

**THE AFTERMATH OF DISASTER: A PRIMER ON GOVERNMENT  
AND LEGAL INVESTIGATIONS OF AVIATION CRASHES**

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INTRODUCTION

It is a long way from the smoking hole and salvage yard--where the story behind an aviation crash is written into the bent metal--to the jury deliberation room.

The proper development of an aviation crash case requires a thorough command both of the applicable legal issues and of the process of investigating a crash and interpreting the data. Not only must the plaintiff's attorney become an expert on key legal areas--such as product liability negligence law, conflicts of law, the Federal Tort Claims Act, and the Federal Air Regulations (specialized statutes with the effect of law)--he or she also must have an excellent understanding of how crashes are investigated, and how the resulting information can be used in litigation.

Virtually all air crashes are investigated by a government agency--generally well before litigation is pursued. Understanding the procedures and documents relevant to these government investigations is thus essential. To assist the attorney new to aviation crash cases, this paper provides a useful overview of each type of government investigation into accidents involving civilian, military, and commercial aircraft--both in the U.S. and abroad.

In addition, the plaintiff's attorney will need to supplement the government's findings with a professional investigation conducted specifically for litigation. Unlike a government investigation--whose primary purpose is to determine probable cause, contributing factors, and safety recommendations--a legal investigation is conducted to identify the legally responsible parties. It must result in an accurate reconstruction of the crash circumstances. It also must be more detailed and thorough than a government investigation, in order to satisfy the burdens imposed by the civil rules of evidence and procedure.

The topics covered in this paper include:

PART I National Transportation Safety Board (N.T.S.B.) investigations of U.S. civilian plane crashes (both airliners and small aircraft)

PART II U.S. military investigations

PART III Investigations of accidents in foreign countries, conducted to

International Civil Aviation Organization (I.C.A.O.) standards

PART IV Professional investigations for litigation purposes

Appendix: Checklist of documents and discoverable reports

## PART I - NATIONAL TRANSPORTATION SAFETY BOARD INVESTIGATIONS

The Department of Transportation Act of 1966 created the N.T.S.B. The N.T.S.B. has several regional offices throughout the U.S., corresponding to the Federal Aviation Agency (F.A.A.) regions. The Board itself is made up of five political appointees, who have varying and sometimes minimal expertise in aviation or transportation.

The N.T.S.B. is responsible for investigating all U.S. crashes involving civilian aircraft. (They also investigate interstate accidents in pipelines, railroads, trucking, and navigable waterways.) The N.T.S.B. also investigates (jointly with the military) midair collisions between civilian and military aircraft. In addition, it provides investigators to an I.C.A.O. investigation when a U.S. airliner or commercial transport is involved, and it may send an investigator to a foreign country's investigation at their request.

Commonly, the N.T.S.B. is assisted in its field investigations by the local F.A.A. This assistance is typically in the areas of weather briefing, flight plans, air traffic control, air traffic reconstruction, airmen records, and other specialty records. Rarely, F.A.A. staff may retrieve and provide air traffic data. Some relatively minor accident investigations are fully delegated to the F.A.A.; however, the N.T.S.B. still is responsible and all interim and final reports are forwarded to them.

Interestingly, a distinction is made between how F.A.A. staff may use the information gained in an investigation, depending on whether they are working on the crash for the N.T.S.B. or for the F.A.A. When working for the N.T.S.B., F.A.A. staff are subject to the N.T.S.B.'s rules, regulations, and procedures--and they may not turn information gained over to the F.A.A. for use in a certificate enforcement action against the pilot or others.

Functionally, the N.T.S.B. is set up to handle two varieties of investigations: (1) mass air disasters (involving commercial airlines and commuter planes), which are handled by the Washington D.C. office and; (2) general aviation crashes (involving private and small planes), which are handled by the regional offices.

The N.T.S.B. has five district categories of accident investigations, which correspond to the relative complexity of the crash. Accidents that involve significant

safety issues and fatalities receive the most in-depth investigations. The five categories are as follows:

*MAJOR INVESTIGATION/Washington D.C. Office*

Conducted by the national N.T.S.B. office after a major air disaster, usually involving an airliner and a large number of fatalities. The Washington D.C. office assigns a "go-team" of investigators, which conducts an in-depth field investigation. The team is headed by an Investigator In Charge (the I.I.C.).

