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ISSUES OF TRUSTWORTHINESS AND RELIABILITY OF EVIDENCE FROM NTSB INVESTIGATIONS IN THIRD PARTY LIABILITY PROCEEDINGS

JACK LONDON*

Evidence of the causes of aviation crashes and of the events leading to aviation crashes is the bedrock of third party liability litigation arising out of such crashes. The National Transportation Safety Board (NTSB) investigates the vast majority of the accidents and incidents which are the subject of litigation. It identifies and observes both objective data such as speeds, angles, weather, and equipment conditions, and subjective or opinion evidence such as design errors, maintenance errors, communication errors, and myriad human behaviors which cause aircraft catastrophes. Such public, professional, and theoretically neutral evidence would appear to be vital to litigants, judges, and juries in resolving third party litigation. However, due both to statutes and to insulating regulations published by the NTSB to limit its involvement in third party litigation, very little of the NTSB’s work is ever admitted into evidence in such cases. Moreover, the evidence that is potentially admissible is also potentially inadmissible due to the manner in which such evidence is gathered and made available.

The system by which the NTSB is organized, performs its investigative functions, and renders its reports is stretched to the breaking point. Aviation technology has become so sophisticated that rarely will an NTSB investigator encounter a crash involving both the same airframe and the same airborne electronic equipment twice in a career. Unlike the era of broken cables and missing engine parts, reconstruction of complex

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crashes in which one-of-a-kind software applications with previously unknown failure modes play a role and disappear in the wreckage is now a very different inquiry than most NTSB investigators have been trained to perform. Moreover, the NTSB's heavy dependence on party participants to provide technical assistance often results in NTSB reports, observations, and data which make NTSB evidence fall outside rather than inside the tests for trustworthiness and reliability which the federal and most state rules of evidence impose as conditions of admissibility.

This article will discuss those problems.

I. RULES AND STATUTES

Courts are often called upon to determine whether to admit evidence of a NTSB investigation—an issue that has several problematic cornerstones. The circumstances under which NTSB evidence is produced and the limitations on inquiring into its foundations create complex issues regarding the reliability and trustworthiness of such evidence.

The admissibility of NTSB reports as public documents is generally evaluated under Federal (and most States’) Rule of Evidence 803(8), the public report exception to the hearsay rule. That such reports may contain opinions and conclusions, as well as mere “factual findings,” is sanctioned by *Beech Aircraft v. Rainey.* Such reports are presumptively admissible, including opinions, unless demonstrated to be untrustworthy.

However, a contrary cornerstone of the evidentiary issue is 49 U.S.C. § 1154(b) which provides: “(b) Reports: 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.”

Thus, the rule giveth, and the statute taketh away.

Given that the statute does not define the reports or parts of reports it bars from admission into evidence, courts and litigants have staked out battlegrounds in efforts to bring as much of the NTSB’s probable cause determinations to the jury, or to keep such determinations away from the jury, as possible. These bat-

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2 49 U.S.C. § 1154(b) (1994). This statute was transferred from former 49 U.S.C. § 1441(e) (1975); cases dated before approximately 1995 which address the inadmissibility of NTSB reports cite the former statute.
tlegrounds are laid out both in the decisions and in the promul-
gation of federal regulations which attempt to define
documents that should be excluded from admission into evi-

Another source of evidence of NTSB investigations is oral tes-
timony. Depending on whether the proposed witness is an em-
ployee of the NTSB or a privately retained expert, such
testimony is generally evaluated within the framework of Federal
(and most States') Rules of Evidence 701, lay opinions, and 702-
703, expert opinions. The nature of NTSB investigations, as will
be seen, creates a very grey area in which expert testimony and
lay testimony overlap so that only the most acutely sensitive
scholars will be able to sort out whether proposed testimony
should be properly characterized as one or the other. The dis-
tinction may prove critical in both procuring such evidence and
in obtaining a ruling on its admissibility.

The decision in *Beech Aircraft v. Rainey* was written several
years before the Supreme Court issued the practice-altering de-
cision of *Daubert v. Merrell Dow Pharmaceuticals, Inc.* Daubert and
subsequent cases have struggled to lay out workable rules to es-

tablish who has the burden of proving that expert opinions are
reliable. The result is that sophisticated expert testimony on
causation is presumptively *inadmissible* until its sponsor first es-

tablishes that it is reliable. Thus, the admission of opinion testi-

mony under Chapter VII of the Federal Rules of Evidence is
dealt with in a manner exactly the opposite of admission of writ-
ten evidence which may contain the same opinions and offered
for admission under Rule 803(8). The conflict between expert
reports which would ordinarily be considered admissible under
Rule 803(8) and *Beech Aircraft v. Rainey*, and the obstacles to ad-
mission which must be cleared under the rules laid out by
*Daubert* and its progeny, is yet to be resolved. However, regard-
less of whether the proposed evidence is written or oral, some-
one will bear a burden on the issue of trustworthiness and
reliability of such evidence.

Finally, the NTSB itself has walked into a fray in which it is
only tangentially a party. It has issued regulations in an attempt
to control the use of oral testimony about NTSB investigations
in civil litigation. As will be seen, these regulations are frustrat-
ing, occasionally one-sided, and are viewed in differing ways by
various courts and litigants. Even so, interpretation of these reg-

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ulations by the court, and by NTSB staff counsel in the course of litigation, will often play a decisive role in developing evidence of what happened, what caused the incident or accident, and who is to blame.

Many of the problems in obtaining such evidence and ruling on whether it is admissible can be handled within the traditional framework of the law of evidence. However, due to an anomaly unique to the investigation of aviation accidents by the NTSB, the reliability and trustworthiness of such evidence may undermine its admissibility. A system known as “the party participant system” renders questionable for third party litigation much of the work which goes into many NTSB investigations, at least insofar as concluding that it is reliable or trustworthy for admission under either Chapter VII or Chapter VIII of the Federal Rules of Evidence.

This article will attempt to shed light on those subjects in an effort to help courts and litigants resolve subtle but serious issues about the procurement and admission of such evidence.

II. THE MISSION OF THE NTSB IS NOT TO SERVE LITIGANTS

The mission of the NTSB is to investigate certain aviation, highway, pipeline, marine, and rail accidents. The Board’s primary contribution is described in 49 U.S.C. § 1116, by which it is charged to:

(a) . . . report periodically to Congress, departments, agencies, and instrumentalities of the United States Government and State and local governmental authorities concerned with transportation safety, and other interested persons. The report shall—
   1) advocate meaningful responses to reduce the likelihood of transportation accidents similar to those investigated by the Board; and
   2) propose corrective action to make the transportation of individuals as safe and free from risk of injury as possible, including action to minimize personal injuries that occur in transportation accidents.

(b) Studies, investigations, and other reports. The Board also shall—
   1) carry out special studies and investigations about transportation safety, including avoiding personal injury;
2) examine techniques and methods of accident investigation and periodically publish recommended procedures for accident investigations.4

In order to live up to such responsibility, the NTSB performs on-scene, laboratory, and document investigations of thousands of accidents and incidents each year. Its tasks are outlined and its goals defined in a statute that practically mirrors third party liability litigation. 49 U.S.C. § 1131 specifies:

1) The National Transportation Safety Board shall investigate . . . and establish the facts, circumstances, and cause or probable cause of—
   A. an aircraft accident the Board has authority to investigate . . . ;
   B. a highway accident . . . the Board selects in cooperation with a State;
   C. a railroad accident in which there is a fatality or substantial property damage, or that involves a passenger train;
   D. a pipeline accident in which there is a fatality, substantial property damage, or significant injury to the environment;
   E. a major marine casualty (except a casualty involving only public vessels) occurring on the navigable waters or territorial sea of the United States, or involving a vessel of the United States. . . ; and
   F. any other accident related to the transportation of individuals or property when the Board decides—
      i. the accident is catastrophic;
      ii. the accident involves problems of a recurring character; or
      iii. the investigation of the accident would carry out this chapter.

The Board shall use the report in establishing cause or probable cause of an accident described under subsection (a) or (b) of this section.

