

AU/ACSC/0143A/97-03

USAF AIRCRAFT MISHAP SAFETY INVESTIGATION
BOARDS
ARE THE RESULTS GETTING PUBLISHED?

A Research Paper

Presented To

The Research Department

Air Command and Staff College

In Partial Fulfillment of the Graduation Requirements of ACSC

by

Maj Randon C. Stewart

March 1997

Report Documentation Page

Report Date 01MAR1997	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle USAF Aircraft Mishap Safety Investigation Boards Are the Results Getting Published?	Contract Number	
	Grant Number	
	Program Element Number	
Author(s) Stewart, Randon C.	Project Number	
	Task Number	
	Work Unit Number	
Performing Organization Name(s) and Address(es) Air Command and Staff College Maxwell AFB, AI 36112	Performing Organization Report Number	
Sponsoring/Monitoring Agency Name(s) and Address(es)	Sponsor/Monitor's Acronym(s)	
	Sponsor/Monitor's Report Number(s)	
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes		
Abstract		
Subject Terms		
Report Classification unclassified	Classification of this page unclassified	
Classification of Abstract unclassified	Limitation of Abstract UU	
Number of Pages 55		

Disclaimer

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the US government or the Department of Defense.

Contents

	<i>Page</i>
DISCLAIMER	ii
LIST OF TABLES	v
PREFACE	vi
ABSTRACT	vii
BACKGROUND AND OVERVIEW	1
Introduction.....	1
Problem.....	2
Thesis	3
Research Significance	4
Scope	4
Review of Related Literature	5
USAF AIRCRAFT MISHAP INVESTIGATIONS	8
Introduction.....	8
Following the Mishap	8
Investigation Responsibility.....	9
Conducting the Investigation.....	11
Summary	12
USAF SAFETY INVESTIGATION BOARD REPORTING	14
Introduction.....	14
Mishap Reporting and Review Process	15
Investigation and Analysis	16
Findings	17
Causes	17
Recommendations.....	19
Minority Opinions.....	20
The Review Cycle.....	21
The Memorandum of Final Evaluation.....	21
Process Effectiveness—An Analysis of Previous Mishap Reports.....	23
The Method of Analysis	23
Findings—A Comparison of SIB Final Reports and the MOFES.....	24

Conclusion.....	27
Criticisms of the Process—The Blue Ribbon Panel Report	27
Charter	27
Findings and Recommendation.....	28
Summary	30
ALTERNATIVE REPORTING PROCEDURES.....	33
Introduction.....	33
The US Army Reporting Process	33
Processing and Review of the Reports.....	35
The US Navy Reporting Process.....	36
Processing and Review of the Reports.....	37
The NTSB Reporting Process.....	38
Summary	39
CONCLUSIONS AND RECOMMENDATIONS.....	41
Introduction.....	41
Controlling and Minimizing Changes.....	41
Minority Reports.....	43
Other Recommendations of Significance	44
Summary	45
BIBLIOGRAPHY	47

Tables

	<i>Page</i>
Table 1. Classes of Aviation Mishaps	2
Table 2. Differences of SIB Reports vs. MOFEs Aug 93-Jan 96.....	24

Preface

The United States Air Force aviation mishap investigation and reporting process has experienced a continuous evolution since its inception. Many changes resulted from critics of the process voicing their concerns through their independent reports. I hope to continue that evolutionary process by providing my criticisms of the current process along with recommendations for improvement.

As an Air Force senior pilot and a trained investigation board member, I would argue that most problems associated with our aircraft mishap investigation process rest not with the actual investigation but rather the reporting that follows. Historically, safety investigation boards have been quite successful at determining probable causes of mishaps and providing recommendations to prevent similar occurrences. However, the USAF is not always as successful at providing independent assessments of their investigations. According to critics, this is caused by too many outside influences affecting the assessment of the boards' reporting. This leads to problems with the credibility of the investigation boards and a loss of confidence in their reports.

Using an analysis of past mishap reports and a review of other independent research completed on the subject, I was able to substantiate some of the concerns raised by critics. Using this information, I provide several recommendations that I believe will improve the independence and effectiveness of the mishap prevention program.

Abstract

The United States Air Force (USAF) has a formal process for conducting investigations of its aircraft mishaps. The system has undergone several changes over the years, each designed to make the process more effective in saving lives and resources. Critics of the current system believe that the USAF has still not gone far enough with their changes. Organizations not directly involved in mishap investigations still have too much influence on what information goes in the memorandum of final evaluation (MOFE), or the Air Force's official position on each mishap. This disrupts the investigation process. As a result of the outside influences, the investigation boards lose credibility and the aviation community loses confidence in their mishap reports. The effectiveness of the program is weakened.

This paper analyzes the concerns of the critics. This is supported by a review of past mishap reports where the author compares safety investigation board reports with their respective MOFEs. Also, the paper reviews comments provided by other research, including a report by the Blue Ribbon Panel on Aviation.

Using this information, the paper provides suggested improvements to the USAF aviation safety mishap reporting process. The improvements minimize the changes that are occurring between the safety investigation board report and the generation of the MOFE. This will revitalize confidence in the mishap reports, resulting in a more effective program that saves more lives and resources.

Chapter 1

Background and Overview

Introduction

Each branch of the US armed services has an aviation safety organization and the civil sector has the Presidential-appointed National Transportation Safety Board (NTSB). Their missions are all similar—to promote aviation safety. Part of their duties requires them to conduct investigations when their aircraft are involved in mishaps. They do this for very specific reasons. The United States Air Force (USAF), for example, conducts their investigations “only to find causes of mishaps in order to take preventive actions.”¹ The NTSB carries out their investigations so that they can recommend safety solutions to other governmental agencies.²

In order for their investigations to be of any benefit, the safety organizations must report their findings and recommended solutions to decision makers who are in positions to correct identified deficiencies. Each organization decides how to accomplish this, and each has established procedures that best fit their needs. To be effective, however, each report must *accurately* reflect the results of the investigation. This research looks at those reporting procedures and, concentrating on the USAF process, provides recommendations for improvements in hopes of creating a safer flying environment.

Problem

The Air Force mishap investigation process has been historically effective in reducing the overall aircraft Class A mishap rate—a measure of the most serious aviation mishaps.³ There are three classes of aviation mishaps classified by the total direct dollar cost of damage and degree of injury or occupational illness (see Figure 1). Recent improvements in the process have accelerated the reduction. However, despite the improvements, some people still believe that the system needs an overhaul in order for it to remain effective. One of the more outspoken critics of the system, Alan Diehl, Ph.D. (a former senior civilian Air Force safety official) believes that the current system allows for “command manipulation of mishap cost and classification” and “sabotaging the reports to please superiors, hide culpability, and avoid embarrassment.”⁴

Table 1. Classes of Aviation Mishaps

	Class A	Class B	Class C
Cost of Damage	\$1M or more	≥\$200K, <\$1M	≥\$10K, <\$200K
Degree of Injury	Fatality or permanent total disability	Permanent partial disability. Inpatient hospitalization of 3 or more persons	Eight or more hours of lost work (not including day of mishap).
Other	Destruction of AF aircraft	NA	NA

Source: AFI 91-204, 22

Fortunately, recent changes to the reporting process have reduced the chances for outside influences on the safety investigation boards’ (SIB) reporting. However, the changes had no impact on the influences affecting Headquarters Air Force Safety Center (HQ AFSC), the agency responsible for generating the Air Force’s *official* position on a mishap. Organizations not directly involved in investigations can, and do, provide

comments about a SIB's report to HQ AFSC. These comments are provided to the AFSC before they generate the memorandum of final evaluation (MOFE), or the Air Force's official position on a mishap. *By not tightly controlling and limiting the amount of these comments and changes that occur as a result of the comments, the Air Force is possibly undermining the SIB's ability to independently assess the mishap.* Not only can this process introduce biases into the reports, but it can also lead to a cascading series of related problems. First, *the board loses credibility within the aviation community.* Any organization or individual that receives a copy of the report through the distribution channels can instigate changes into the MOFE if they can provide a convincing presentation to the AFSC. Second, this creates *a lack of confidence in the SIB report.* When reading the Air Force's position on a mishap (MOFE), an individual does not know who provided the inputs-did they come from the SIB's investigation or from someone that never even saw the mishap site? Finally, *the SIB's inputs are weighted no more heavily than any other input.* The AFSC gives the SIB's findings and recommendations the same amount of attention as the other inputs. As a result, the SIB recommendations may never be acted upon despite having come from a trained group of investigators who are extremely familiar with the mishap.