*MAJOR INVESTIGATION/Regional Office*

Conducted by a regional N.T.S.B. office after a less serious air disaster, but one which still involves significant safety issues. Some airliner accidents and most involving commuter planes fall into this category.

*FIELD INVESTIGATION*

Conducted after an airliner accident involving no fatalities or a general aviation accident with a fatality. At least one investigator goes to the scene of the accident.

*LIMITED INVESTIGATION*

Conducted after some type of incident--most often not a crash--involving a general aviation aircraft, with no fatalities. Unlike the three categories of field investigations above, this one is done exclusively by correspondence.

*DELEGATED INVESTIGATION*

These are fully delegated to the F.A.A. The N.T.S.B. presently delegates less than 1% of its investigations; these are restricted to incidents involving experimental aircraft. Additionally, the N.T.S.B. recently has undertaken safety studies of specific subject areas, designed to discover hazards and prevent future accidents.

Participants in N.T.S.B. Field Investigations

"PARTIES to the field investigation shall be limited to those persons, government agencies, companies, and associations whose employees, functions, activities or products were involved in the accident or incident and who can provide suitable qualified technical personnel to actively assist in the field investigation." 49 U.S.C. ' 831.

Translated this means: investigation participants may include some owners,

operators, airframe manufacturers, engine manufacturers, propeller manufacturers, suspect component manufacturers, airline union representatives and some F.A.A. staff. Generally, it precludes others and almost always precludes attorneys and the representatives of possible litigants. (Of course, this is a Catch 22 because the very participants allowed by the N.T.S.B. often become litigants.) This rule is the genesis of the trial lawyer's complaint that the "N.T.S.B. sleeps with the manufacturer."

The I.I.C. has some latitude; he may choose to allow persons with technical and other specialized skills to participate, so long as that person is not a claimant's representative or an insurer. But this rarely happens.

### N.T.S.B. Investigation Reports and Their Admissibility

Attorneys have access to the "go-team's" factual findings in several ways. After the team's daily progress meetings, the I.I.C. or a designated information officer may release factual findings to the media. All such releases are approved by the I.I.C. At the discretion of the Director of the N.T.S.B.'s Aviation Division, a "Public Hearing" also may be held at which the factual findings are made public. Access to the hearing is limited, and controlled by the I.I.C. At the hearing, exhibits are presented and testimony is transcribed.

An attorney or private investigator may use the Freedom of Information Act (F.O.I.A.) or the discovery process to request several N.T.S.B. documents produced during an investigation. The available documents include:

- ! The preliminary report
- ! Transcripts and exhibits submitted at a public hearing (held only for major investigations)
- ! Individual investigation reports (also called Factual Aircraft Accident Reports)
- ! Open public docket materials

From the committee reports and public hearing records, the N.T.S.B. issues a final "Board's Report" which interprets the facts gathered and identifies a cause of the accident. Unfortunately, the Board's Report is excluded by federal statute from being introduced into evidence in any civil litigation. However, the individual Factual Aircraft Accident Reports that are submitted prior to the issuing of the final Board's Report are admissible, because they are regarded as trustworthy government records of a regularly conducted activity.

To show the court that each official accident report used in evidence is in fact a government record, an attorney is advised to get either a certified blue ribbon copy or to keep transmittal letters of a Freedom of Information Act requests for data.

For a major accident, the "Board's Report" (signed by the members of the board and sometimes including dissents) may be a 3" thick document. For a small plane accident, the N.T.S.B. releases a one-to-two page computer printout, which covers probable cause and contributing factors. These shorter Board Reports, often called Accident Briefs, are based on the I.I.C.'s findings. It is only Board Reports and Accident Briefs--because they identify probable cause-- that are excluded from evidence by federal statute. (The statutory exclusion is different from a privilege, in that anyone may assert it.) The remainder of the documents produced in an N.T.S.B. investigation is admissible in their entirety, except for the normal objections provided by the legal Rules of Evidence. In many cases, the objections may be overcome through the standard exceptions to the exclusionary rules because the investigation and resulting reports are deemed:

- ! Trustworthy;
- ! Conducted by a disinterested expert party;
- ! An official government document and business record of a duty routinely conducted in a prescribed manner.