(e) Accident reports. The Board shall report on the facts and circumstances of each accident investigated by it under subsection (a) or (b) of this section. The Board shall make each report available to the public at reasonable cost.5

III. THE NATURE OF NTSB INVESTIGATIONS

The NTSB is responsible for the investigation of civil aviation accidents, fatal pipeline accidents, marine accidents involving public and non-public vessels, and significant highway and passenger train accidents. In addition, the NTSB is the compliance agency for the United States under Annex 13 to the Convention on International Civil Aviation, by which it is responsible for U.S. contributions to the investigation of accidents in international air navigation and transport. In both international and domestic accident investigations, the NTSB functions in a proactive manner, that is, with the goal of prevention of future accidents and incidents by the determination of the causes of the events being investigated. It is specifically not the goal of the NTSB to determine legal responsibility for the cause of an accident or an incident.⁶

Investigations generally fall within one of five categories. A major investigation, typically involving a commercial airliner or cargo aircraft, is usually investigated through the Washington headquarters. A major investigation in which substantial issues relating to safety have been identified, including non-fatal airline accidents and commuter accidents, is managed by a regional NTSB office. A field investigation describes the investigation of general aviation accidents and of non-fatal airline incidents and accidents. A field investigation with serious safety issues or complex investigative problems may occasionally be as complicated as major investigations. Limited investigations may take place without a field investigation or major investigation in events involving general aviation. Finally, the NTSB may delegate an investigation to the Federal Aviation Administration (FAA) in aircraft other than fixed-wing aircraft certificated above 12,000 pounds, except for fatalities, air taxies, or mid-air collisions. In those investigations, the FAA completes a report while the NTSB will make a probable cause determination. Note that two of the five categories of investigation may not involve NTSB employee participation at a scene or by staff technical analysis.

The NTSB systematically investigates crashes by gathering the data, the records, and the observations which are particular to

⁶ An accident is an event which takes place when any person is onboard an aircraft and sustains a serious injury or death or the aircraft sustains substantial damage; an incident is an occurrence other than an accident which affects or could affect safety. 49 C.F.R. § 830.2 (2002).
sub-categories of information about the aircraft, the crew, and the flight. NTSB investigations vary widely depending upon the complexity of an event and the safety implications which the NTSB identifies. An investigation will typically involve the creation of working groups for each area of investigation which the Investigator in Charge concludes will lead to particular information about the cause of the crash. The assigned Investigator in Charge will determine which groups, if any, to form for a given investigation. The formal groups in any one investigation are typically one or more of the following: Structures, Systems, Powerplants, Operations, Air Traffic Control, Weather, Human Factors, Witnesses, Maintenance Records, Flight Data Recorder, and Cockpit Voice Recorder. Not every investigation results in a report from every group.

The NTSB has a staff of approximately 400 employees in any given fiscal year, of whom approximately 150 are assigned as aviation safety employees, 75 are surface transportation employees, and fewer than 50 are research and engineering employees. The balance are administrative and policy employees. These employees, collectively, are responsible for the investigation of an average of 7 headquarters investigations per year, 10 foreign investigations per year, and approximately 2,000 general aviation accidents per year, including air charters, recreational flights, emergency medical flights, and many other forms of non-carrier activity.\(^7\)

A subsequent section will address problems within the NTSB which have been identified by the RAND Institute, an outside public study group which was engaged to provide a critique to the NTSB for planning future operations. As a point of reference, RAND found that while the NTSB is properly considered the preeminent crash investigation agency in the world, NTSB employees are also overworked and understaffed, given the number of cases they must handle, the complexity of the work, and the conditions they must work under. NTSB aviation investigative employees average almost 50 work hours per week. This is far more than the average hours worked by employees of the companies whose aircraft, pilots and mechanics they are called upon to investigate.\(^8\)

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\(^8\) *Id.* at 146-51.
IV. THE PARTY PARTICIPANT SYSTEM

The NTSB is presently able to complete its work only because of a hybrid arrangement generally known as the party participant system. The system has been created by the Board, under regulation, to augment its limited resources by calling up some, but not all, of the parties interested in a crash to actually assist the NTSB in various aspects of the investigation.

The NTSB has been granted regulatory authority in its constitutional statute. 49 U.S.C. § 1113(f) authorizes the NTSB to "prescribe regulations to carry out this chapter." Pursuant to such authority it has issued a number of regulations which have a significant impact on third party litigation, perhaps none more so than 48 C.F.R. § 831.11, which provides:

Sec. 831.11 Parties to the investigation.

(a) All Investigations, regardless of mode.

(1) The investigator-in-charge designates parties to participate in the investigation. Parties 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 actively to assist in the investigation. Other than the FAA in aviation cases, no other entity is afforded the right to participate in Board investigations.

(2) Participants in the investigation (i.e., party representatives, party coordinators, and/or the larger party organization) shall be responsive to the direction of Board representatives and may lose party status if they do not comply with their assigned duties and activity proscriptions or instructions, or if they conduct themselves in a manner prejudicial to the investigation.

(3) No party to the investigation shall be represented in any aspect of the NTSB investigation by any person who also represents claimants or insurers. No party representative may occupy a legal position (see § 845.13 of this chapter). Failure to comply with these provisions may result in sanctions, including loss of status as a party.

(4) Title 49, United States Code § 1132 provides for the appropriate participation of the FAA in Board investigations, and § 1131(a)(2) provides for such participation by other departments, agencies, or instrumentalities. The FAA and those other entities that meet the requirements of paragraph (a)(1) of this section will be parties to the investigation with the same rights and privileges and subject to the same limitations as other parties, provided however that representatives of the FAA need not
sign the "Statement of Party Representatives to NTSB Investigation" (see paragraph (b) of this section).

(b) Aviation investigations. In addition to compliance with the complete understanding of the requirements and limitations of party status, all party representatives in aviation investigations shall sign "Statement of Party Representatives to NTSB Investigation" immediately upon attaining party representative status. Failure timely to sign that statement may result in sanctions, including loss of status as a party.\(^9\)

At the request of the Investigator in Charge of a given accident or incident, "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 actively to assist in the investigation"\(^10\) will be invited to participate in the investigation from the time of crash notification until the completion of the final report. As a practical matter, this means that manufacturers of aircraft and aircraft components, airlines, charter aircraft operators, component part manufacturers, and government agencies who have a direct involvement in a crash are notified as soon as possible that one of their pieces of equipment or one of their employees, or both, were involved in a crash. These parties usually maintain a 'safety' department which will send a technical representative to the site to participate in the on-site identification and recovery of the aircraft wreckage. These party participants contribute technical knowledge of aircraft systems, such as fuselage diagrams, control linkage diagrams, powerplant and propeller/rotor details, electronic equipment on board, and an infinite variety of details about the aircraft, equipment, crew, and conditions of the flight. It would be almost impossible for the NTSB or any other single entity to maintain a comprehensive collection of specific aircraft details which could be quickly retrieved and taken to the site to identify components and the condition of components from burned and twisted wreckage scattered over an infinite variety of crash sites and areas. The manufacturers possess the technical details of airframes and systems to make this possible.

It is common for the NTSB to transport components and parts from the crash site to the manufacturers' facilities for technical analysis. The manufacturers maintain failure laborato-

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10 Id.
ries and employ materials failure analysis technicians who have immediate access to manufacturing drawings for their parts and assemblies. Work performed by manufacturers, powerplant and component part suppliers, airlines, and others often result in the creation of reports and support documents, such as photographs, laboratory samples, and technical drawings. Such documents are contributed to the NTSB for use by appropriate groups in the NTSB investigation. In addition, as a party participant, the party representatives may, if they wish, participate in any other group involved in the same accident investigation. For example, a powerplant representative may participate in the Cockpit Voice Recording group if he elects to do so.

The party participant system provides a relationship of uneven quality to the investigations. The NTSB prides itself on independence and professionalism. However, the threat to independence was conveyed by one manufacturer's representative:

Although the NTSB investigators are qualified, experienced, and professional in accident investigation techniques and management, a single investigator may not investigate the same model helicopter configuration more than once in his/her career. This is due to the relative rare frequency of accidents and the extremely large number of model configurations in the fleet. For example, Bell has produced and fielded 50 different configurations within our 10 commercial model series. We have produced about 10,500 civil helicopters since the original Model 47 was certificated in 1946. Within the Model 47 series alone, Bell produced 24 configurations. Other people have modified the 47 to new and unknown (to Bell) configurations. With all of this variety, it is difficult to nearly impossible for an NTSB investigator to know the basic configurations. Thus the need for the technical expertise of the manufacturer.11

In plain language, the party participants are frequently the only source of information available to NTSB investigators to perform their task; a fact which threatens their independence and occasionally impedes rather than assists investigations. As a result, the quality of any NTSB evidence is directly affected by how high, or low, the degree of open, candid, and selfless cooperation the party participants contribute.