Thesis

Individuals and organizations become naturally defensive when blame (cause) for an aircraft mishap is associated with their name. This defensive mode compels many individuals to routinely question the assignment of cause in mishap reports and redirect the blame if at all possible. By allowing too many inputs from the individuals not directly

involved in mishap investigations and not controlling the changes that occur because of their comments, the Air Force has weakened the effectiveness of their mishap investigation and reporting process. Changes in the reporting must be made if it is to remain effective. Using a review of several different safety organizations' processes, the author proposes the changes that are necessary to improve the reporting process and produce a more effective mishap prevention program.

Research Significance

General Fogelman, in a message to his Air Force commanders that followed an out-briefing from the Blue Ribbon Panel on Aviation Safety, clearly stated the importance of having an effective and reliable mishap investigation and reporting program. In the message, he said "Confidence in our safety program is critical to mishap prevention and mishap prevention is important to save lives and resources."⁵ This research helps boost that confidence level by providing recommendations for changes to the current reporting process. This, in turn, can have an impact on the number of lives and critical resources saved through the prevention program in the years to come.

Scope

This research focuses on the reporting and recommendation process that takes place following the formal investigation of a USAF aircraft mishap. The paper discusses some of the procedures used to conduct the investigations, but only in enough detail to provide a background for the reader. It also covers the reporting procedures used by other aviation organizations, but this review is limited to the US Army, US Navy, and the NTSB. Additionally, all discussions refer to Class A mishaps (since they are the most

costly, both in terms of lives and money). However, the concepts apply equally well to all categories of mishaps. Finally, the author makes an assumption that the Air Force will not radically change the make-up of their SIBs in the near future. Many individuals have offered alternative suggestions in the past (e.g., having an independent agency conduct investigations) only to have them turned down by the Air Force. Therefore, this research looks for more moderate and evolutionary ways to improve the output of the current system.

Review of Related Literature

With the focus of this research centering on the amount of information that gets changed between the SIB report and the MOFE, the author spent a great deal of time reviewing past SIB reports and their corresponding MOFEs. The comparison of the two helped determine exactly how much of the information in the SIB report the Air Force uses when they generate the MOFE. Additionally, the author reviewed numerous newspaper and magazine articles that were specifically written about this problem in order to gain insight into the critics' concerns.

To better understand the requirements and restrictions placed on the investigating team when producing a report, the research also covered the Air Force's guidance on aircraft mishap investigations. This included a review of AFI 91-202, *The US Air Force Mishap Prevention Program*, as well as AFI 91-204, *Safety Investigation and Reports*. These instructions provide the foundation for mishap investigations and reports in the USAF.

A third source of information, *The Blue Ribbon Panel on Aviation Safety Report*, produced at the request of the General Fogelman, was instrumental in the research. This report culminated a two-month independent study that took a broad look at aviation safety within the Air Force. It included findings and recommendations of the Panel and results of a questionnaire conducted within the Air Force to determine the perceptions of aviation and safety personnel toward the safety program. This Blue Ribbon Report was a catalyst to several recent changes to the USAF investigation process.

Next, the author reviewed reporting guidance used by other safety organization of the US Government, namely Army Regulation 385-40, *Accident Reporting and Record*, Army Pamphlet 385-40, *Army Accident Investigation and Reporting*, Chief of Naval Operations Instruction 3750.6Q, *Naval Aviation Safety Program*, and the National Transportation Safety Board (NTSB) *Report on Proceedings*, a series of documents detailing the NTSB's mishap investigation process in the civilian sector. The intent was to search for more effective methods of reporting that could be adopted by the USAF.

Finally, the research included a review of studies that individuals conducted on different mishap investigation and reporting processes. Although several of the products concentrated on the actual investigation process versus generating a report, the information was still valuable in providing different perspectives on the overall process.

Notes

¹Air Force Instruction (AFI) 91-204, *Safety Investigations and Reports*, 1 December 1996, 7.

²“Too Slow to Act on Airline Safety?”, *Consumer Reports*, June 1995, 385.

³AFI 91-204, 22. There are three classes of aviation mishaps classified by the total direct dollar cost of damage and degree of injury or occupational illness.

⁴Mark Thompson, “Way, Way Off in the Wild Blue Yonder,” *Time*, 29 May 1995, 32.

Notes

⁵Ibid.

Chapter 2

USAF Aircraft Mishap Investigations

Introduction

As an overview to the steps leading up to a USAF safety investigation board formal report, this chapter provides a synopsis of the events that take place following a mishap. It stops short of the generation of the actual report as this is discussed in detail in the next chapter. The purpose is to set the stage for the reader and permit a basic understanding of the current process and the reasoning behind the Air Force's desire to produce a high-quality, independent report for each mishap investigation. Once again, the following discussion assumes a Class A mishap unless stated otherwise.

Following the Mishap

Upon notification of a USAF aircraft mishap, the nearest Air Force base is responsible for most of the logistical requirements involved in an emergency of this nature. This includes such things as fire fighting, rescue and recovery, and emergency medical care. Additionally, the base must establish an interim SIB to “protect and preserve vital evidence pending the arrival of the formal SIB.”¹ This board remains convened only until a formal board arrives on scene. However, because of the timing, they normally have to release the first electronically transmitted message about the mishap. This message, often

referred to as the “8-hour report” or preliminary report, contains purely factual information and is releasable to the public. It gives a short, narrative description of what happened with the mishap.²

If the incident involves aircraft other than those belonging to the Air Force, the rules of the investigation change somewhat. For example, if there is civil aircraft involvement the NTSB conducts the investigation. However, the Air Force may take part in the investigation and can conduct its own investigation so long as it does not interfere with the NTSB inquiry.³ In any case, when the Air Force conducts an investigation, it follows the guidance established in AFI 91-204.

Investigation Responsibility

While the interim SIB gathers and preserves early evidence from the mishap scene, the commander of the major command (MAJCOM/CC) that is accountable for the mishap appoints individuals to conduct the formal investigation. This responsibility (known as convening authority) is given to an officer of the highest rank within the Air Force and shall not be delegated to a subordinate commander.⁴

The formal investigation board normally consists of at least six “primary members” and one “nonprimary member.” The primary members include: a president, investigating officer, pilot member, maintenance member, medical officer, and a representative from the Air Force Safety Center (this individual was added as a result of a recent change to AFI 91-204). The nonprimary member acts as a recorder and handles most administrative issues. On a rare occasion a sole investigating officer may conduct the investigation, depending on severity of injury/damage, possible public reaction, future mishap potential, etc. The convening authority makes this determination.⁵

In addition to the seven-member SIB discussed above, the convening authority can add other individuals as the need arises. Those may include the following: an air traffic control officer, a weather officer, a life support officer (all primary members), an FAA or NTSB representative, additional crewmembers, and technical personnel with expertise in specific systems (nonprimary members).⁶ The intent of including these additional members is to ensure that even those areas where the primary members may not be familiar are adequately addressed.

