 400 employees, about 125 work in NTSB's office of aviation safety; the remaining employees are devoted to investigating accidents in other transportation modes, along with a host of employees who provide administrative support functions.

The actual Board consists of five board members who are appointed by the President and confirmed by the US Senate. The Board provides oversight of the investigative staff's products. At the completion of an investigation, the investigative staff presents their report, findings, and proposed recommendations to the Board for its approval. This approval may come in the form of the board members holding a publicly-noticed board meeting, or they may read the report and vote individually via an electronic ballot.

Since its inception in 1967, NTSB has investigated nearly 140,000 aviation accidents, and issued over 5000 aviation-related safety recommendations. The agency has no regulatory authority; when a deficiency is noted, NTSB cannot enact a law or regulation to "fix" the problem. What it can do, however, is issue safety recommendations to the appropriate organization(s). The agency tracks the status of each recommendation and follows up periodically on those that have not been implemented. Over the history of the agency, approximately 82 percent of its safety recommendations have been successfully implemented.

Responding to an Accident

The NTSB's 24/7 Response Operations Center holds vigil over a score of television monitors and computer screens. Often, the news media provides NTSB with the first notification of a major transportation crash. At other times, notification comes through FAA or from state or local officials.² NTSB defines an aircraft accident as "an

occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.”³ There are approximately 1500 aviation accidents in the US each year.

Once notified, the Response Operations Center notifies the duty officer for that particular transportation mode (*e.g.*, aviation, highway, marine, rail). To determine the appropriate level of response, NTSB management makes a rapid assessment of the number of casualties and the anticipated complexity of the investigation. For aviation accidents, NTSB will respond in one of four ways.

C Form Investigation: This type of investigation, also known as a data collection accident, is one in which the operator self-reports the circumstances through submission of a statement and a 6120 Accident Reporting Form.⁴ It is used for a non-injury general aviation accident in which no airworthiness issues are apparent. Examples of such accidents would be a ground loop in a Cessna 150 in which substantial damage is done but there are no injuries, or a bounced landing in a Cessna 172 by a student pilot that does substantial wing damage but results in no injuries.

Limited Investigation: A limited investigation may occur if the accident does not involve fatalities. For limited investigations, NTSB investigators do not travel to the scene; instead, the on-scene phase of the investigation is delegated to FAA. Personnel from local FAA offices respond to the accident and take photographs, document the wreckage, conduct interviews, and collect other pertinent information. Once they have completed these activities, FAA forwards the information to the NTSB’s Investigator-In-Charge (IIC) for that accident. Although the FAA documents and collects on-scene information related to the accident, NTSB still retains the authority to conduct analysis and determine probable cause of the accident.

Regional Investigation: For accidents that involve a small number of fatalities, NTSB will respond by sending an investigator – as IIC – from one of its four regional offices. The NTSB’s IIC will be joined by parties to the investigation, as discussed below. The small investigation team will generally stay on scene two or more days while documenting wreckage, conducting interviews and collecting other pertinent information. Of the 1500 or so aviation accidents investigated each year, roughly 225 to 250 are handled as field investigations.

Major Investigation: For larger-scale accidents – those with multiple fatalities or national public interest – NTSB will launch a “Go Team” from Washington, DC. This team is headed by an IIC, and will be supplemented by NTSB experts in a variety of disciplines such as powerplants, structures, operations, human performance, survival factors, and airworthiness. Remaining behind at headquarters are data specialists who read-out flight data recorders and cockpit voice recorders (CVRs); meteorological specialists; and, experts in material science who can examine aircraft components to determine possible failure modes. Major investigation Go Teams are usually accompanied by an NTSB board member who will serve as the spokesperson for the on-scene phase of the investigation. Additionally, joining the Go Team will be a representative(s) from NTSB’s office of transportation disaster assistance, who will interface with victims and their families.

Parties to the Investigation

NTSB rules allow organizations that can provide technical expertise to the investigation to obtain party status. Party status allows organizations to actively participate in the NTSB’s investigation, working alongside NTSB investigators to gather factual information pertinent to the investigation. By statute, FAA is always afforded party status. Other party members typically include the aircraft operator, aircraft and engine manufacturers, and labor organizations such as pilot, air traffic controller, and mechanic unions.