A contrary feature of the party participant system that has serious implications for the admissibility of evidence of NTSB investigations is that it is inherently one-sided. The same regulation by which the NTSB has created the party system goes on to exclude the parties who are most often and most immediately affected by the investigation, i.e., the victims of a crash. Paragraph 3 of the regulation provides: "(3) No party to the investigation shall be represented in any aspect of the NTSB investigation by any person who also represents claimants or insurers. . . ."12

Accordingly, some indeterminable portion of the investigation is performed under circumstances which effectively preclude a substantial block of potentially interested parties from having any role in the affair until the NTSB (and party participants) completes its hands-on work. At that point, the NTSB will notify the parties that it is releasing the wreckage or releasing the property of any party participants. The extent to which excluded parties may inspect, test, examine, analyze, or otherwise investigate the crash is then no longer a matter under the control of the NTSB but instead a matter of formal legal discovery and investigation.

Efforts by non-parties to participate, even as observers, in NTSB investigations have been consistently rebuffed by the courts. In Graham v. Teledyne-Continental Motors,13 the family of a pilot sought to be allowed to either serve as a party participant or as an observer. The Court determined that the NTSB had the right under Section 831 to choose whether to include or exclude anyone as a party participant. While the possible investigative contribution of an estate was not apparent, "[t]he use of Teledyne's facilities and expertise in disassembling its own engines could be indispensable in enabling the NTSB to carry out its mission" to promote transportation safety by investigations and formulating safety improvement recommendations, not determine civil liability.14 The decision went on to foreshadow the problem which does concern courts which are convened to determine civil liability. The court said: "At most, appellant may be deprived of certain evidence that could assist her in litigation."15

13 Graham v. Teledyne-Cont'l Motors, 805 F.2d 1386 (9th Cir. 1987).
14 Id. at 1389.
15 Id. at 1390.
Thus the problem is framed. When the issue is squarely focused on the use of NTSB evidence in litigation to determine civil liability, litigants and trial judges must come to grips with the problem that such evidence is often less than pristine. The quality of the information suffers from the process which created it and is subject to very real threats of spoliation, untrustworthiness, and the subtle evidentiary distinctions between expert opinion testimony and lay opinion testimony.

V. EVIDENTIARY TAINTS TO NTSB INVESTIGATIONS

A. EVIDENTIARY PROBLEMS OF TRUSTWORTHINESS AND RELIABILITY

_Beech Aircraft v. Rainey_ is frequently cited for the proposition that a public record of an investigative report is not inadmissible merely because it contains opinions as opposed to factual findings. The Supreme Court, in an opinion by Justice Brennan, wrote that "factual findings admissible under Rule 803(8)(C) may be those which are made by the preparer of the report from disputed evidence. . . . We agree and hold that factually based conclusions or opinions are not on that account excluded from the scope of Rule 803(8)(C)." However, the Court very clearly warned all concerned that while Rule 803(8)(C) assumes that a government report or document is admissible in the first instance, the rule provides "ample provision for escape if sufficient negative factors are present."

The Court endorsed the comments to Rule 803(8)(C) which list four non-exclusive factors to consider in determining whether an offered report is trustworthy: (1) timeliness of the investigation; (2) the investigator’s skill; (3) whether a hearing was held; and (4) possible bias. The Court went to great lengths to write that the determining test was whether the offered report was trustworthy, not whether the opinions or conclusions it contained were found to be lay opinions or expert opinions. The Court stated:

Our conclusion that neither language of the Rule nor the intent of its framers calls for a distinction between “fact” and “opinion” is strengthened by the analytical difficulty of drawing such a line.

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17 Id. at 167.
It has frequently been remarked that the distinction between statements of fact and opinion is, at best, one of degree:

"All statements in language are statements of opinion, i.e., statements of mental processes or perceptions. So-called 'statements of fact' are only more specific statements of opinion. What the judge means to say, when he asks the witness to state the facts, is: 'The nature of this case requires that you be more specific, if you can, in your description of what you saw.'"

The Court then observed that the disputed report in question contained the factual finding that the engine was operating, but at reduced power; a finding the investigator presumably reached on the basis of clues in the wreckage. Next, the Court stated that its decision to admit opinion findings into evidence as an exception to the hearsay rule was consistent with "relaxing the traditional barriers to 'opinion' testimony." The Court noted that Rules of Evidence 702-705 allow admission into evidence of ultimate expert opinions and that Rule 701 even permits lay witnesses to express opinions drawn from observations.

It is in the application of Beech Aircraft v. Rainey to NTSB evidence that such reasonable principles become bogged down. First, Beech Aircraft did not deal with an NTSB report. Instead, the issue before the Court was whether a Judge Advocate General investigative report of a Navy aircraft crash was admissible over the objection that it contained opinions. Second, the Court faced a thoroughly inapposite situation to the problems arising from NTSB evidence. As the Court noted, admission of a government report is reasonable in the last instance because "the admission of a report containing 'conclusions' is subject to the ultimate safeguard—the opponent's right to present evidence tending to contradict or diminish the weight of those conclusions."

The application of that principle was central to the Court's decision: the JAG report in question not only contained evidence of both the prevailing theory—pilot error—but contained evidence of the countervailing theory, a power failure, which had been developed during the investigation. The Supreme Court expressly held it error to have admitted in evi-

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18 Id. (quoting W. King and D. Pillinger, Opinion Evidence in Illinois 4 (1942)).
19 Id. at 169.
20 Id. at 168.
dence the report with the prevailing theory opinion while excluding the evidence of the countervailing theory.\textsuperscript{21}

Both the decisions and the regulations implemented by the NTSB present litigants with a very different problem than the Court faced in \textit{Beech Aircraft v. Rainey}. Consider that the Ninth Circuit in \textit{Graham v. Teledyne-Continental Motors} noted specifically that the party participant system and application of 49 C.F.R. § 831 by the NTSB meant that: "At most, appellant may be deprived of certain evidence that could assist her in litigation."\textsuperscript{22} The premise of \textit{Beech Aircraft v. Rainey}, ante, is that the ultimate test of unreliability of a government report is the right of a party to present evidence tending to contradict or diminish the weight of the reported findings. That is a false premise in NTSB party participant-assisted investigations in which, like the Teledyne engine tear down in question, the evidence becomes unavailable for future study by the excluded parties due to inherently destructive testing. Moreover, in \textit{Beech Aircraft v. Rainey}, a competent "minority view" investigator did in fact participate in the investigation and presented countervailing evidence for consideration to the report's author for inclusion, contrary to the practice in NTSB investigations, which excludes claimants and their families, and occasionally even parties, from investigations.\textsuperscript{23}

The result is that NTSB evidence which does not account for "evidence tending to contradict or diminish the weight of those conclusions" is no longer presumptively trustworthy but, rather, is presumptively untrustworthy.\textsuperscript{24} One of the key tests of reliability is whether an investigation into causation accounts for all possible causes of the event or condition in question.\textsuperscript{25} The Fifth Circuit embraced this gate in aviation litigation in which multiple potential explanations of a crash must be accounted for as a predicate to reliability of opinion evidence. In \textit{Michaels v. Avitech, Inc.},\textsuperscript{26} the Court upheld summary judgment finding that a proposed expert opinion did not meet \textit{Daubert} reliability standards: "Given the variety of intervening events, the finding

\textsuperscript{21} The majority opinion wrote at length about the inclusion of the countervailing evidence as "optional completeness" under FRE 106. \textit{Id.} at 170.

\textsuperscript{22} Graham v. Teledyne-Cont'l Motors, 805 F.2d 1386, 1390 (9th Cir. 1987.).

\textsuperscript{23} \textit{Beech Aircraft v. Rainey}, 488 U.S. at 157-61.

\textsuperscript{24} \textit{Id.} at 168.

\textsuperscript{25} See, e.g., \textit{In re Paoli Railroad Yard PCB Litigation}, 35 F.3d 717, 758-61 (3d Cir. 1994).

\textsuperscript{26} Michaels v. Avitech, Inc., 202 F.3d 746 (5th Cir. 2000).
of debris alone cannot support any rational inference that Avitech's installation of the right pump was negligent, given that the plaintiff's experts wholly fail to address and rule out the numerous other potential causes."

Two of the four trustworthiness pieces to the Rule 803(8)(c) puzzle which the *Beech Aircraft v. Rainey* Court found to be essential do not exist in many NTSB investigations in which non-party or minority-view investigators are systematically excluded. First, there is the lack of anything resembling a hearing which, at the least, a representative to the investigation for all sides would provide. Consequently, there is no check or balance to assure that all possible causes of an accident are even recognized, much less investigated to a point where a differential diagnosis can be rendered by ruling in or ruling out causes other than those blessed by party participants at the expense of non-parties. Second, party participants who perform destructive testing do so both at peril to a charge of spoliation and to a serious taint of bias, either of which undermine the reliability of a conclusion since the test or examination upon which it is founded cannot be reproduced, given that the part or component cannot be put back to the test parameters after destructive examination.