To enhance the investigation skills of the board members, the Air Force recently instituted changes to their SIB training program. Training for the board members had been identified in several prior independent studies as an area that needed improvement. The Air Force finally took steps to correct this problem after the Blue Ribbon Panel on Aviation Safety identified the deficiencies in their report.⁷ The correction (included in a recent change to Air Force safety guidance) requires all board presidents and investigating officers to be graduates of their respective courses provided by the Air Force Safety Center (AFSC) before performing those duties on an investigation board. This change should aid the investigation process and produce a better quality report.

In addition to the required training, there are also other qualifying factors that individuals must meet before serving as members of a particular SIB. Those include: at least one member be equal to or higher in rank than the most senior individual directly involved in the mishap, and SIB members should have no personal interest in the outcome of the investigation.⁸ These requirements help to minimize biases in the investigation and reporting process.

Conducting the Investigation

Once the convening authority assembles a formal SIB, they have 30 calendar days to conduct the investigation and produce a formal report (the time period can be extended if the need is justified).⁹ The board spends a lot of this time gathering and reviewing physical and documentary materials since they are some of the most important forms of evidence. To help with this, the Air Force gives the SIB “inherent priorities over other activities and investigations connected to the mishap, including the right to *impound* Air Force property involved in the mishap.”¹⁰

Witness interviews provide another valuable source of information. Witnesses include those individuals involved in the mishap, anyone who saw it happen, and individuals whose training and/or experience makes them a technical expert in a particular field related to the mishap. To encourage open communications of the witnesses with the SIB, the Air Force provides them a promise of confidentiality. This promise, granted under federal law, ensures that the information received from the witnesses of safety mishap investigations is protected from disclosure to unauthorized personnel. Distribution of the information provided in their statements is limited to those “persons and agencies whose duties include relevant mishap responsibilities.”¹¹

As they continue to compile information, the board uses their training, professional knowledge, and experience to try to fit the pieces of the mishap puzzle together. They do this by attempting to reconstruct the events leading up to the mishap so that they can determine not only what caused the mishap but also what needs to be done to prevent similar incidents. The board continues this process until they are confident that they have

determined the probable cause(s) of the mishap and have identified the areas that need correcting to prevent a similar mishap from occurring in the future.

Summary

As evidenced by the preceding paragraphs, the Air Force expends a great deal of effort and resources trying to provide the SIB with the necessary tools to determine the causes of a mishap. This includes everything from 6-week training courses to authorization to impound Air Force assets as necessary to determine the causes of mishaps. Additionally, the Air Force places a lot of responsibility on the SIB with high expectations that they will produce a final report that not only identifies the causes of a mishap but also provides recommendations for prevention of future occurrences. In fact, the SIB is the only group that the Air Force uses to conduct their mishap investigations for this purpose. Thus, the Air Force must place total responsibility and a high degree of confidence in the SIB and their investigation ability.

As a means of measuring this confidence level, the next chapter looks at the outcome of the investigation (the SIB report) and determines how much of that information the AFSC uses when generating the MOFE.

Notes

¹Air Force Instruction (AFI) 91-204, *Safety Investigations and Reports*, 1 December 1996, 8.

²*Ibid.*, 43.

³*Ibid.*, 32.

⁴*Ibid.*, 9.

⁵*Ibid.*, 29.

⁶*Ibid.*, 29.

⁷VADM (Ret) Donald D. Engen, "The Blue Ribbon Panel on Aviation Safety," (Washington D.C.: Department of the Air Force, 5 September 1995), 14. The Panel

Notes

found a general lack of trained SIB presidents in some MAJCOMs and an overall shortage of safety school slots versus the training requirements.

⁸AFI 91-204, 28-29.

⁹Ibid., 27.

¹⁰Ibid., 32.

¹¹Ibid., 14.

Chapter 3

USAF Safety Investigation Board Reporting

Introduction

As we have seen in the preceding pages, the SIB spends up to a month determining the causes of a mishap for the sole purpose of future prevention. The culmination of this effort is a document known as the formal (or final) report. This report records the results of the investigation and makes recommendations to correct identified deficiencies. It should be an independent assessment of what caused a mishap and what the Air Force needs to do to ensure that a similar occurrence does not happen in the future. Unfortunately, criticisms of the process indicate that it is not as independent or effective as it could be. The critics, some of which have worked under the current process on a daily basis, suggest that the information in the SIB report is changed so much by the time the AFSC puts it into the MOFE that it no longer resembles what the SIB originally intended. These allegations, whether true or not, reduce the credibility of the SIBs, create a lack of confidence in the SIB process, and reduce the effectiveness of the mishap prevention program.

This chapter discusses the reporting process and its criticisms while looking for areas for improvement. This is accomplished in a three-step process. First, the author

addresses the reporting and review process, including the requirements that the Air Force currently places on the board. This provides the reader an understanding of what the Air Force expects from the SIB. Next, the research covers a review of previous Class A mishap reports to determine how well the process has worked in the past. Finally, it addresses issues that were identified by the Blue Ribbon Panel on Aviation Safety. By using these three steps, the author not only explains how the process is supposed to work, but also highlights problems that are generated by following that process.

Mishap Reporting and Review Process

The SIB produces the formal report to ensure that the results of their investigation are disseminated quickly and properly recorded for future reference. The report “provides a narrative of the mishap sequence of events, states the mishap’s causes, tells what corrective actions have been taken, and recommends additional preventative actions.”¹ It can have one or two parts, but must be in two parts if it contains privileged information (the latter being the norm for Class A mishaps). Part I of the report, *Facts*, contains only factual information that is releasable by the Air Force to the public; while Part II, *SIB or Investigator Analysis* (the privileged section) contains the SIB or investigator’s analysis and conclusions and is not releasable in whole or in part.²

Both parts of a mishap report are important for obvious reasons. However, given that Part I is basically a statement of facts and requires little interpretation, this paper concentrates on Part II, the analytical section. Specifically, the author addresses the information found at Tab T of Part II, the narrative section. The Air Force refers to this segment as “the most important part of the report.”³ It ties together all of the loose ends

of the report and lists the chain of events that led up to the mishap. Additionally, it includes recommendations that the SIB believes will help to prevent similar occurrences. The following paragraphs discuss some of the more important parts of Tab T.

Investigation and Analysis

This portion of the report is sometimes referred to as “30 days of work on 3 pages.”⁴ Here, the SIB uses their previous training, individual expertise, and analytical thinking to summarize what they believe to be the chain of events that led to the mishap. There are cases where the investigators cannot determine what caused the mishap, but those are rare. Generally, the section tells the *what* and *why* of the mishap. It provides an overview of the investigation and describes in detail areas that the SIB determined to be important to the investigation. The narrative ends with the SIB’s conclusions on what they believe caused the mishap. This summary provides the background for the sections that follow. These sections, which include *Findings*, *Causes*, and, *Recommendations* provide an executive summary of the narrative in a bullet format.⁵

The analysis section plays an extremely important role during the report review process as you will see in the second part of this chapter. When a reviewer has questions about the validity of a finding, cause, or recommendation, he/she must be able to reference the analysis section and find the answers. The reviewer cannot go to the SIB for an explanation because the Air Force disbands the board after completion of the SIB report.

Findings

Findings are “statements of significant events or conditions leading to the mishap.” The SIB makes the “significant event” determination based upon the available evidence and the SIB members’ *professional knowledge* and *good judgment*.⁶ Essentially, the findings are a synopsis of the significant events or an executive summary of the investigation and analysis section. As such, the findings receive a lot of scrutiny during the review process of the formal report, becoming one of the most politically controversial areas of the report.