To become a party to an NTSB investigation, a representative of the organization seeking party status should request it from the IIC. Party status is a privilege – not a right – and as such, it can be revoked. This can occur when a party does not adhere to NTSB rules, the directions of the IIC, or otherwise takes actions that are prejudicial to the investigation. NTSB rules are clearly delineated in writing and are required to be acknowledged by all party participants.⁵

NTSB rules preclude extending party status to persons occupying a legal position or representing claimants or insurers. A party representative must also certify that his or her participation is to assist the NTSB safety

investigation and is not for the purposes of preparing for litigation. This is because NTSB investigations are focused on finding and correcting the cause of the accident, not on determining liability or fault.⁶ Each party participant must sign a form stating: “I certify that my participation is not on behalf of either claimants or insurers, and that, although factual information obtained as a result of participating in the NTSB investigation may ultimately be used in litigation ... my participation is to assist the NTSB safety investigation and not for the purposes of preparing for litigation.”⁷

The advantages of the party system are numerous. It ensures the board has access to technical expertise in the fact-finding phase of the investigation, that all viewpoints are heard, and that the investigation itself is transparent. When you have FAA, airframe manufacturer, engine manufacturer, operator, and unions all participating, the fact that everyone is looking over each other’s shoulder has an amazing effect: in addition to tremendous synergies created by the process, it ensures that all perspectives are considered, and no stone is left unturned.

After the factual portion of the investigation is completed, each party is invited to make a party submission regarding facts, analysis, findings, probable cause, and proposed recommendations. Although parties do assist NTSB in the fact-finding phase of the investigation, the analysis is the sole work product of NTSB.

There are other, ancillary advantages to NTSB’s party system. In addition to the synergistic and transparent effects of the party system, it also ensures safety deficiencies that need immediate corrective action are expeditiously known by those who can effect that change. As an example, in 2011, a 5 foot by 8 inch section of a B737-300’s fuselage opened up inflight at Flight Level 340. Following a rapid decompression and emergency descent, the crew made a safe landing in Yuma, Arizona.⁸ On the first day of the investigation (a Saturday), Boeing representatives on site assisted NTSB in quickly identifying substandard manufacturing with that fuselage section. FAA, Boeing, and the airline – as well as the other parties – were all present in the room when that discussion occurred. That set wheels in motion: Boeing immediately began work on a service bulletin to increase inspections in the subject area of the fuselage, and this bulletin was released on Monday. Meanwhile, the airline voluntarily grounded their B737-300s to ensure none had the same problem. On Tuesday, FAA issued an Airworthiness Directive to mandate the inspection. These actions would not have been taken as quickly or as effectively without a well-functioning party system.

Conduct of an NTSB Investigation

When investigators arrive on scene, one of the first things they do is conduct a “walk-through” of the scene to get a general idea of what they are facing. The first day they arrive, often the first evening, the IIC will hold an organizational meeting to designate parties and form investigative groups.

For regional investigations, the investigative group will likely be one single group; for major investigations, various investigative groups will be formed. These groups are headed by NTSB specialists known as group chairmen and are populated with representatives from the respective parties. For example, the operations group would be chaired by an NTSB investigator with a strong background in aircraft operations. Party members on the operations group might typically consist of representatives from FAA, the company that operated the aircraft, the aircraft manufacturer, as well as other parties that can provide technical expertise to further the group’s work.

The on-scene portion of the investigation may last anywhere from two days to a week, and in some cases, longer. During the on-scene investigation, the investigative groups fan out in different directions to collect information in their respective disciplines. Each evening, the groups gather – usually in a hotel meeting room – for a progress meeting to share what they have found during the day and organize plans for the following day. This process is extremely transparent, with each party knowing what has been found and where the investigation is headed.

The on-scene portion of the investigation is strictly a fact-gathering process: no analysis is performed during this portion of the investigation. As each investigative group completes their on-scene activities, each party member signs “field notes” to indicate they agree (or don’t agree) with the activities that were conducted.

After leaving the scene, there may be follow-on group activities. A group may reconvene at the engine manufacturer's facilities, for example, to perform a teardown of the engine. Another group may meet at NTSB headquarters in Washington to audition the CVR, while another is traveling to conduct interviews with surviving crew members, family members, and company personnel.

As the fact-finding phase of the investigation concludes, the IIC will request that parties provide a party submission. Party submissions are not mandatory, but their importance should not be discounted. They are the parties' opportunity to formally tell NTSB what they believe are the facts, analysis, and findings, and to offer any suggested recommendations. They are carefully reviewed by NTSB investigators and board members to ensure the investigation has considered all differing viewpoints.