As mentioned previously, the Supreme Court has substantially altered the liberal purpose of the Federal Rules of Evidence (FRE) insofar as expert opinion testimony of causation is concerned. Since *Beech Aircraft v. Rainey* was issued in 1988, the prevailing standard for admission of such testimony has been subjected to a gatekeeper evaluation. The proponent of expert opinion testimony regarding the cause of an occurrence must demonstrate before it is admitted that the methodology which produced the opinion is reliable.\(^2\) This produces two different standards of admissibility for such evidence. FREs 702-705 contemplate the admission of expert opinion evidence as an exception to the general rule that a witness must speak from personal knowledge, but such expert opinion evidence must first be shown to be reliable as a pre-condition to being admitted. The burden of establishing reliability of the evidence is on the party offering the evidence. However, if that same evidence is offered as an exception to the hearsay rule by a party who offers it as written evidence in the form of a public document, pursuant to FRE 803(8)(C), the information does not contain such a pre-

\(^{27}\) *Id.* at 753.

condition even though it contains opinions as well as factual findings; the burden is instead on the party which opposes admission of such evidence to demonstrate that the evidence is not trustworthy.\textsuperscript{29} Since evidence of an NTSB investigation may come in either form, the distinction is problematic.

B. The Two Threats to Reliability and Trustworthiness of Evidence of NTSB Investigations

Opinion evidence, expert or otherwise, and written public reports of an investigation, are generally admissible for different reasons. The former is permitted as an exception to FRE 602 which provides that a witness must have personal knowledge of the subject about which he gives testimony. The latter is permitted as an exception to Rule 802, which bars the admission of hearsay evidence which cannot be subjected to cross examination. However, both opinion evidence and hearsay evidence must be reliable.

Some waypoints of reliability and trustworthiness should be noted because of two factors which pervade NTSB accident investigations and do affect the evidentiary value of such evidence. These two factors are (1) the presence of systemic grit in the NTSB mechanism and (2) the contributions which party participants may make to any particular investigation.

While there is no all-case bright line test for a trial court to apply in assessing whether evidence is trustworthy or reliable, there is an abundance of litmus. The published commentaries which accompany each rule of evidence seek to guide courts and counsel in application of the rule of evidence to particular problems. The commentaries to Rule 803(8)(C) note four factors which were discussed by the Supreme Court in \textit{Beech Aircraft v. Rainey}, i.e.: (1) timeliness of the investigation; (2) the investigator’s skill; (3) whether a hearing was held; and (4) possible bias in the investigation. To that must be added the gates of reliability which have been articulated for admission of expert testimony beginning with \textit{Daubert} and in the subsequent decision of \textit{General Electric Co. v Joiner}.\textsuperscript{30} Expert opinion evidence must be reliable and may not have an analytical gap between the observations or tests in question and the opinion proffered.\textsuperscript{31}

\textsuperscript{29} For an excellent review of this issue, see Harvey Brown, \textit{Daubert Objections to Public Records: Who Bears the Burden of Proof?}, 39 \textit{Hous. L. Rev.} 413 (2002).


\textsuperscript{31} \textit{Id.} at 146.
The qualifications of the witnesses are inherent prerequisites to the question of reliability.\textsuperscript{32} Other factors by which a court may test such reliability include whether the method from which the finding or conclusion was derived has been subjected to testing,\textsuperscript{33} has been generally accepted in the relevant community and peer reviewed,\textsuperscript{34} and whether the method produces consistent results.\textsuperscript{35} There must not be so many unknown facts or unresolved variables as to render the finding unreliable.\textsuperscript{36} And, as noted above, the investigation must reasonably account for all possible causes of a crash, not only the cause subjectively considered by the party participants or NTSB investigator to be the most probable.

Each of these factors plays a role in evaluating such evidence.

1. \textit{Inside the NTSB: Systemic Problems Which May Affect Trustworthiness and Reliability of Evidence}

Aviation has become much more complex and crowded than was envisioned even twenty years ago. In order to help prepare for the increasing demands such an environment has presented, the National Transportation Safety Board commissioned the RAND Institute (RAND) to conduct a self-critical study of NTSB training and qualifications of its investigators and to assess the adequacy of NTSB policies and practices to perform its tasks. RAND used internal NTSB records of personnel, workload, training, budgets, accidents, and reports to assess NTSB operations.\textsuperscript{37} RAND conducted extensive employee interviews and collected extensive information about the practice of NTSB investigations through focused questionnaires completed by NTSB staff. It met with and obtained reports from members of the aviation community which might be properly considered as interested parties, i.e., technical and legal representatives of airlines, manufacturers, and attorneys who specialize in aviation litigation.\textsuperscript{38}

The RAND Institute issued a comprehensive report in 2000 which addressed many different facets of the work done and to

\textsuperscript{32} \textit{Fed. R. Evid.} 702.
\textsuperscript{33} \textit{Daubert}, 509 U.S. at 593.
\textsuperscript{34} \textit{Id.} at 594.
\textsuperscript{35} \textit{Id.} at 590 n. 9.
\textsuperscript{36} Bogosian v. Mercedes-Benz of N. Am., Inc., 104 F.3d 479 (1st Cir. 1997); Twin City Plaza, Inc. v. Cent. Sur. & Ins. Corp., 409 F.2d 1195 (8th Cir. 1969).
\textsuperscript{37} RAND, \textit{NTSB Aviation Accident Investigations}, supra note 7.
\textsuperscript{38} \textit{Id.} at xxviii.
be done in the future by the NTSB. The goal of the report was to assist the NTSB in assessing how it might change or modify its methods to better perform its mission of preventing future accidents through identifying both actual and potential causes of events. The study clearly identified several serious problems within the NTSB which have a direct bearing on whether evidence of any particular investigation is reliable or trustworthy within the limited confines of third party litigation. The Report is an indispensable source of NTSB work load analysis.

From the study, it is clear that as the aviation industry produces more sophisticated equipment, which often depends on computer-controlled solutions to rapidly changing flight conditions, it is unlikely that NTSB investigators can keep up with the thousands of versions of software, displays, and applications by which modern aircraft are flown and controlled. Increasing demands on air traffic control systems, the proliferation of airways and of off-airway navigation with global positioning devices, and ageing fleets compound the problems. However, the task of investigators is not to "keep up" with technological changes, but to determine causes of accidents and incidents. Performance excursions and defects in equipment contribute to crashes and leave no proof. This poses a terrible threat to NTSB investigators: how to determine cause of an electronic or systems failure which destroys itself in the process of an accident or incident? It poses an equal threat to courts and litigants who must depend on their work. These problems are manifest in at least the following areas.

a. Work Overload

RAND concluded that a lack of resources is bringing the NTSB close to the breaking point. Its budget is small. It has fewer than 200 crash investigators. Nevertheless, the NTSB investigates more than 2,000 large and small aircraft accidents and incidents each year. Included in this number is an average of seven major domestic air crashes per year, 10 major foreign site investigations per year, and almost 2000 general aviation accidents per year.\textsuperscript{39} As a result, each NTSB investigator averages more than 15 complete aviation crash assignments per year.

\textsuperscript{39} Id. at 152-55.
RAND concluded that "the NTSB is facing a serious work overload resulting from demand for its services and is in urgent need of additional resources and management reform. . . ." 40

b. Unfamiliarity and Complexity

Aviation crashes present an extraordinary number of failure scenarios. One of the most perplexing examples of this difficulty is the investigation of USAir Flight 427, in which a 737 simply fell off the radar screen in Visual Flight Rules weather, at altitude and cruise speed, and with no warning. The wreckage was extensively compromised both by impact and by post-crash fire. The NTSB accident team dealt with a virtually endless number of possible scenarios. The probable cause report concluded that:

The National Transportation Safety Board determines that the probable cause of the USAir flight 427 accident was a loss of control of the airplane resulting from the movement of the rudder surface to its blowdown limit. The rudder surface most likely deflected in a direction opposite to that commanded by the pilots as a result of a jam of the main rudder power control unit servo valve secondary slide to the servo valve housing offset from its neutral position and overtravel of the primary slide. 41

This investigation is a poster child for the difficulty of systems failures which have no historical failure precedents to assist NTSB investigators. All such crashes tend to be one-of-a-kind investigations. A major problem for investigators was that the failure mode which was found to be the probable cause had not previously been seen in that airframe. Many of the critical components were so extensively damaged that investigators disagreed as to their condition and pre-crash behaviors. The probable cause finding was undoubtedly theoretical in most senses of the word.