In an attempt to alleviate some of the debates over the findings, HQ AFSC provides specific guidance on what the findings should contain. Each should be a single, correctable event or condition (not necessarily causal) and an essential step in the mishap sequence. The SIB should list the findings in chronological order, and they can actually start long before the mishap aircraft even got airborne. “In some cases the event sequence begins long before the actual mishap sequence with such things as design problems, improperly written directives, or an inadequate training program.”⁷ Therefore, each finding does not have to come directly from the mishap being investigated, but can be a result of an action or lack of action taken from previous mishap reports. This understanding will also become important as we review historical reports in the next section.

Causes

After the findings have all been tallied by the investigators, the SIB is also responsible for addressing the cause(s) of the mishap. The Air Force defines a cause as “a deficiency the correction, elimination, or avoidance of which would likely have prevented or

mitigated the mishap damage or significant injury.”⁸ Causes can either start or sustain the mishap sequence.⁹ To determine cause, the Air Force expects the SIB to apply the “reasonable person concept.” If the performance or decision of the individual involved was reasonable under the given conditions, the SIB should *not* consider it a cause.

Once the SIB determines a finding to be a cause, they annotate this in the report by placing CAUSE in front of the applicable finding. The SIB then assigns responsibility for that cause through a methodology known as “category-agent-reason (CAR).” An example would be *Operations-Directives-MAJCOM* in a case where the SIB believed that MAJCOM-level guidance or directives were a cause in the mishap. This methodology aids the investigators in two ways. It helps them categorize causal findings and also helps them to write clear and concise cause statements.¹⁰

Since causes assign fault to individuals or organizations, reviewers of the reports often critique them heavily. Even though the intent of assigning cause is not to place blame but rather to identify areas needing improvement, many organizations still feel as if they are being singled out by the process. To avoid this, they routinely question the assignment of cause in the reports and have them changed if possible. This is one area that critics such as Dr. Diehl want to see changed. They believe that there is too much outside influence and too little control by the Air Force over the number of comments being provided to the AFSC during the generation of the MOFE. The SIB comes up with their conclusions based upon all of the evidence they uncovered during their investigation. However, by the time the AFSC receives all of the comments and generates their MOFE, they often paint a different picture than what the SIB had intended.

Recommendations

The recommendations are the “purpose for the process.”¹¹ They are, as determined or validated by the SIB, feasible solutions to the causes that generated the mishap. The author uses the term validated here to indicate that the SIB does not generate recommendations, or conduct any part of the investigation, in a vacuum. The SIB accepts inputs from witnesses, technical experts, and many others to assist their investigation. However, like the rest of the investigation, the SIB needs the inputs *before* they produce their final report so that they can determine what to put in the report. After all, the SIB members are the investigation experts and, therefore, should have the authority to determine which recommendations are feasible, related to specific causes, and have good chances of preventing similar mishaps in the future.

With each recommendation, the SIB also assigns an action agency. These agencies will ultimately be responsible for ensuring that someone corrects the identified deficiencies. However, at this point in the process the recommendations are not directive; they are only *recommendations*. They do not become directive until finalized in the MOFE. The author discusses this in more detail later in this chapter.

One final note about the recommendations section needs to be brought to your attention. The SIB also has the authority to list, as a subparagraph to the recommendations, *Other Recommendations of Significance*. In this paragraph the SIB lists items that they uncovered during the investigation that do not pertain directly to the mishap but may prevent or mitigate other problems or mishaps.¹² Unfortunately, the AFSC does not transfer this information into the MOFE, and hence is not tracked or held accountable to any particular organization. This creates somewhat of a dilemma. AFI 91-

204 provides several paragraphs of instruction to the SIB members on how to complete the section, suggesting that the information is important. However, the AFSC gives the information very little emphasis once they receive it. By not listing the information in the MOFE, the AFSC gives the impression that the recommendations are not nearly as important as rest of the report. As a result, SIBs may place much less emphasis in this area even though the recommendations could potentially prevent future mishaps. The Air Force must make changes to the procedures for handling these recommendations if they expect this program to continue working effectively. The author discusses this further in Chapter 5.

Minority Opinions

Throughout the investigation, there are obvious opportunities for SIB members to disagree on their findings, causes, or recommendations. To rectify this, the AFSC established a provision known as “minority reports” for those times when the board members cannot find a way to come to agreement. AFI 91-204 highly encourages the SIB members to work out their disagreements yet still establishes provisions for those times when agreements are not reached. This alternative permits individual dissenting members to submit their own report as an attachment to the formal report. The minority report contains the dissenting member’s opinion on why he/she disagrees with the other SIB members and also lists the findings, causes, or recommendations that were different from the majority report. However, no matter how many members agree with it, the SIB must title the report “minority.” By definition, the formal report, as signed by the SIB president, is the majority report regardless of how many, if any, other members agree with the report. In fact, AFI 91-204 requires that the SIB title any report that includes findings

or causes that disagree with the SIB president as a “minority report,” regardless of the number of individuals who sign it.¹³ Here again, what may be significant findings will go untracked by the MOFE process.

The Review Cycle

Once the SIB completes the investigation and *finalizes their report* (a recent change, to be discussed later), they must brief the convening authority on the results. Following the briefing the convening authority, being the individual that originally assembled the board, has three options. He can either accept the report as it stands, accept it as is with comments added, or reconvene the SIB for further investigation. He has the authority to continue the last option (further investigation) until he is satisfied with the report.¹⁴

Although the report is in final form prior to briefing the convening authority, the SIB does not release it for distribution until after the convening authority approves it, for obvious reasons. Once okayed for release (with or without comments), the Air Force limits distribution to the AFSC, the organization that possessed the aircraft, any MAJCOMs that can who may need the results of the investigation, and a list of others.¹⁵ The Air Force wants to get the information to those who can use it effectively for mishap prevention yet keep it away from individuals who may have ulterior motives (such as filing lawsuits). Remember, the intent of this process is not to place blame but to learn lessons from others’ mistakes and prevent recurrence.

The Memorandum of Final Evaluation

Although the SIB receives a command endorsement on their report and makes distribution, their product is not the Air Force’s final position on the mishap. Instead, HQ

AFSC sends out a message to those organizations and individuals that received a copy of the formal report requesting comments and/or concurrence within 30 days. After receiving all comments, endorsements, and recommendations for changes, HQ AFSC generates a draft MOFE based on the SIB report and the additional information they receive. This MOFE then becomes the *final* Air Force position on the mishap after being signed by the Air Force Chief of Safety.¹⁶

In generating the MOFE the AFSC *considers* all inputs from the convening MAJCOM, other agencies, and witness statements and includes an in-depth review of the SIB's report.¹⁷ However, the MOFE is not necessarily a compilation of the preceding information but rather HQ AFSC's opinion of the mishap, based on all of the information they received. In other words, the final say on what/who caused the mishap and what everyone should learn from it rests not with the SIB but with HQ AFSC and the Air Force Chief of Safety. This ability of a third party to interpret and freely change the results of a SIB's report leads critics to believe that the Air Force lacks the desire or ability to control changes to the reports.

Up to this point in the process (SIB report completed), no one has really been able to challenge the SIB's opinion or actions on anything they have done. This is especially true now that the recent change to AFI 91-204 requires the SIB to have their report finalized before briefing anyone, including the convening authority. Even the convening authority has to justify his reasoning for requiring the SIB to reconvene if he is not satisfied with their investigation. However, despite the recent changes, individuals not directly involved in the investigation still have opportunities to dispute and influence the final results of the investigation during the generation of the MOFE. These opportunities for inputs by third

parties, if not controlled, create a loss of credibility among SIBs and a dwindling confidence level in their reports.