While the N.T.S.B. has five categories of investigations, from a functional standpoint they can be discussed under the two main groupings below: major air disasters and small aircraft accidents.

### Major Air Disasters

When an airliner crashes, the N.T.S.B.'s Washington office immediately dispatches a "go team" of one or more investigators--as many as a dozen for a really big crash--led by an Investigator in Charge (I.I.C.), who organizes, conducts, and controls the in-field investigation. The I.I.C. is solely responsible for the coordination and supervision of all field investigators.

After ensuring that survivors have been taken care of, the N.T.S.B. team secures the area and conducts a safety audit, assessing any potential danger from hazardous cargo, fuel or fire. They also protect the evidence; this involves securing the area to protect it from looters, sightseers and amateurs. The I.I.C. then has sole care of who may enter the area. .

The N.T.S.B. "go" team forms at least ten investigative committees:

- ! Operations
- ! Weather Group
- ! Air Traffic Control Group
- ! Structures Group

- ! Power Plant Group
- ! Systems Group
- ! Maintenance Group
- ! Witness Group
- ! Human Factors Group
- ! Human Performance Group

The Human Factors group restricts itself to crashworthiness, rescue and survivability. The Human Performance group is more esoteric, delving into the performance and possible errors of pilots and others.

Each group conducts its own investigation and submits a committee report, signed by the team leader, to the I.I.C. After the investigation is closed, these individual committee reports (generally found to be admissible as evidence) are available from the N.T.S.B. office in Washington D.C.

In addition to its field investigations, the N.T.S.B. has access to an Oklahoma City medical lab, which provides toxicology studies and drug scans, and has a Washington D.C. laboratory with a metals lab, a flight data lab, and a sound lab for analyzing cockpit voice recorders. They also have access to other government labs as needed.

### Small Aircraft Accidents

These crashes are usually handled by a single N.T.S.B. regional investigator, who serves as the I.I.C.; he often is aided by local F.A.A. investigators. There are no investigative subsections; all aspects are investigated by the I.I.C., who gathers the same type of materials as in the mass air disaster. It is rare for a public hearing to be held. The Factual Aircraft Accident Report is signed by the I.I.C. and sent to the Board for determination and assignment of causal factors. This factual report is usually admissible, because it is treated as a trustworthy government record of a regularly conducted activity. But once again, the final "Board's Report" in this case--usually a one-page computer printout of probable cause findings is inadmissible as evidence.

## PART II - U.S. MILITARY INVESTIGATIONS

To simplify this discussion, we will focus primarily on the investigations conducted by the United States Air Force (U.S.A.F.), which are typical of those conducted by the other branches of the military.

The U.S.A.F. has two separate investigations, each conducted by a different board and resulting in two separate accident reports. A purely factual investigation is conducted by the Judge Advocate General (J.A.G.) Board; this results in a 110-14

report. A more subjective investigation is conducted by the Safety Board; this results in a 127-4 report. Understanding the distinctions between the two is essential.

J.A.G. Board 110-14 reports have been found by the U.S. Supreme Court to be admissible as evidence in legal proceedings. They report on the facts of the crash only and are supposed to be devoid of opinion, conclusions, or recommendations for safety. Witness statements are sworn, and obtained with a warning that the witness does not have to testify, that what they say can be used against them, and that they have a right to counsel.

Safety Board 127-4 Reports are divided (by the Air Force only) into Part 1 and Part 2. The materials in Part 1 are factual, releasable, and admissible as evidence. (Part 1 is routinely forwarded to the J.A.G. Board for inclusion in their 110 Report as well.) The materials in Part 2 are privileged and cannot be released to the public. Part 2 includes opinions, conclusions, and recommendations for safety. Witnesses (including military contractors interviewed) are not sworn, and they are told that their statements will not be made public or used against them. They are free to give opinions and speculate. The thousands of photographs taken as part of the 127-4 activities are releasable fact, unless they come under some other restriction. In addition to the 127-4, the safety board also produces a preliminary report, progress reports, and supplemental reports.