RAND noted:

The fact that complex events may fail to present clear reasons for equipment or system failures poses a considerable challenge to traditional Safety Board investigative practices. RAND found that NTSB investigators are well prepared for accidents in which the failure mode reveals itself through a careful examination of the wreckage. An appreciation for the fact that catastrophic failures can occur in complex systems without obvious physical evidence

40 Id. at xxix.
41 NTSB No. AAR-99/01.
was less apparent. The "broken bolt" or "severed cable" represents the type of mechanical failure that can be located quickly by analyzing debris. This type of "permanent state" failure is readily identifiable. In complex systems, "reactive state" failures can occur. Such modes of failure do not persist and therefore evidence needed to trace the cause of the failure is not available to investigators.\footnote{42}

When the most reliable investigative body in the world is challenged to reach conclusions because there is inadequate factual evidence for investigators to depend upon in applying traditional and accepted methods to reconstruct a crash, courts must likewise be challenged in admitting or excluding such evidence by application of the known reliability waypoints. But, what is left? Should findings and conclusions be admissible because the best qualified body of investigators did the best it could? Or should they be excluded because of a dearth of repeatable failure mode analysis, given a paucity of debris?

c. Training and Experience

Qualifications and skill are essential prerequisites under both F.R.E. Rules 701-702 and under 803(8)(C). Courts have consistently held that a lack of experience by the investigator will preclude the admissions of a crash report. For example, in \textit{Desrosiers v. Flight International of Florida, Inc.},\footnote{43} the court of appeals approved exclusion of parts of a Judge Advocate General crash report:

The plaintiffs presented sufficient evidence to support the district court's conclusion that Lt. Cmdr. Hamilton was not qualified to render expert opinions. The record shows: 1) Lt. Hamilton did not attend aviation accident reconstruction school until after completing the JAG report; 2) he had no formal training in aircraft accident investigation; 3) this was the first JAG aircraft accident report Lt. Hamilton ever prepared; and 4) Lt. Hamilton never reviewed the avionics maintenance records before issuing the report.\footnote{44}

Those specific criticisms are unlikely to apply to NTSB investigators. Most of these employees are mid-career technical employees hired from careers in aviation. Most have technical special skills in at least one area, such as piloting and engineer-

\footnote{42} RAND, \textit{NTSB Aviation Accident Investigations}, supra note 7, at 60.  
\footnote{43} Desrosiers v. Flight Int'l of Fla., Inc., 156 F.3d 952, 962 (9th Cir. 1998).  
\footnote{44} \textit{Id.}
New employees are taught basic aviation accident investigation courses. However, after employees are absorbed into the crushing workload in which they rarely see the same airframe more than one or two times in a year, if ever, training opportunities are limited by budget, workload, and the diversity of topics. Few NTSB employees ever have the opportunity to become as familiar with a single airframe as an airline employee. Given that aircraft systems become more complex as manufacturers identify complex design solutions to flight problems, the NTSB investigator becomes a "generalist," albeit a very competent one, in a world of microspecialists (who are usually employed by the parties being investigated). This poses problems for blind faith dependence on an investigation which by necessity requires that very skilled people with no knowledge of the unique airframe, component, or failure modes in turn depend on specialists who are employees of parties with much at stake. The opinion of the generalist is at risk.\textsuperscript{45}

In this regard, the RAND study found that:

The success of the NTSB depends on the continuing technical excellence of its staff, but at present it does not have a well-structured training program or a commensurate set of facilities that support both training and engineering analysis. . . .

[T]he NTSB's limited training program is not a reliable outlet for informing the professional staff about state-of-the-art technologies or the future aviation environment.

Because of the stochastic nature of accident events, investigators are often introduced to the intricacies of new equipment only when an accident occurs. There is no guarantee that investigating an accident involving an older aircraft, such as a Boeing 747-100, will prepare an investigator for subsequent investigation involving a more modern airliner, such as an Airbus 340 or a

\textsuperscript{45} See Christophersen v. Allied-Signal Corp., 939 F.2d 1106 (5th Cir. 1991). In Christophersen, the district court scrutinized a doctor's lack of specialized experience:

Dr. Miller is not an expert in either oncology or pathology. Miller's opinion as to the cause of Christophersen's death was formed without consultation with oncologists or other cancer specialists. Dr. Miller's experience with cancer occurred during his residency when he assisted in a study of the immune system as affected by smoking and asbestos. Dr. Miller does not routinely treat cancer patients, nor has he ever treated a patient with a colon cancer of the type that affected Christophersen.

\textit{Id.} at 1112.
Boeing 777. The amount of available time for maintaining proficiency and acquiring new skills is very limited. . . .46

d. Accuracy of Records and Reports

The complexity of maintaining and retrieving huge databases of historical data has contributed to the difficulty NTSB employees, and others, experience in obtaining records for use in investigations. The RAND study concluded: "However, there is neither oversight nor an emphasis on accuracy in the collection and maintenance of NTSB records. As a result, the accuracy of most of the NTSB data sources was related as "poor" in the RAND analysis. . . ."47

e. Dependence on Others

Finally, the combination of the above factors has the potential to lead investigators into error. Complex failure modes, dependence on party representatives, a lack of familiarity with equipment or systems, and a lack of time and funding to both hire and train sufficient employees to perform the NTSB mission has implications in the work they produce being used outside their mission, i.e., in third party litigation:

The current state of training at the NTSB. . .implies a steady degradation of staff skills, a matter of concern for an agency with a national safety role. The current situation is of particular concern because . . . the NTSB is facing more complex accident investigations that increasingly involve design-related issues associated with high-level systems integration. . . .

The impact of insufficient training is much more subtle, such as the technical question that goes unasked or the possible accident cause that goes unexplored because the investigator does not possess adequate technical knowledge of a particular system.

Investigators have related instances of misrepresentation by parties that were uncovered only because of the technical knowledge of the NTSB staff, underscoring the need to maintain a skilled staff through a combination of hiring and training.

One party representative from the aviation community privately stated to RAND researchers that information would be given to the NTSB investigators only if "they [the investigators] knew to ask the right questions[s]."48

46 RAND, NTSB Aviation Accident Investigations, supra note 7, at xxxviii - xxxix.
47 Id. at xli.
48 Id. at 166.
If anything can be stated without dispute, it is that the NTSB and its employees are indeed professional, competent, diligent, and afflicted with less bias than anyone might reasonably expect. From a policy standpoint, one must say "Thank goodness for the NTSB." Without it, the skies would be far less safe than the high level of sanctity we enjoy. From an evidentiary standpoint, however, one must be diligent that NTSB evidence is reliable and is NTSB evidence rather than the product of a party with much at stake in the case. The systemic compromises forced on the NTSB and its employees by budget and labor constraints put the quality of the evidence at risk when analyzed by Daubert or Rule 803 standards. That superior knowledge of extremely narrow technical information is in the exclusive possession of parties being investigated, combined with gamesmanship, means that the party participant system has great potential to produce evidence which is neither the product of the NTSB nor produced by a reliable and independent investigation based on an adequate foundation of facts concerning increasingly-complex equipment and failure modes likewise puts the quality of the evidence at risk when analyzed by Daubert or Rule 803 standards. In sum, the questions about such evidence are: Is this the work product of the NTSB or of a party, and why can it be trusted?

2. Party Participant Threats to the Trustworthiness and Reliability of Evidence from an NTSB Investigation

As a prologue to this issue, it is necessary to note that there are at least three limits to NTSB evidence which must be considered. First, the NTSB has by regulation attempted to restrict oral testimony by its employees. Second, the NTSB has by regulation attempted to define those documents resulting from NTSB investigations to which it has no objection as evidence in third party proceedings, and to identify those which are meant to be prohibited as evidence.