According to the AFSC, they do solicit comments if they are going to make substantive changes to any findings, causes, or recommendations that were in the SIB report. They reportedly do this to indicate that they do not make the changes in a vacuum. However, they *do not* ask any members of the SIB about the changes.¹⁸ You would expect that, if the AFSC is going to query anyone, they would ask the SIB members. This begs the question: how much confidence does the Air Force place in the report that the SIB provides? Are the changes that the AFSC makes mostly grammatical or formatting changes in which case they would not necessarily need to consult the SIB, or are they substantially changing the outcomes of the investigations? If the latter is the case, one would expect them to consult at least the SIB President to try to determine the boards thought process when they put the particular information in the report. Perhaps the verbiage in the report could be reworded to make both parties happy yet not change the intent of the information. The next section tries to answer some of those questions through a review of past reports and an analysis of changes that the AFSC generated via the MOFE.

Process Effectiveness—An Analysis of Previous Mishap Reports

The Method of Analysis

The author reviewed Class A mishap reports from the period of August 1993 through September 1996. This review helped determine exactly how much of the information in the SIB reports the AFSC uses in generating the MOFEs. The review covered most but

not all of the Class A mishap during this period because some of the mishap report packages were absent MOFEs for one reason or another. Nevertheless, the review covered 82 reports. The author is not trying to suggest that the sample size is a statistically significant sample; however, it is useful as an indicator of how the AFSC uses the SIB reports.

Findings—A Comparison of SIB Final Reports and the MOFEs

In the review of 82 Class A reports of mishaps that occurred between August 1993 and September 1996 only *five* had *no changes* between what the SIB listed as findings, causes (including CAR classifications), and recommendations and what the AFSC put in their MOFE. That is less than a six percent success rate as far as the SIBs are concerned! Granted, many people would consider some of the changes insignificant, such as an addition of a recommendation or a change to the CAR identification. However, the total number of changes for the 82 reports totaled over 430 for an average of better than five changes per report. Table 2 briefly summarizes the changes.

Table 2. Differences of SIB Reports vs. MOFEs Aug 93-Jan 96

Changes	Added	Deleted	Revised	Totals
Findings	93	37	67	197
(Cause)	39	34	N/A	73
Recommendations	41	37	35	113
“Car” Descriptions	N/A	N/A	44	44
Chronological Order ^a	N/A	N/A	9	9
				436

Source: USAF Class A Mishap Reports

^aEach mishap package where a MOFE had findings in a different order than the corresponding SIB report counted as “1.”

The reasons for the changes obviously varied from report to report. However, in general, there were some reasons that appeared to be more dominant throughout. In a lot

of cases HQ AFSC *added* new causal findings to reports to show that SIBs had uncovered similar problems in the past, yet the Air Force had not corrected them for whatever reason. A common example was an engine malfunction caused by a design problem. This problem caused several mishaps either because the Air Force elected to maintain the current design or did not install an updated engine in the aircraft prior to its mishap. In other cases, the AFSC made many *changes* to the findings for clarity. Finally, they frequently *changed* or *added* recommendations to broaden their scope to other aircraft or MAJCOMs. The remainder of the changes were too varied to categorize.

Some of the changes made by the AFSC were obvious corrections to align the reports with published guidance. Few people would argue with those. Others appeared to be justifiable changes, however that determination was hard to make since the author was not part of the original investigation. There were still others where the significance of the changes was enough to change the outcome of the investigation. For example, the way the SIB reported one mishap, the causes clearly pointed at a mechanical failure. However, by the time the AFSC had made changes and generated the MOFE, they had redirected the emphasis to pilot error.

In other instances the changes were even more extreme. In one example, the AFSC made it very clear that they had no confidence in the SIB mishap report. They stated “SE (HQ AFSC) nonconcurred with most mishap findings because they (SIB) failed to identify causes of the mishap.” This statement, in the author’s opinion, was quite significant and indicated a breakdown in the system. In this case, the convening authority had already approved the report, yet HQ AFSC considered it to be so poorly written that they had to completely revise it. The rhetorical question in cases like this as well as the one discussed

in the preceding paragraph is, how can a group of individuals who were not part of the investigation come in after the fact and write a new Part II of a report using Part I of the same report? If the AFSC did not trust Part II, why would they trust Part I enough to use it as a bases for their new Part II? If a report is that bad, should there not have been another investigation and report generated?

Next, the author studied the reports from a different perspective. Assuming that the lack of mandatory training for SIB members may have caused many of the problems in the reports, the author looked for improvements in the more recent reports. With HQ AFSC adding one of their members to the SIBs after October 1, 1995, the author expected the newer reports would have fewer changes.¹⁹ However, a review of the 16 reports since that date revealed a total of 92 changes for an average of 5.75 changes per report. This average is about the same as the previous reports. Again, this sample size is too small to make any statistically significant determinations. However, the sample appears to indicate that the additional member did not have any impact, at least for the 16 reports the author reviewed. Further research conducted after more data becomes available will better indicate the effects of adding the additional member.

Apparently, the problem is more deeply rooted than just the need for a HQ AFSC member on each SIB. Training may have been at least part of the problem in the past, but it should no longer be an issue now that HQ AFSC requires *all* SIB presidents and investigating officers to attend training before conducting any investigations. The author would instead suggest that the problem has developed over time as a result of the growing lack of independence of the SIBs caused by the ability of organizations not directly involved in investigations to heavily influence the reports. This process of changing

reports has become habit forming within the safety community. The opportunity to freely influence the SIB reports and introduce changes via the MOFEs *needs tighter controls*. The author provides recommendations for improvement in Chapter 5.

Conclusion

This review has highlighted the fact that the AFSC is not willing to accept the SIB's reports as the final position on many mishaps. They may be able to justify their reasoning for changes in many cases. However, the AFSC cannot continue to use SIB reports only as starting points to build MOFEs. This causes the cascading problems that the author mentioned at the beginning of this paper: the loss of SIB credibility, lack of confidence in SIB reports, and an unfair weighting of the SIB's input. The Air Force must take measures to correct these problems.

Up to this point in the chapter, we have discussed the requirements involved in producing the SIB report and the MOFE. We also looked at some of the problems that occur when the two reports do not agree. Next, the report highlights several areas of the reporting process that an independent panel felt needed improvement if the system is to remain effective.

Criticisms of the Process—The Blue Ribbon Panel Report

Charter

As a result of 17 Class A mishaps in less than six months (nine in the final two months) and numerous allegations concerning the quality and objectivity of the Air Force safety program, General Fogelman convened a Blue Ribbon Panel on Aviation Safety on 23 June 1995. He gave the panel 60 days to conduct their independent assessment of the

safety program and report back to him on their findings. He instructed the team to review, as a minimum, organization, staffing, and the investigative procedures used by the Air Force in support of the USAF Mishap Prevention Program. The third area, investigative procedures, included a look at “procedures for completion, forwarding, endorsement, and final evaluation of safety investigation board formal reports.”²⁰

The Panel completed a broad look at the safety program. Their review, like this research, concentrated on Class A mishap investigation and reporting procedures. This resulted in several findings and recommendations, several of which the AFSC has incorporated into AFI 91-204. However, since this research is concentrating on the reporting process that follows the investigations, the author only discusses those particular areas of the Panel report that address the post-SIB process.

Findings and Recommendation

In essence, the review resulted in two major conclusions. The first stated that the current organizational structure of the safety program is appropriate for the Air Force.