The investigative process often takes at least a year – sometimes longer. There are numerous management reviews and checks and balances along the way, which prolong the process. However, these reviews ensure the report is accurate and logical.

The majority of aviation reports are signed off by NTSB's director of the office of aviation safety. For accidents that have widespread safety implications or received high public interest, however, NTSB staff will forward the report for Board deliberation in a formal board meeting. Board meetings are publicly announced in the *Federal Register*, through NTSB press releases, and on the NTSB webpage (www.nts.gov). Board meetings are open to the public and are webcast.⁹

Several weeks prior to the public board meeting, board members receive a draft copy of the accident report. They meet individually with staff to discuss concerns and ask clarifying questions. During the board meeting, the investigative staff presents details of the accident and is then questioned by board members. The Board then deliberates – potentially offering and voting upon amendments to the report – and then votes to accept the findings, probable cause, recommendations, and the overall report. Due to the Government in the Sunshine Act,¹⁰ board members are not permitted to meet in a quorum (three or more board members) to discuss agency business except in publicly-noticed meetings. Because of this, the board meeting is the first time the full Board will have the opportunity to discuss the accident; thus, the audience is afforded a window to see inside the actual deliberations of the Board.

Petition for Reconsideration

NTSB rules provide for a petition for reconsideration if the petitioner can show that the investigative report contained erroneous information, or can provide new information that was unavailable at the time the Board adopted its findings.¹¹

Safety Studies, Hearings, and Testimony

Congress has also vested NTSB with authority to conduct safety studies and investigative hearings. Hearings are distinct from board meetings, as discussed above, although board meetings often are mistakenly referred to as hearings.

For safety issues on which the Board desires to gather information using sworn testimony, the Board will convene an investigative hearing. As with the fact-finding portion of accident investigations, Federal regulations provide for the designation of parties to NTSB investigative hearings; parties are chosen for their ability to provide technical expertise in their respective disciplines.¹²

Hearings can be accident-specific or may focus on more general transportation-related issue areas. For example, in 2009, the Board held a four-day public hearing on the safety of helicopter emergency medical services (HEMS).¹³ In this issue area hearing, the Board explored nearly every facet of the HEMS industry, including large and small companies, hospital programs, and those who oversee them. The hearing featured 41 expert witnesses, representing eight HEMS operators, 12 associations, six manufacturers, and four hospitals. It examined flight operations procedures including flight planning, weather minimums, and preflight risk assessment, as well as safety enhancing technology such as terrain awareness and warning systems (TAWS) and night vision imaging systems

(NVIS). Flight recorders and associated flight operations quality assurance programs were discussed, as was training, including the use of flight simulators.

After completion of the hearing, staff pored over transcripts of the hearing and brainstormed ways to improve HEMS safety. Seven months after the gavel fell on the hearing, staff presented 21 safety recommendations to the Board for approval; in a public board meeting, the Board unanimously adopted those recommendations. Ten were issued to FAA;¹⁴ five to public operators, such as local law enforcement agencies that perform HEMS missions but are not obligated to comply with FAA regulations;¹⁵ four to the US Department of Health and Human Services;¹⁶ and, two to the Federal Interagency Committee on EMS (FICEMS).¹⁷

The NTSB also conducts safety studies using transportation and accident-related data. In 1988, NTSB conducted a safety study of commercial EMS helicopter operations.¹⁸ That study evaluated 59 EMS helicopter accidents and resulted in NTSB issuing 19 safety recommendations. Following implementation of these recommendations, the number of HEMS accidents decreased. As time progressed and the number of HEMS aircraft increased, however, so did the number of accidents.

Prompted by this rise in EMS accidents, in January 2006, NTSB adopted a special investigation report analyzing 41 helicopter EMS and 14 fixed-wing EMS accidents that had occurred in the previous three years, claiming 39 and 15 lives, respectively.¹⁹ In that report, the Safety Board identified the following recurring safety issues:

- less stringent requirements for EMS operations conducted without patients on board;
- a lack of aviation flight risk evaluation programs for helicopter EMS operations;
- a lack of consistent, comprehensive flight dispatch procedures for EMS operations; and
- no requirements to use technologies such as TAWS and NVIS to enhance EMS flight safety.

NTSB determined that 29 of the 55 accidents may not have occurred had any of these safety measures been in place.