Third, 49 U.S.C. § 1154(b) and its predecessors expressly prohibit admission of the NTSB probable cause report into evidence in third party litigation. Even so, the use of NTSB reports or portions of such reports has had a litigious history.49 A number of federal courts admitted NTSB final reports or some por-

49 In re Air Crash at Charlotte, 982 F. Supp. 1071 (D. S.C. 1996), contains a very good summary of the cases, both for and against, admission of all or any portions of an NTSB Board report.
tion of them as evidence in third party liability proceedings.\textsuperscript{50} Others criticized the practice and set about to exclude all portions of the NTSB final report.\textsuperscript{51}

The NTSB weighed in to protect its neutral status by opposing the admission of final Board reports while still defending the party participant system in ways that are not neutral. For example, in \textit{Chiron Corp. & PerSeptive Biosystems v. NTSB},\textsuperscript{52} a dispute arose between two party participants over the disclosure of a cargo list which would identify the items being shipped on board a crashed Federal Express airplane. Federal Express provided the list to the NTSB but asserted it was a trade secret, and the NTSB refused to disclose it to the other party participants.\textsuperscript{53} They contended they had the right as party participants to see the list to explore whether any of the cargo may have caused the crash, a fact which it asserted the NTSB should investigate as part of its duty to determine cause and which if not explored would hurt them in subsequent third party litigation. The NTSB asserted that it had the right to conduct the investigation as it saw fit and that its ultimate report could not hurt the parties anyway since no part of it would be admissible in evidence in later third party litigation.\textsuperscript{54} The Court agreed, ruling on a case not pending before it or even yet filed, that not even the factual portions of the NTSB final report would be admissible in some future case.

The NTSB has also attempted by regulation to distinguish between those reports which are inadmissible pursuant to the statute and other reports to which the NTSB has no objection as evidence in third party litigation. \textsuperscript{49} C.F.R. § 835.2 provides the Board’s definitions which attempt to distinguish the two:

- Board Accident report means the report containing the Board’s determinations, including the probable cause of an accident, issued either as a narrative report or in a computer format ("briefs" of accidents). Pursuant to section 701(e) of the Federal Aviation Act of 1958 (FA Act), and section 304(c) of the Independent Safety Board Act of 1974 (49 U.S.C. 1154(b)) (Safety

\textsuperscript{50} See, e.g., \textit{In re Air Crash Disaster at Stapleton Int’l Airport}, 720 F. Supp. 1493 (D. Colo. 1989). At a later proceeding, the court decided to admit a Human Factors Report which formed a basis for the Board’s probable cause report. 720 F. Supp. 1515 (D. Colo. 1989).

\textsuperscript{51} \textit{In re Air Crash Disaster at Sioux City}, 780 F. Supp. 1207 (N.D. Ill. 1991).

\textsuperscript{52} \textit{Chiron Corp. & PerSpective Biosystems v. NTSB}, 198 F.3d 935 (D.C. Cir. 1999).

\textsuperscript{53} \textit{Id.} at 937.

\textsuperscript{54} \textit{Id.} at 940-41.
Act), no part of a Board accident report may be admitted as evidence or used in any suit or action for damages growing out of any matter mentioned in such reports.55

Factual accident report means the report containing the results of the investigator's investigation of the accident. The Board does not object to, and there is no statutory bar to, admission in litigation of factual accident reports. In the case of a major investigation, group chairman factual reports are factual accident reports.

Thus the NTSB has by regulation attempted to articulate a distinction between reports of the Board itself and reports written by NTSB employees in the course of their investigations. As a further measure, the NTSB has also promulgated the following regulation:

(a) Section 701(e) of the FA Act and section 304(c) of the Safety Act preclude the use or admission into evidence of Board accident reports in any suit or action for damages arising from accidents. These sections reflect Congress' "strong * * desire to keep the Board free of the entanglement of such suits." Rep. No. 93-1192, 93d Cong., 2d Sess., 44 (1974), and serve to ensure that the Board does not exert an undue influence on litigation. The purposes of these sections would be defeated if expert opinion testimony of Board employees, which may be reflected in the views of the Board expressed in its reports, were admitted in evidence or used in litigation arising out of an accident. The Board relies heavily upon its investigators' opinions in its deliberations. Furthermore, the use of Board employees as experts to give opinion testimony would impose a significant administrative burden on the Board's investigative staff. Litigants must obtain their expert witnesses from other sources.

(b) For the reasons stated in paragraph (a) of this section and § 835.1, Board employees may only testify as to the factual information they obtained during the course of an investigation, including factual evaluations embodied in their factual accident reports. However, they shall decline to testify regarding matters beyond the scope of their investigation, and they shall not give any expert or opinion testimony.

(c) Board employees may testify about the firsthand information they obtained during an investigation that is not reasonably available elsewhere, including observations recorded in their own factual incident reports. Consistent with the principles cited in § 835.1 and this section, current Board employees

are not authorized to testify regarding other employee's reports, or other types of Board documents, including but not limited to safety recommendations, safety studies, safety proposals, safety accomplishments, reports labeled studies, and analysis reports, as they contain staff analysis and/or Board conclusions.56

The limitations which the NTSB has attempted to put in place can be summarized as follows: First, NTSB Board Reports, in which the probable cause of a crash are stated, are neither admissible in evidence nor may be the subject of oral testimony by an NTSB employee. Second, NTSB investigators may testify, but may not give expert or opinion testimony. Third, NTSB investigators may not testify about any other employee’s reports.

Not all courts or litigants are quite so complacent about relinquishing the source of such reputable evidence. In Kline v Martin,57 staff counsel instructed an investigator to not answer a number of deposition questions, including opinions about whether evidence revealed malfunction before the crash, pilot incapacitation, and what happened.58 The trial court noted that former 14 C.F.R. § 435 (now apparently 49 C.F.R. § 835) limited the testimony of investigators to facts actually observed by them. However, the court ruled that only conclusory opinions as to the ultimate issue of probable cause of the accident were barred under the policy behind Section 1441(e), and ordered the investigators to answer certain questions, including whether the investigator found any evidence that the aircraft was not intact at time of impact and whether he had determined the angle that the aircraft struck the mountain.59 Most people would agree that those subjects call for opinions, although whether lay or expert is by no means clear.

Another attempt to test the trustworthiness of NTSB employee factual findings was made in McCandless v. Beech Aircraft Corp.60 Beech served a subpoena on the NTSB for an employee deposition. It sought to obtain deposition testimony about the crash and also sought written file materials from which it, Beech, hoped to determine whether Alexander’s report lacked trustworthiness. The Court concluded that until the trial court ruled in advance of trial whether it was going to admit Alexan-

56 Id. § 835.3(a)-(c).
58 Id. at 32.
59 Id. at 32-33.
der’s safety analyses into evidence, a decision on whether Alexander might be deposed about its underlying trustworthiness was sufficiently premature to justify staying the deposition. The implications of this decision are striking. If McCandless means what it says, litigants may easily find themselves caught between courts of different circuits or jurisdictions which find reasons to not permit development of NTSB evidence or preclude inquiries into NTSB methodology. Ordinarily, a trial court will not determine admissibility until after trustworthiness is established, rather than the reverse. Moreover, the court of appeals was sitting in the Washington D.C. circuit, whereas the trial was pending before a district court in Texas.

A similar dilemma is presented by In re Air Crash at Dallas Fort Worth Airport on August 2, 1985,61 in which a party sought to obtain “notes, diagrams, photographs, memoranda, or other documents or writings related to or arising out of the investigation of the crash” by subpoena to the NTSB in order to evaluate the findings and conclusions of the factual reports.62 The NTSB did not ground its objections on the limits which it has written into 49 C.F.R. § 835 which restrict the use of documents in an employee deposition. The Board instead asserted that the material sought to be discovered was privileged in that it was not a final product or approved or adopted by the Board. The Board objected that this material is privileged, work composed in the course of developing official action, but not made a part of the official action. The court concluded that such records are not discoverable from NTSB employees.

The implications of these decisions, as well as the limits in 49 C.F.R. § 835, pose a serious problem: if a litigant cannot see the work product of an investigator, by what means can a litigant discover trustworthiness? The most neutral method to discover such trustworthiness is to ask the witness. Someone bears the burden of determining trustworthiness, either to demonstrate it in order that testimony may be admitted or to impeach it, in order that a written public report may not be admitted, as the case may be. This puts courts and litigants in prison dure et forte i.e., between a rock and a hard place. By application of the NTSB regulations a party cannot obtain the underlying file material which should reveal to what extent the NTSB report or

62 Id. at 393.
testimony are reliable. If the NTSB or a party obtains a protective order or judicial injunction against deposing an NTSB employee about the subject matter and about his methodology and conclusions until after the trial court rules on admissibility, a party cannot reasonably prepare to either present or oppose evidence of the NTSB investigation, even if such evidence is limited to group reports or investigator factual reports. Given that the Supreme Court is neither able nor willing to distinguish between factual and opinion testimony and between lay opinion testimony and expert opinion testimony, the blanket which 49 C.F.R. § 835 draws over NTSB employee testimony is often neither workable nor useful. At some point the Cheshire cat must appear or the grin will fade away.