Severe penalties exist for illegal and unauthorized release of the privileged portions of the 127-4. It is a Uniform Code of Military Justice (U.C.M.J.) offense obtained by participation on a board. This is apparently a lifetime restriction. The privilege is a governmental privilege and must be asserted by them. This usually happens through government affidavit or deposition.

The Navy calls its Safety Board Report the Mishap Investigation Report (M.I.R.). Like the Air Force version, it is privileged. The Navy (and other military branches) are not as formal as the Air Force in presorting factual material from the M.I.R. report so as to be included in the collateral report. But it is reasonable when it comes to producing materials that are obviously factual in nature.

### PART III - INVESTIGATIONS OF ACCIDENTS IN FOREIGN COUNTRIES

The I.C.A.O. administers and oversees a set of agreements ("conventions") among nations that regulate international flying and its safety. These conventions include an agreed-upon standard method for conducting international air crash investigations, outlined in the I.C.A.O. accident investigation manual.

When an accident occurs in an I.C.O.A. member nation, an investigation is conducted by the "country of occurrence" or "host nation" according to I.C.A.O.

standards. (When and if these standards conflict with the nation's law, however, that law prevails.) When an aircraft is lost at sea, the host nation is the nation of registry. The U.S., Canada, United Kingdom, France, and many other countries have their own procedures that meet or are superior to the standards required by the I.C.A.O. Less developed countries, however, may not be equipped to meet the standards; they therefore may invite technical help from other I.C.A.O. member nations (i.e. our N.T.S.B.) in order to comply.

Those countries that are not I.C.A.O. participants--such as some former soviet block and communist countries--conduct their own investigations.

Participants in an I.C.A.O. investigation, besides the "country of occurrence," may include the nation of the plane's registry and the nation of manufacture. Other nations who have a proven interest may petition the county of occurrence to be allowed to participate. The operator and his nation provide relevant information about the registry of the aircraft and the flight crew, and may participate in other ways as well. Qualified advisers (investigators) also may be made participants. The laws of the host country must be observed by the investigator. All I.C.A.O. member countries must furnish the accident team with any relevant information requested.

Obviously, things get sticky when the "accidental" circumstances of a plane going down are suspect. The infamous Lockerbie and Arrow Air-Gander crashes are examples; when they were investigated, other involvements and rules were interjected. In such a case, accident reports and data may be retrieved from various sources: The N.T.S.B. and U.S. State Department (if they participated), the host country, and I.C.A.O. headquarters in Montreal. Usually the I.C.A.O. will not release such reports to the public, however.

An I.C.A.O. investigation typically results in several reports: the Preliminary Report, Final Report, and Report Summary. These can be obtained from the host country. (If our N.T.S.B. has been involved in an I.C.A.O. investigation, its report will be released--at the discretion of the host nation--from the N.T.S.B.'s Washington D.C. office.)

Final Note: It is worth noting that governmental accident investigations of all kinds always can be reopened, based on obvious error or newly discovered evidence.

### **AN AIRCRAFT INVESTIGATION CONDUCTED FOR LITIGATION**

To prove liability a legal investigation must be more complex and technically sophisticated than any of the governmental investigations described above. It always encompasses a wider range of investigative resources. For example, while a governmental aircraft accident investigation may include damning evidence of human



error, or documentation of a material or mechanical failure, it almost never concerns itself with an investigation of a product line with a possible history of design or marketing defects. It is this variety of inquiry that an aviation attorney undertakes through FOIA and legal discovery.

The main purpose of an investigation conducted for litigation is to detect breaches in duties of care relating to aviation safety, and to find defects that were detrimental to aviation safety. A lawyer's investigator must reduce those findings to the form of credible, probative evidence sufficient to meet the legal rules of evidence.