The second conclusion is strongly related to this research:

The Safety Investigation Board process must be strengthened to ensure that the report of the Board reflects precisely the results of the investigation and can not [be] changed by the people in the chain of command. It is the strongly held view of the panel that the integrity of the process depends upon the independence of the SIB and an open Command endorsement process.²¹

The Panel came to this conclusion not only as a result of their independent research but also from a survey of 600 Air Force personnel who have had dealings with the mishap prevention program. As part of the survey, a vast majority of those polled believed that the system was working properly, i.e., all relevant data is being collected, considered, and

reported under the current process. However, the Panel still felt that there was significant concern among those polled:

Notwithstanding this overall positive perception regarding the mishap investigation process, there are too many service members who believe that SIB results are occasionally driven by factors outside of the board process. The fact that a significant portion of those holding these views have had SIB experience is an important consideration in developing recommendations.²²

During the time-frame that the Panel conducted their investigation, governing regulations required the SIB to brief the convening authority on the results of their investigation within the 30 day window allowed for the investigation. Additionally, it had become common practice to brief the chain of command prior to briefing the MAJCOM/CC so that they could “help” improve the report before it went to the MAJCOM/CC. This outside influence, as innocent as it may have seemed at the time, was destroying the objectivity of the SIB report. This led to the Panel’s comment mentioned above as well as a recommendation to “require that the SIB Report reflect precisely the results of the investigation in order to preserve the integrity of the process.”²³

While the Panel highlighted the perception problem with the SIB report, the author would take it one step further and apply the same considerations to the development of the MOFE. As was indicated in the previous section, *Historical Review of Previous Class A Mishaps*, there are still a lot of changes taking place between the generation of the SIB report and the MOFE. Outside influences cause these changes just as they caused the changes to SIB reports of the past. To avoid the same problems that occurred with the SIB reports, the Air Force must also enforce a similar level of control at the MOFE level. The author is not suggesting that the MAJCOM/CC and his staff, nor others who can

provide insightful thought into the process, should not have a say in the investigations and reporting of their aircraft. However, the Air Force must maintain a tight set of controls to monitor and limit changes that occur during MOFE generation. The author discusses this again in Chapter 5.

One last area that needs to be discussed here is the Panel's recommendation to include an AFSC representative on the SIB.²⁴ The author alluded to the fact that the AFSC has since instituted this procedure. Although the change may not be as effective as everyone had hoped, it does provide some benefits and should be continued. The Panel suggested the change for several reasons. We will discuss two reasons that apply to this research. First, an AFSC member provides headquarters-level recommendations to the other board members for consideration *before* their report is finalized. This is especially important since the AFSC does not consult SIB members about the changes they make to the reports via the MOFE. Additionally, inclusion of the AFSC member helps reduce the number of administrative-type changes that the AFSC makes to the SIB report. With fewer differences between the SIB report and the MOFE, the two may once again become nearly synonymous, thereby enhancing the SIB's credibility and the confidence that Air Force has in the SIB report.

Summary

This chapter started out describing what the Air Force expects of a SIB when they produce their final report. Using this knowledge, we then took an historical look at past reports to determine how much of the SIBs' report is used by the Air Force and HQ AFSC in generating the MOFEs. Finally, we reviewed some of the findings and

recommendations of the Blue Ribbon Panel in order to provide a second and supporting view that there are areas of the reporting process that need improving. With each section of the chapter, it became more apparent that there is, as a minimum, a perceived loss of credibility among the SIBs and an overall lack of confidence in the SIB reports. The reasons for this are many. The author highlighted the ones he felt were applicable. No matter what the reasons, the negative impacts can have lasting effects on the quality of future SIB reports and the safety program as a whole. The next chapter takes the next logical step and looks for ways to improve the process. This is done through a review of other organizations' reporting processes.

Notes

¹Air Force Instruction (AFI) 91-204, *Safety Investigations and Reports*, 1 December 1996, 44.

²*Ibid.*, 76-78.

³*Ibid.*, 78.

⁴Doug Brosveen, *Aircraft Mishap Investigation Techniques*, (Kirtland AFB, N.M.: Southern California Safety Institute, 1994), 9.

⁵AFI 91-204, 37.

⁶Brosveen, 9.

⁷AFI 91-204, 37.

⁸*Ibid.*, 38.

⁹Brosveen, 9.

¹⁰AFI 91-204, 38.

¹¹Brosveen, 10.

¹²AFI 91-204, 39.

¹³*Ibid.*, 80.

¹⁴*Ibid.*, 81.

¹⁵*Ibid.*, 91.

¹⁶*Ibid.*, 104-105. If at any time during the review process the convening authority or higher authority learns of facts that were not available to the SIB or shed new light on the findings and recommendations, he or she may reopen the investigation or list the facts in the command endorsement.

¹⁷*Ibid.*, 103.

¹⁸Ltc Dyer, Headquarters Air Force Safety Center, interviewed by author, 4 February 1997. Ltc Dyer, who is charge of starting the MOFE for each mishap, indicated that SIB members are not contacted about the changes. However, with the recent inclusion of a

Notes

AFSC member on the SIB, he can and sometimes does ask him/her about the thought process behind a particular finding/cause/recommendation.

¹⁹Dyer, 4 February 1997.

²⁰VADM (Ret) Donald D. Engen, "The Blue Ribbon Panel on Aviation Safety," (Washington D.C.: Department of the Air Force, 5 September 1995), A1-2.

²¹Ibid., i.

²²Ibid., 9.

²³Ibid., 17.

²⁴Ibid., 18. The Panel recommended that an experienced AFSC representative be included as a voting (primary) member for each Class A SIB. This recommendation was incorporated into the next revision of AFI 91-204.

Chapter 4

Alternative Reporting Procedures

Introduction

With at least four different and fairly autonomous organizations conducting aviation mishap investigations in the US, there are varying methods of reporting the results of the investigations. Each organization has its own set of procedures that are best suited for the way it operates. It is possible, however, that the Air Force may be able to incorporate some of these organizations' procedures into their process to enhance their reporting program. To determine this, we will cover the reporting procedures of the US Army, US Navy, and the NTSB. The chapter concentrates on only the major differences between the processes instead of covering each program in its entirety. The author may highlight unique differences in the investigating procedures, but only to help the reader better understand the reporting processes.

The US Army Reporting Process

The Army's method of investigating and reporting, as defined in Army Regulation 385-40 and Army Pamphlet 385-40, is similar to that of the Air Force. However, their focus of the investigation appears to be more on the short-term causes of the mishap. They conduct their investigations to "identify the *immediate* mistake(s)/error(s)/failure(s),

and the system inadequacy(ies) which may have caused, or contributed to, the accident being investigated.” Their purpose, like the Air Force, is to “provide recommendations that will remedy the causes and minimize the chances for similar recurrences.”¹

The Army’s makeup of the investigating board is different from the Air Force’s. According to Army guidance, they have two different types of boards that they may convene. At the discretion of the Director of Army Safety, either a centralized accident investigation (CAI) board, consisting of members of the headquarters-level US Army Safety Center (USASC), or an installation-level accident investigation (IAI) board conducts the investigation and reporting.² However, according to a USASC representative, the Director of Army Safety requires a CAI for all Class A and selected Class B aircraft mishaps.³

To better train the investigating members and improve the quality of the reports, each USASC investigator must conduct an investigation as a nonvoting member prior to serving as a voting member or recorder. Once an individual completes a formal training course and completes the field training, he/she can act as a voting member on a board. Even with these requirements, USASC still pairs the less experienced members with more experienced investigators.⁴

The investigators follow a format that is very similar to that described in Chapter 2. This even includes the promise of confidentiality offered to the witnesses. As a result, the Army also categorizes their aviation mishap reports as *limited use* and limits their distribution.⁵

Processing and Review of the Reports

After completing the investigation, the team produces a draft report. It consists of several standardized forms very much like those of the Air Force. One difference is the style in which the Army writes their findings. Unlike the very succinct findings found in Air Force reports, the Army's findings are more descriptive. This may cause some duplication from the narrative section, but it allows the board to better explain their thoughts and may result in fewer changes during the review process.