The only statutory bar to NTSB evidence is 49 U.S.C. § 1154(b), which bars admission of the NTSB probable cause report. The purpose of the statute was to: (a) insure that the opinions of the NTSB were developed for its mission of accident prevention through neutral and independent investigation; and (b) to prevent such investigations from displacing the courts and juries in third party litigation. However, from the outset, both litigants and courts have wrestled with alternatives to simply offering the probable cause report as evidence. Before long, the alternative sources of such evidence were tendered in the form of NTSB investigator testimony and NTSB investigator factual reports.

In American Airlines, a party objected to admission of NTSB investigator deposition testimony which included a graph and a flight data recorder interpretive document, asserting that such evidence was an opinion and hence inadmissible pursuant to the statute. The court held otherwise, stating that:

American Airlines' position on the reach of § 1441(e) seems thoroughly at variance with the prevailing interpretation of the statute. As stated in Berguido v. Eastern Air Lines, Inc., 3 Cir., 1963, 317 F.2d 628, 632, "the primary thrust of the provision is to exclude C.A.B. reports which express agency views as to the proba-

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63. "Our conclusion that neither language of the Rule nor the intent of its framers calls for a distinction between "fact" and "opinion" is strengthened by the analytical difficulty of drawing such a line. It has frequently been remarked that the distinction between statements of fact and opinion is, at best, one of degree..." Beech Aircraft v. Rainey, 488 U.S. 153, 167 (1988).

64. See, e.g., Am. Airlines, Inc. v. United States, 418 F.2d 180 (5th Cir. 1969); Israel v. United States, 247 F.2d 426 (2d Cir. 1957).

65. Id. at 195-96.
ble cause of the accident." Exhibits 58 and 89 are not the report of the C.A.B. and do not reflect the Board’s evaluation of the data they contain or the emphasis placed on that data in reaching a decision on probable cause. To the contrary the exhibits merely display and explain the data derived from the flight recorder foil itself, which was admitted without objection.

The decision seems consistent with the purpose of the statute: Allow the NTSB to do its work and not allow it or its employees to become expert arbiters of third party liability. As usual, the devil is in the details.

Enter the party participants.

*American Airlines* referred to and relied upon the earlier decision of *Berguido v. Eastern Airlines, Inc.* The *Berguido* trial court likewise had allowed testimony of two CAB (forerunner of the NTSB) investigators who related certain calculations involved in their investigations. The two employees were the chairmen of the Operations Committee and the Structures Committee of the CAB investigation into the crash. They did not provide an opinion or evaluation on the probable cause of the crash. They testified by deposition from observations at the scene about propeller slash marks on trees and impact marks on turf and trees. These observations led them to make findings and conclusions that the aircraft speed at impact was 140 kph; the angle of descent was $2 \frac{1}{2}$ degrees at 10 fps; that just before impact the angle of descent was $11 \frac{1}{2}$ degrees in a right bank, and; that the aircraft was $4 \frac{3}{4}$ degrees nose up. Cross examination developed that, although he personally observed the physical conditions at the scene, CAB employee Van Epps got the figures from CAB employee Searle. On further cross examination, it was developed that Searle got the figures from a Lockheed aeronautical engineer working "under Searle's supervision."

The Plaintiff contended that the Lockheed engineer only provided mathematics whereas the defendant contended that the Lockheed engineer’s work was hearsay. The *Berguido* court found on appeal that the calculations were not "evaluation or opinion testimony" because the mathematics showed that the party representative had to make certain assumptions and choices relative to the physical facts before he could "reach the

66 *Id.*
68 *Id.* at 630-31.
69 *Id.* at 631.
final computation stage" and that CAB employee Searle had no
knowledge how the engineer arrived at the figures or what as-
sumptions he made.\textsuperscript{70} The court concluded that this informa-
tion was hearsay and could not be admitted through evidence
derived from the CAB.

The court in \textit{Berguido} reached its conclusion on the premise
that the defendant had been unable to cross examine the Lock-
heed engineer and thus the CAB evidence was essentially inad-
missible hearsay. However, the vice in the mathematics lay in
that its reliability could not be demonstrated:

Furthermore, the testimony of Searle indicates that he had no
knowledge of how Schmidt arrived at his final figures and what
assumptions were made in the process. The inherent vice of all
hearsay evidence so becomes apparent, for, at the very least, de-
fendant had no opportunity to cross-examine Schmidt and ascer-
tain from him the basis of his computations; to test the validity of
said basis, including whatever assumptions he made, if any, and
what he did regarding the information available to him; to ascer-
tain his method of computation and to test its validity, etc. For
this reason we hold that it was prejudicial error to admit the evi-
dence at the trial.\textsuperscript{71}

This language is a clear forerunner of both \textit{Beech Aircraft v.
Rainey} and \textit{Daubert}. In the former case, the Supreme Court ob-
served that the ultimate test of trustworthiness is the ability of a
party to present evidence tending to diminish or contradict the
weight of conclusions in a government report.\textsuperscript{72} One cannot
easily diminish or contradict evidence for which the underlying
basis can neither be explained nor demonstrated. In the latter
case, it was concluded that such evidence should not have to be
diminished or contradicted; if the underlying basis for it cannot
be shown to be reliable, it should not be admitted in evidence in
the first place.\textsuperscript{73}

The party participant system has thus placed evidence from
the NTSB of its investigation into a difficult position. While pre-
sumptively admissible pursuant to FRE 803(8)(C), if offered in
the form of an investigator's report, it is not admissible if in fact
it is not trustworthy. To determine whether it is trustworthy, it is
necessary to determine whether such evidence has its origins in
observations, tests, data, measurements, or technical informa-

\textsuperscript{70} \textit{Id.} at 632.
\textsuperscript{71} \textit{Id.}
\textsuperscript{73} \textit{Daubert v. Merrell Dow Pharmas., Inc.}, 509 U.S. 579, 592 (1993).
tion observed completely independently by the NTSB employee who composed the report, as in *American Airlines, Inc. v. United States*,\(^7^4\) or whether the evidence came from similar observations, tests, data, measurements, or technical information contributed by a party participant, as in *Berguido*.\(^7^5\) Finally, the only way to determine the source of the data appears to be to take the deposition of an NTSB employee, who is prohibited by his or her employer’s regulations from testifying about anything more than “the factual information they obtained during the course of an investigation, including factual evaluations embodied in their factual accident reports.”\(^7^6\)

As both the RAND Institute study and *Berguido* suggest, the involvement of party participants in NTSB investigations is a frequent threat to the reliability or trustworthiness of NTSB evidence. It is no longer reasonable, if it ever was, to suggest that party participants labor with a blind eye to the consequences of an NTSB investigation. Not only is the probable cause determination a road map for liability, even if not admissible in evidence, but the threat of an expensive safety recommendation from the NTSB or FAA, such as an airworthiness directive, is a significant financial risk for manufacturers. The RAND Institute study explained:

> Clearly, an airline or manufacturer knows more about the engineering, design, or operation of its own aircraft than any NTSB investigator, no matter how experienced. The motivation for parties to withhold information that might be relevant to the cause of the accident, or to deflect attention for an area of possible culpability, is obvious. The question is whether, in fact, this occurs. . . .

RAND researchers collected much anecdotal evidence suggesting that full disclosure of relevant information by parties during major investigations cannot always be assured. . . .

NTSB investigators reported instances of misrepresentation and outright lying by the company’s party participants, uncovered only because of the NTSB staff’s extensive knowledge. . . .

In addition, much of the evidence and expertise resides with parties who may be reluctant to be forthcoming. Senior NTSB investigators concur that parties may eventually convey critical in-

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\(^7^4\) *Am. Airlines, Inc. v. United States*, 418 F.2d 180 (5th Cir. 1969).

\(^7^5\) *Berguido*, 317 F.2d 628 (3d Cir. 1963).

\(^7^6\) 49 C.F.R. § 835.3(b).
information if asked the right questions, but that sometimes information is not volunteered. . . .

A more untrustworthy report can hardly be imagined than the investigation behind Palmer v. Borg-Warner Corp. There, men died in a small Piper aircraft in rural Alaska. The estates of the two men filed third party liability suits for wrongful death damages. One of the estates was dismissed by summary judgment on the statute of limitations, over protest that the plaintiffs could not have known during the period of the NTSB investigation that the carburetor had a manufacturing defect. The other passenger estate appears to have sued the carburetor manufacturer timely. The case went to trial about sixteen months later. In that trial, the judge made specific findings of fact that the carburetor had a manufacturing defect. The judge also made specific findings that the manufacturer knew that some of its carburetors contained manufacturing defects but that it had nevertheless told the FAA, the engine manufacturer, and the public that automobile gasoline was the cause of the problem. It urged the FAA to issue an Airworthiness Directive requiring replacement of the defective part as a consequence of gasoline damage so that consumers would pay for the repair, rather than disclose that there were known manufacturing defects, in which instance an airworthiness directive would have obliged the manufacturer to pay for the replacement. The first family, long dismissed by summary judgment, moved for relief from the judgment under Federal Rule of Civil Procedure 60 based on the findings in the companion case and the evidence that the manufacturer had concealed the known manufacturing defects from the NTSB and deceptively cultivated the “auto gas theory.” The party participant’s deception led to an NTSB report which did not reflect the role which the defect played in the crash.