It is not what you know, but what you can prove. In conducting the investigation, the lawyer's purpose is to prove fault and assess recoverable legal damages and possibly retribution when warranted in the form of punitive damages. And of course, aviation safety is always enhanced when the true cause of an accident is proven.

Because the legal investigator has access to governmental factual reports, he starts with more information than the government's on-scene investigators. But he still always has less information than the government or the manufacturer.

A fertile area for the legal investigator to pursue is a study of aircraft and component field histories. Legally, a defect can be proven by circumstantial evidence and interference. A government accident report is usually devoid of such information, since it focuses on the single accident at hand. For instance, in a case where a manufacture's component part is suspect as causative, the field investigator may limit his investigation to the condition of the part itself in the smoking hole, and the maintenance history of that part in that aircraft. It would be routine for the attorney to go further. Among the records he would obtain are:

From the F.A.A. or military:

- a. Service Difficulty Reports

From the manufacturer:

- a. Technical representative's field reports.
- b. Development test data.
- c. Certification and verification engineering and test data.
- d. Warranty maintenance work.
- e. Customer complaints.
- f. Developmental system safety hazard analysis and fault trees.
- g. Production lesson learned data.
- h. Engineering Change Proposals.
- i. Service letters and bulletins.
- j. Correspondence file with N.T.S.B. and F.A.A.
- k. Other accidents.
- l. Other litigations.

- From the government, reports on:
- a. Other accidents.
  - b. Other incidents.
  - c. Airworthiness Directives.
  - d. Type certificate data sheets.<sup>8</sup>

The main problem with most investigations conducted by the government is that their scope is limited and their focus is on only the accident at hand. Therefore, the wise attorney will not necessarily assume that all of their findings are correct. Major questions almost always remain unanswered after probable cause is determined. Simply identifying a pilot error, maintenance error, or supervisory error as a probable cause begs a further analysis. What could have been done differently? In the case of a machinery defect, what caused or allowed the defect to exist? In negligence actions, was the standard and duty of underlying care violated?

If a pilot commits an error, was it his alone? Was it induced by design, contributed to by the controller, a result of company induced fatigue through scheduling, or a lack of company training? Was the pilot known to be hazardous in his previous flight history and actions? Was there an incapacitation or medical influence? Often litigation discovery is the only way to get these critical questions answered.

#### Appendix: Checklist of Documents and Discoverable Reports

An investigator should always operate from an investigative checklist. The following is a starting point from which to deviate; not all facets are applicable to every accident. For each investigation, one must focus on the areas where relevant and probative evidence appears to exist. This checklist is limited to documents and discoverable reports; a full checklist covering all aspects of field and wreckage investigations might be over 40 pages long. But the list below should serve to demonstrate the exhaustive scope required for a competent legal investigation.

#### Reports Available:

1. Local police.
2. Local E.M.S.
3. Local fire department.
4. Local coroner report.
5. Local medical examiners autopsy report.
6. All news media coverage local.
7. F.A.A. C.A.M.I. toxicology and drug screen (Civil Aero Medical Institute).
8. F.A.A. tower tapes.
9. F.A.A. departure or approach control tapes.

10. F.A.A. Air Route Traffic Control Tapes.
11. F.A.A. A.T.I.S. weather tapes.
12. F.A.A. radar data for aircraft flight path.
13. F.A.A. tower movement logs.
14. F.A.A. sector manning records.
15. F.A.A. Facility sector log.
16. F.A.A. Aircraft records on registration and title.
17. F.A.A. Airmen records.
18. F.A.A. airmen medical records.
19. F.A.A. facility status log.
20. F.A.A. facility check after accident.
21. F.A.A. telephonic and radio conversations from flight service.
22. F.A.A. training records.
23. F.A.A. punitive action and violation records.
24. F.A.A. form 337 changes.
25. F.A.A. service difficulty reports.
26. F.A.A. airworthiness directive file and history.
27. F.A.A. data on certification of a specific airplane.
28. N.T.S.B. factual accident report.
29. N.T.S.B. public hearing transcript.
30. N.T.S.B. public docket documents.
31. N.T.S.B. data on similar accidents and incidents.
32. N.T.S.B. pictures.
33. I.C.A.O. accident reports (foreign).
34. U.S.A.F. 110-14 accident reports.
35. U.S.A.F. 127-4 part one accident reports.
36. U.S.A.F. engineering tear down reports.
37. U.S.Army accident reports.
38. U.S.Navy accident reports.
39. U.S.Navy mishap reports.
40. U.S. Navy engineering teardown reports.
41. Military service records.
42. Military flight training records.
43. Armed forces pathology and toxicology Reports.
44. U.S. Weather Service reports for reconstruction.
45. U.S. weather radar photographs.
46. Weather satellite photos.
47. EROS DATA CENTER high altitude photos.
48. Company simulator and flight training records.
49. Company aircraft maintenance records.
50. Company aircraft overhaul record.
51. Company personnel file on flight crew.
52. Company ground training records on flight crew.