At times, the agency is also asked to testify before Congress on areas of interest. On the heels of NTSB's HEMS hearing, Congress held its own hearing on HEMS and asked NTSB to testify. In his testimony, the NTSB representative acknowledged the important role played by HEMS in our nation's healthcare system, but also expressed NTSB's longstanding interest and concern with such operations.²⁰

Serving as Court of Appeals for Certificate Enforcement Actions

For those certificate holders against whom FAA brings an enforcement action, a right of appeal lies with NTSB. It is important to note, however, there are actually two levels of appeal within NTSB. The first level involves one of the four NTSB administrative law judges (ALJs) empowered to hear cases. Each case is adjudicated in a fair, impartial manner, applying formalized rules of practice.²¹ The second level of appeal, distinct from ALJ decisions, involves NTSB board members themselves.

In emergency cases – those in which FAA believes an imminent threat to the safety of air commerce and the public exists – the certificate holder must immediately surrender his or her certificate to FAA, and any appeal hearing must be held before an ALJ within 30 days.²² Of the 311 incoming enforcement cases in 2013, 124 were designated as emergency cases. In such cases, if the certificate holder challenges FAA's underlying determination of an emergency, there will be a preliminary inquiry by an ALJ. This is the only instance in which NTSB relies on information from FAA and assumes it to be true – for the sole purpose of ruling whether or not the case should be classified as an emergency, and thus subject to expedited timelines. In 2013, such cases represented 10 percent of all enforcement appeals before NTSB.

Once a case proceeds to a hearing before an NTSB ALJ, FAA has the burden of proof to establish the violations charged by a preponderance of the evidence.²³ The certificate holder has the right to cross-examine FAA witnesses, provide the testimony of his or her own witnesses, and furnish documentary evidence to disprove FAA's charges or assert affirmative defenses. Thus, in all cases – emergency and non-emergency alike – the certificate

holder has full adjudicative rights and FAA must prove its case by a preponderance of the evidence before any charges may be sustained.

Following an ALJ hearing, the second level of NTSB appeal is directly to the full Board. To ensure impartiality, board members maintain a firewall between their offices, NTSB ALJs, FAA, and the involved certificate holder.²⁴ Board members undertake a fresh examination of the factual evidence and arguments made on appeal, and – in cooperation with NTSB’s Office of General Counsel – issue their decision. They may uphold the ALJ’s order, reverse it, or remand the case back to the ALJ for further proceedings.

As provided by the recently-enacted *Pilots Bill of Rights*,²⁵ judicial review of any final Board action may be sought in any federal district court or court of appeals, within 60 days of the Board’s order.²⁶

Summary

As an independent federal agency, NTSB is free to conduct accident investigations and “call it the way they see it.” The agency’s primary mission is improving safety, and its investigations are neither motivated nor influenced by political pressures or litigational interests. By carefully investigating accidents, NTSB seeks to determine what happened so that lessons can be learned and applied to prevent future accidents. NTSB investigations utilize a party system, whereby organizations that can provide technical assistance to NTSB are able to participate in the fact-finding phase of the investigation. The party process ensures that the investigation remains transparent, and ensures that all viewpoints are expressed and heard.

Suggested Reading

History of the National Transportation Safety Board. <http://www.nts.gov/about/history.html>. Accessed May 8, 2014.

NTSB Annual Reports to Congress, 1996 – 2012. <http://www.nts.gov/about/reports.html>. Accessed May 8, 2014.

About the Authors

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References

¹ 49 U.S.C. § 1154(b) (2006). See *Chiron Corp. & PerSeptive Biosystems, Inc. v. Nat'l Transp. Safety Bd.*, 198 F.3d 935, 940 (D.C. Cir. 1999) (“The simple truth here is that NTSB investigatory procedures are not designed to facilitate litigation, and Congress has made it clear that the Board and its reports should not be used to the advantage or disadvantage of any party in a civil lawsuit.”). See also *Knous v. United States*, 2:13-CV-00075-WCO, 2013 WL 5970333 (N.D. Ga. Nov. 7, 2013) (holding that plaintiffs’s pleadings in a civil suit against the FAA could not rely upon findings of probable cause in an NTSB accident report). See generally John D. Goetz and Dana Balocco, *Excluding NTSB Final Aircraft Accident Reports and FAA Airworthiness Directives at Trial*, Air and Space Lawyer, Volume 17, No.4, at 8 (Spring 2003).