In Four Corners Helicopters, Inc. v. Turbomeca, S.A., an engine manufacturer did not supply the NTSB with failed test results of an engine it had assembled with a modified procedure, which later led to a fatal crash. The NTSB was able to evaluate the condition only because of a combination of fortuitous facts.

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77 RAND, NTSB Aviation Accident Investigations, supra note 7, at 104-05.
79 Id. at 1246.
80 Id. at 1250.
81 Id.
82 Four Corners Helicopters, Inc. v. Turbomeca, S.A., 979 F.2d 1434 (10th Cir. 1992).
Even though Turbomeca denied that the condition in question caused the crash, it had previously issued an Urgent Service Bulletin recommending a procedure to avoid the problem. The failure occurred twenty-one times previously.

Given that party participants are often the only sources of technical manufacturing and failure analysis information, courts, counsel, and juries must be skeptical of a system which has no process for separating the good from the bad. The difficulty is that the NTSB investigators (who are institutionally comfortable with the process anyway), have no choice but to depend on party participants. The thin line between trustworthiness and fraud depends on the skill of NTSB investigators (or, later, diligent discovery), to detect when someone has crossed the line.

Party participant threats to trustworthiness and reliability are not limited to the Turbomeca, Berguido, and Borg-Warner situations. A more common problem is that the reliability of a contribution made by a party participant simply cannot be established. For example, in *In re Air Crash at Charlotte, North Carolina July 2, 1994*, the court excluded the Weather Group report which would have been otherwise admissible under 49 C.F.R. § 835.2. The Weather Group report contained condensed summaries of witness statements. The witnesses had originally been interviewed by a party participant, who wrote notes, then condensed them, then discarded his notes. He provided them to the Weather Group chairman who included them in the group report. Some of the persons interviewed said the Weather Group report incompletely or inaccurately characterized their statements.

In *Christ v. IBM*, the factual report of the NTSB investigator was deemed untrustworthy to the extent that it relied on manufacturer-conducted tests which he did not attend. "In contrast, no one ever informed us that Mr. Twine had attended the other manufacturer's tests. He had no knowledge of any part of the test or how the reports were prepared."

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83 *Id.* at 1436.
85 *Id.* at 1078-79.
87 *Id.*
In *John McShain, Inc. v. Cessna Aircraft Co.*, the Third Circuit upheld the exclusion of NTSB investigative accident reports. The reports included, and the findings were essentially based on, statements by pilots, accident witnesses, and reports of investigators from other government agencies. To some extent this appears to be the very situation that *Beech Aircraft v. Rainey* had in mind when Justice Brennan stated that factual reports included those which result from the preparer dealing with disputed evidence. The distinction appears to lie in two factors. First, a report which merely mimics information fed to the author is not an independent investigation, but is simply the product of those who contributed information of unknown quality. Second, in *Beech Aircraft v. Rainey*, the report in question contained the evidence for both the prevailing and the countervailing probable cause conclusions. That simply won’t occur in most NTSB factual investigations in which the key technical data is provided to the NTSB by parties with much at stake in third party litigation.

A related question was presented in *Fraley v. Rockwell International Corp.* Two reports were presented, one prepared by a JAG investigator, one prepared by an experienced employee of the NARF naval rework facility. Both the JAG investigation and the NARF report relied exclusively on hearsay given by both military and non-military sources. Accordingly, both were based on information which was not subject to cross examination. However, the NARF report was prepared by an experienced investigator whereas the JAG report was not. The trial court split the baby. Without citing authority, the court stated that:

> [I]deally, the author will have first-hand knowledge of the factual statements which he has made. However, if he does not, the first-hand knowledge requirement imposed by FRE 602 still can be satisfied if the author had first hand knowledge of the statements made by declarants who did have first-hand knowledge of the facts mentioned in the factual findings of the public document.

Both reports amounted to hearsay based upon hearsay, but the JAG report was inadmissible for lack of trustworthiness. The court considered that as the document was prepared by an inex-

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91 *Id.* at 1265.
92 *Id.* at 1266-67.
experienced investigator in a highly complex field of investigation, the document lacked the reliability necessary to be admitted into evidence.93

Fraley suggests that if a NTSB investigator is experienced, his hearsay on hearsay report is admissible. This is contrary to the Berguido analysis, in which it was concluded that the underlying material on which the investigator relied must be independently reliable and admissible. No other court appears to have validated hearsay on hearsay based on the experience of the author.94

VI. SUMMARY AND CONCLUSION

Because of the statutory inadmissibility of NTSB probable cause final reports, parties do not have the use of public, professional, and unprivileged evidence, theoretically because it would improperly sway the jury and because it would impair the neutrality and independence of the NTSB. The remaining evidence available from NTSB investigations, such as group reports, investigator factual reports, and investigator depositions is subject to careful scrutiny. Systemic problems, party participants, and excluding parties from investigations threaten the reliability and trustworthiness of the product. The end result is probably not satisfactory to anyone.

As an epilogue, consider McLean v. 988011 Ontario, Ltd.95 This rather innocuous summary judgment case illustrates both the weight played by NTSB evidence and the impracticality of embroiling the NTSB in third party litigation. In McLean, a Piper Cherokee airplane operated by a low time pilot crashed.96 The aircraft had been maintained by two mechanics who were not licensed aircraft mechanics. The trial court granted summary judgment, finding that the NTSB report was definitive and that the opinions submitted by the plaintiffs’ experts were too far-fetched to be reliable. On appeal, the plaintiffs challenged the basic skill of the NTSB investigator, pointing out that the

93 Id. at 1267.
94 See, e.g., Meder v Everest & Jennings, Inc., 637 F.2d 1182 (8th Cir. 1981) (excluding a police report on causation which was not trustworthy when the officer could not recall the source of the statements); John McShain, Inc. v. Cessna Aircraft Co., 563 F.2d 632 (3d Cir. 1977) (excluding the hearsay on hearsay report as simply double hearsay).
95 McLean v. 988011 Ontario, Ltd., 224 F.3d 797 (6th Cir. 2000).
96 Id. at 799.
NTSB investigator’s “primary expertise is in helicopters.”\textsuperscript{97} Moreover, the appellants asserted that the trial court erred in treating the NTSB investigator’s report as definitive since it had been contradicted by plaintiffs’ expert testimony. This was clearly the situation anticipated by the Supreme Court in \textit{Beech Aircraft v. Rainey}.

\textit{McLain}'s lessons are fundamental. By virtue of 49 C.F.R. § 835, NTSB investigators are neither experts within the limited confines of Rules 702-703 nor necessarily in a position to explain their observations and investigations through the use of lay opinions pursuant to Rule 701. NTSB workloads and training preclude such investigators from being finely tuned to the minutiae of thousands of versions of hundreds of airframes. It is unfair to them to hold them to such standards, given their mission. At the same time, it is equally unwise to disregard the issue of reliability or trustworthiness in procuring and offering their evidence. On the other hand, if evidence of NTSB investigations is not developed and presented, proof of the causes of aviation accidents and incidents may be limited to strained and far-fetched opinions by investigators picking through the remains or to the opinions of employees of the wealthiest litigants, who happen to be privileged insiders to the investigation.

The influence of party participants who are at cross purposes with claimants and with each other, destruction of vital evidence both in the event and in post-crash technical examinations, and the exponentially-growing complexity of aviation equipment illustrate the urgent need for neutral documentation and authentication, both for the safety of the flying public and for private litigants. At the same time, such neutral and reliable documentation and authentication should be admissible in evidence, as it is in any other catastrophe investigated by a public agency other than the NTSB.

No one disputes that the NTSB must be allowed to perform its functions in a neutral and impartial manner. However, it does not necessarily follow that it must do so in a vacuum. If its investigation of a crash is reliable and trustworthy, the evidence should be admitted. If the report or testimony describing the investigation is the unfortunate product of factors which make it unreliable, it should not be used to sway the judge and jury.

As lawyers and judges have always known, stating the rule is simple. It is in applying the rule that the devil is in the details.

\textsuperscript{97} \textit{Id}. at 803.