53. Company checks aviators records of flights with flight crew.
54. Company dispatch and flight planning records.
55. Company airborne radio reports.
56. Company maintenance records for a specific component part.

#### Discoverable Company Documents

1. Aircraft Audit (configuration audit).
2. Aircraft baseline Configuration.
3. Airworthiness Certificate.
4. Airworthiness Directives.
5. C.O.D. A Correction of Defect or Deficiency.
6. Company Documents:
  - a. company service letters;
  - b. company service bulletins;
  - c. company service instructions;
  - d. company advertisements; and
  - e. company patents.
7. Company Final Compliance Documents.
8. Company testing in preparation for verification tests.
9. Company witnessed verification tests.
10. Consumer complaints.
11. C.I.D.S. Critical Item Development Specification.
12. Development Contract.
13. Deviations from specification.
14. Engineering changes.
15. Engineering Change Proposals.
16. Engineering Orders.
17. F.A.A. Advisory Circulars.
18. F.A.R.
19. Field Service Digest.
20. F.S.D.R.: Field Service Difficulty Reports.
21. Field Service Monthly Reports.
22. Form 337 Supplemental Type Certification (S.T.C.).
23. Maintainability studies.
24. Maintenance records.
25. Malfunction and Defect Reports (M.D.R.)
26. M.T.B.F. Mean Time Between Failure Reports.
27. Military Specifications.
28. Military Standards.
29. Military Design Handbook Criteria.

30. Notice of Deficiency (N.O.D.).
31. Prime Item Development Specifications (P.I.D.S.).
32. Procurement Contract.
33. Reliability Studies.
34. R.F.P.: Request for Proposal.
35. R.F.Q.: Request for Quote.
36. R.P.O.: Maintenance repair orders.
37. S.D.R.: Service difficulty reports.
38. Ship file or Ship log.
39. Study Contract.
40. System Safety Development Plan.
41. System Safety Group Minutes.
42. Systems Safety Studies.
  - a. Systems Safety Failure Mode and Effect Studies;
  - b. Systems Safety Fault Tree Analysis;
  - c. Systems Safety Hazard Analysis;
  - d. Systems Safety Lessons Learned Tracking;
  - e. Systems Safety Committee Meetings;
  - f. Systems Safety Updates to studies;
  - g. Systems Safety Common Cause Failure studies;
43. Technical Orders.
44. Timed Maintenance Items:
  - a. T.B.O. Manufacturers suggested time between overhaul;
  - b. T.S.O. Actual time accumulated since last overhaul;
  - c. T.T. Total time on component or aircraft;
45. Waivers of specification or contract.
46. Warranty work invoices.

## CONCLUSION

The findings from a governmental investigation of an aviation accident can provide important information about probable cause and the crash circumstances. An attorney pursuing an aviation crash case must carefully study all of the relevant public documents produced by the investigating governmental body--whether the N.T.S.B., the military, or the I.C.A.O. A thorough understanding of how these organizations structure their investigations, their procedures, and the kinds of documents they produce, and the documents' admissibility in court is thus an essential starting point for the plaintiff's attorney.

But these governmental findings must be supplemented by an independent professional investigation conducted specifically for litigation. Only an exhaustive legal investigation can produce the kind of solid evidence needed to conclusively identify fault, and to prove liability in court.