² For a list of events that are required to be reported immediately to NTSB, see 49 C.F.R. § 830.5 (2013).

³ 49 C.F.R. § 830.2 (2013).

⁴ *NTSB Form 6120.1: Pilot/Operator Aircraft Accident/Incident Report*, at http://www.nts.gov/doclib/forms/6120_1web_nopwx.pdf. Accessed May 7, 2014.

⁵ *NTSB Certification of Party Representative*, at http://www.nts.gov/doclib/forms/NTSB_Investigation_Party_Form.pdf. Accessed May 7, 2014.

⁶ For more information regarding party status, see 49 C.F.R. § 831.11 (2013).

⁷ *Certification of Party Representative*, *supra* at 1.

⁸ For more information, see *Southwest Airlines, Flight 812*, Aircraft Accident Brief NTSB/ AAB-13-02 (Washington, DC: National Transportation Safety Board, 2013), available online at <http://www.nts.gov/doclib/reports/2013/AAB1302.pdf>. Accessed May 8, 2014.

⁹ Webcasts of public meetings, and archived webcasts of previous meetings, are viewable at the following website: <http://nts.capitolconnection.org/>.

¹⁰ 5 U.S.C. § 552b (2006).

¹¹ 49 C.F.R. § 845.41 (2013).

¹² For more information on the general conduct of NTSB hearings, see 49 C.F.R. § 845, Subpart B (2013).

¹³ *Public hearing: Safety of Helicopter Emergency Medical Services (HEMS) Operations*, February 3-6, 2009. http://www.nts.gov/news/events/2009/hems_public_hearing/index.html. Accessed May 8, 2014.

¹⁴ *Safety recommendation letter to Honorable Randolph Babbitt, Administrator, Federal Aviation Administration, from Deborah A.P. Hersman, Chairman, National Transportation Safety Board*, (NTSB Recommendations A-09-87 through -96), 2009. http://www.nts.gov/doclib/recletters/2009/A09_87_96.pdf. Accessed May 8, 2014.

¹⁵ *Safety recommendation letter to public helicopter emergency services operators, from Deborah A.P. Hersman, Chairman, National Transportation Safety Board*, (NTSB Recommendations A-09-97 through -101), 2009. http://www.nts.gov/doclib/recletters/2009/A09_97_101.pdf. Accessed May 8, 2014.

¹⁶ *Safety recommendation letter to Honorable Kathleen Sebelius, Secretary, Department of Health and Human Services, from Deborah A.P. Hersman, Chairman, National Transportation Safety Board*, (NTSB Recommendations A-09-104 through -107), 2009. http://www.nts.gov/doclib/recletters/2009/A09_104_107.pdf. Accessed May 8, 2014.

¹⁷ *Safety recommendation letter to Dr. Kevin Yeskey, MD, Chairman, Federal Interagency Committee on Emergency Medical Services, from Deborah A.P. Hersman, Chairman, National Transportation Safety Board, (NTSB Recommendations A-09-102 through -103), 2009.* http://www.nts.gov/doclib/reclatters/2009/A09_102_103.pdf. Accessed May 8, 2014.

¹⁸ *Safety study: Commercial emergency medical service helicopter operators, NTSB Report No. NTSB/SS/88-01, 1988.* <http://libraryonline.erau.edu/online-full-text/ntsb/safety-studies/SS88-01.pdf>. Accessed May 8, 2014.

¹⁹ *Special Investigation Report on Emergency Medical Services Operations, NTSB Report No. NTSB/SIR/06-01, 2006.* <http://www.nts.gov/doclib/safetystudies/SIRO601.pdf>. Accessed May 8, 2014.

²⁰ *Hearing on the Oversight of Helicopter Medical Services, House Transportation and Infrastructure Subcommittee on Aviation, Washington, DC, April 22, 2009 (testimony of Robert L. Sumwalt, III, Board Member of the NTSB).* <http://www.nts.gov/news/speeches/sumwalt/rls090422.html>. Accessed May 8, 2014.

²¹ See 49 C.F.R. Part 821, Subpart B (2013).

²² See 49 C.F.R. Part 821, Subpart I (2013).

²³ 49 C.F.R. § 821.32 (2013).

²⁴ See, e.g., 49 C.F.R. Part 821, Subpart J (2013) (regarding *ex parte* communication).

²⁵ Pub. L. 112–53, 126 Stat. 1159 (August 3, 2012).

²⁶ 49 C.F.R. § 821.64 (2013).