After completing the draft, the investigating field team sends a copy to the USASC for review. The USASC compiles an informal group, known as a *murder board*, to review the report and make possible recommendations for improvement.⁶ This permits an independent assessment of the board's report by *qualified* personnel (looking for completeness and technical accuracy) yet avoids undue influence by those that might be affected by the outcome of the report. This can ultimately add to the credibility of the report.

When the CAI investigators finalize their report, they forward a copy to the unit experiencing the accident and another directly to the appropriate major command (MACOM). They have 60 days from the date of the accident to accomplish this. The unit level commander either concurs or nonconcur in writing and returns the report to the MACOM. The MACOM then provides comments and sends the original copy back to the USASC within 90 days of the original transmittal.⁷

The US Navy Reporting Process

While the US Army requires their headquarters-level investigators to conduct their Class A mishap investigations, the US Navy operates at the opposite end of the spectrum by having squadron-level individuals conduct their investigations. All aircraft reporting custodians (Navy/Marine squadron unit or detachment) are responsible for maintaining standing Aircraft Mishap Boards (AMB) that they can call upon to conduct investigations as needed. In the event of a mishap, the Navy utilizes an AMB of a sister-unit to conduct the investigation. The senior member of the board must be appointed by an appointing authority from sources external to any reporting custodian involved in the mishap⁸

The Navy believes their use of squadron-level AMBs supports a standing principle of the Naval Aviation Safety Program that states “an individual or command detecting a hazard has an obligation to others in naval aviation to report that hazard.” They believe that this type of system avoids the adversarial problems of one unit investigating another and the perception that safety is the business of only the higher authorities. Just as important, though, is the fact that many mishaps occur at sea making it very impractical to conduct the investigation by anyone other than those on the ship.⁹

The methods of investigation used by the Navy are similar to the Air Force with a few exceptions. First, the board must arrive at all decisions by consensus with no one member having veto power. Unlike the Air Force, the board president does not have the final say on what is or is not a cause, recommendation, etc. Second, because the Navy realizes that the determination of a causal factor is not an exact science and sometimes requires inductive and deductive reasoning, they have established procedures for the investigators to identify their own confidence level in their conclusions. The five levels of confidence

include: determined, determined-no fault assigned, most probable, possible, and undetermined. The AMB assigns these to each causal factor in their report.¹⁰

Processing and Review of the Reports

The reporting procedures, on the other hand, are quite different between the Navy and Air Force. The responsibility for originating a Mishap Investigation Report (MIR) in the Navy rests with the appointing authority (normally the reporting custodian of the mishap aircraft), in conjunction with the AMB.¹¹ The appointing authority is also the individual that determines if an investigation or report is incomplete. If so, he returns it to the AMB for correction. If not, he forwards the MIR to other appointing authorities for review. Their review is only to determine completeness (as opposed to a review for concurrence). Once the appointing authorities are satisfied with the report, they release the MIR for distribution.¹²

The Navy is quite sensitive to the concerns of independence issues of the AMB. As a result, they make two separate statements about this in their reporting guidance. First, there shall be no review of the MIR nor prebriefing of its contents to any endorsers prior to its formal release. Second, believing that the success of the safety program depends on submission of succinct, open and forthright information, they strictly prohibit any hint of command influence on the contents of the MIR. They only permit comments during the review process (which includes the normal operating chain of command up through the major command commander and on to the Naval Safety Center).¹³

The NTSB Reporting Process

The NTSB process for conducting aircraft mishap investigations and reporting are quite different from those of the armed services. With the agency being established by Congress as an independent organization tasked to investigate and report on all civil transportation mishaps, their actions are constantly in the public eye. Their findings often have to tow a fine line between the legal views and the safety views.¹⁴ Still, even with these political concerns, their strengths and credibility lie in their independence.

The NTSB investigations are similar to the Army's methods in the fact that they have centrally controlled "Go-Teams" on standby that they call upon to initiate an investigation in the event of a mishap. On the other hand, there are also distinct differences. Due to strong public and private interests in the outcomes of the investigations, additional organizations can be made parties to an investigation. These include airlines, unions, manufacturing companies, etc.¹⁵ Another difference is the way they gather witness testimonies. The NTSB uses subpoenas and public hearings to collect their information, especially for uncooperative witnesses.¹⁶ This method may seem harsh on the surface, but can be a necessary evil in order to gather the information needed for the investigation. This is especially true since there can be no promise of confidentiality. The NTSB cannot offer that promise since they must make much of the information in the report available to the public.

The public receives their information about the mishap through several different methods. For major accidents, the NTSB holds press briefings at the scene in the days immediately following the accident. A public docket containing factual information about the accident is also available within a few months. Within about a year, the board members

review a draft of the accident report in a public meeting at Safety Board headquarters in Washington, D.C. Shortly after that meeting, the Board's Public Affairs Office issues an abstract that contains the Board's conclusions, probable cause statement (listing the *single* cause that the board attributes to the mishap), and safety recommendations from the accident report. Lastly, they print a final report of all major accidents for public distribution.¹⁷

The NTSB obviously slants their method of reporting toward informing the public. Still, this method allows them to easily get their information out to those who need it and to explain their thought processes behind the investigation. This method, according to the Director of the Office of Safety Recommendations (NTSB), is part of "the most comprehensive and successful aviation mishap investigation program in the world."¹⁸

Summary

This chapter has provided an overview of reporting procedures used by organizations other than the Air Force. The author placed emphasis on the differences between the procedures of the each organization and those of the Air Force. The differences exist for various reasons, but have a lot to do with the uniqueness of each organization. In spite of this, the Air Force could easily adopt many of the procedures if they determine them to be beneficial. The next chapter expands upon this as it provides recommendations for changes to the current Air Force reporting process using some of the processes described above.

Notes

¹Department of the Army Pamphlet (DAP) 385-40, *Army Accident Investigation and Reporting*, 1 November 1994, 1.

²Army Regulation (AR) 385-40, *Accident Reporting and Records*, 1 November 1994, 12.

³Maj Dolores M. Anderson et al., "Organizational and Conceptual Changes to the USAF Flight Mishap Investigation Process," Research Report no. 96-04 (Maxwell AFB, Ala.: Air Command and Staff College, 1996), 67. This statement was made by Ltc Turner of the USASC during interviews on 23 and 25 January 1995.

⁴*Ibid.*, 69.

⁵AR 385-40, 2.

⁶Anderson et al., 71. (Interview with Ltc Turner).

⁷AR 385-40, 14.

⁸Chief of Naval Operations Instruction (OPNAVINST) 3750.6Q, *The Naval Aviation Safety Program*, 28 August 1989 (with changes included), 2-5.

⁹*Ibid.*, 6-2.

¹⁰*Ibid.*, 6-17a.

¹¹*Ibid.*, 7-2.

¹²*Ibid.*, 7-16.

¹³*Ibid.*, 7-1.

¹⁴Engen, D2.

¹⁵*Ibid.*, D1.

¹⁶Anderson et al., 96.

¹⁷"NTSB Sources of Information," *NTSB Home Page*, n.p.; on-line, Internet, 30 January 1997, available from <http://www.nts.gov/info/sources.htm>.

¹⁸NTSB Report on Proceedings, Vol. II, March 1994, 61.

Chapter 5

Conclusions and Recommendations

Introduction

This paper presented some of the criticisms of the current process used by the USAF to report their views on an aircraft mishap. It went on to explain some of the requirements that the Air Force places on a SIB when they conduct an investigation and produce a report of that investigation. Next, we covered problems with the current system through a review of past SIB reports and corresponding MOFEs and a discussion of areas highlighted by the Blue Ribbon Panel. Finally, we looked at alternative methods of reporting. Using the information from this review, the author now discusses some recommendations for improving the current USAF reporting methods.

Controlling and Minimizing Changes

Recent changes to AFI 91-204 strengthened the authority of the flight mishap boards by further shielding the board from outside influences.¹ This is beneficial because it strengthens the credibility of the SIB's report. However, if the AFSC does not have the confidence in the report to use the information effectively when producing the MOFE, the changes to the process were of no benefit. The AFSC must develop methods that will

result in fewer changes between the SIB report and the MOFE in order for the system to work properly.² This can be accomplished through several steps.

First, similar to both the Army and Navy methods, the Air Force should establish a formalized process whereby an independent group reviews SIB reports before they are released. This review, to be conducted by the AFSC, would look for formatting and procedural-type errors only and would *not* be a review for concurrence. This review maintains the objectivity of the SIB report yet improves its credibility by minimizing the differences between the report and the MOFE. As the need for changes to the SIB report diminishes, the confidence level of the SIB report will increase. Hence, as individuals review the report, they will spend less time looking for ways to improve it and more time understanding what the SIB is trying to tell them. The time it takes to accomplish this additional step should have little impact on the process since HQ AFSC should be able to accomplish their review in minimum time.

Second, the AFSC needs to consult the SIB President before finalizing the MOFE, especially when the findings, causes, and recommendations are different from the SIB report. This may or may not reduce the number of differences between the report and the MOFE. However, it gives the AFSC a better understanding of why the SIB wrote their report as they did. At the same time, it provides reinforcement to the SIB members that their inputs really are vital to the process. This type of communication can only help to produce a better end-product.

Third, the AFSC should follow a technique similar to the Army and require their board presidents and investigating officers to participate in an investigation board as a nonprimary member. They can accomplish this by having the individuals act as recorders

or simply observers on their first board. This may be expensive in time and resources, but would give the members more experience in producing reports that generate fewer discrepancies.

Lastly, the AFSC should establish a metric to start tracking the number of changes that occur between the SIB reports and the MOFEs. This can be a simple yet productive process. By tracking the metric, they can determine the impact that changes have on their investigation process. An example would be tracking the number of changes between the SIB report and the MOFE after the addition of the AFSC representative to the SIB. Only through this type of analysis will the AFSC be able to determine how affective their changes are to the overall process. With automation, this process would be simple, yet still allow the AFSC to set goals and track them. Next, we will discuss two additional areas of the reporting process that the author believes need improving.

Minority Reports

The AFSC needs to change the term “minority report” because it can lead to a wrong impression. As mentioned earlier in this paper, there will be times when all members of the board are not able to come to complete agreement on the report. The minority report is available to identify those situations. However, calling the report a “minority” can cause problems. First, the word “minority” indicates that the number of dissenters is less than those who agree with what is in the original report, and this is not always the case. Second, in the author’s opinion, the term suggests to the dissenter that his/her ideas are minor or inferior. The author does not believe that this is what the Air Force is trying to project. If they are trying to deter board members from filing a separate report by terming it “minority” there are more appropriate ways to do this. As an example, the Navy

requires their board to come to an agreement; they have no provision in their procedures for addressing disagreements. However, the author does not believe that this is the right answer, nor does he suggest that the Air Force eliminate the requirement for the board president to have the final and deciding vote. Rather, the recommendation is to title the dissenter's report differently, perhaps "Areas of Disagreement." Then, if the Air Force wants to emphasize the need for the board members find agreement where at all possible, they can do this by adding an additional statement to that effect in AFI 91-204.

Other Recommendations of Significance

As discussed previously, SIB members put these recommendations in their reports because they believe that the information, although not directly related to the mishap, may help to prevent future mishaps. However, the AFSC does not include the recommendations in the MOFEs or track them to ensure that someone corrects the problems. The fact that the SIB members elect to spend some of their very limited 30 days to highlight the information and put recommendations in their report indicates that it is important. Understanding this, the author believes that the AFSC should place the information in the MOFE and track it like the rest of the SIB report. If, on the other hand, the AFSC established this provision to allow SIB members to identify only administrative-type problems uncovered during investigations, they need to more clearly explain this. With this latter case, the information would not belong in a mishap report. Instead, the SIB members should provide memos directly to the commanders who are responsible for correcting the problems rather than identifying them in their reports. This allows the problems to be worked at the proper levels while keeping the focus of the SIB report on mishap prevention.

Summary

This report has taken a broad look at the reporting processes. Its efforts and recommendations focused on ways of controlling and minimizing the changes that take place between the SIB report and the generation of the MOFE. This, in turn, increases the credibility of the SIB, improves confidence in their report, and allows their report to be weighted to a degree that is commensurate with the amount of time and energy the SIB spends completing the investigation and report. To be effective, an organization's program must meet all three. The Air Force recognizes this and has attempted to incorporate them all into their process. To remain effective, they need to continue with the evolution as we all become more educated about this business. With that, I will end with an appropriate statement made by Tom Hall, Chairman of the NTSB, that is just as applicable to the Air Force as it is to his organization.

It is impossible to say that safety in air transportation is, has been, or will be, achieved by any one specific detail of equipment, by experience alone, solely by conservative (investigative) policy, by (solid) research, by virtue of good organization, or because of government regulations. All these elements, cemented together by (investigators) imbued with a spirit of apprehension combined with a deep sense of responsibility for the safety of the flying public, have brought about our present laudable (air safety) record and will continue to improve on it.³

Notes

¹Gen. Ronald R. Fogelman, "Why Safety Isn't Just Another Word," *Air Force Times*, 15 January 1996, 33.

²The author assumes that the Air Force wants to keep the MOFE as part of the reporting process. The product could actually be eliminated whereby the SIB report would be the final Air Force position on a mishap (similar to the other services). However, this paper does not have the intention of trying to eliminate the MOFE, but rather to minimize the differences between it and the SIB report.

³Jim Hall, "Today's Investigators, Tomorrow's Trends and Technology," *NTSB Home Page*, 25 September 1995, n.p., on-line, Internet, 30 January 1997, available from

Notes

<http://www.nts.gov/speeches/speeches.htm> This speech by NTSB Chairman Hall was presented to the International Society of Air Safety Investigators International Seminar in Seattle Washington.

Bibliography

- Air Force Instruction 91-202, *The Us Air Force Mishap Prevention Program*, 1 October 1995.
- Air Force Instruction 91-204, *Safety Investigations and Reports*, 1 December 1996
- Anderson, Major Dolores M. et.al., "Organizational and Conceptual Changes to the USAF Flight Mishap Investigation Process," Research Report no. 96-04. Maxwell AFB, Ala.: Air Command and Staff College, 1996
- Army Regulation (AR) 385-40, *Accident Reporting and Records*, 1 November 1994
- Brosveen, Doug, *Aircraft Mishap Investigation Techniques*. Kirtland AFB, N.M.: Southern California Safety Institute, 1994.
- Chief of Naval Operations Instruction 3750.6Q, *The Naval Aviation Safety Program*, 28 August 1989 (with changes included).
- Department of the Army Pamphlet (DAP) 385-40, *Army Accident Investigation and Reporting*, 1 November 1994
- Engen, VADM (Ret) Donald D., "The Blue Ribbon Panel on Aviation Safety." Washington D.C.: Department of the Air Force, 5 September 1995
- Fogelman, General Ronald R. "Why Safety Isn't Just Another Word," *Air Force Times*, 15 January 1996
- Hall, Jim. "Today's Investigators, Tomorrow's Trends and Technology," *NTSB Home Page*, 25 September 1995, n.p., on-line, Internet, 30 January 1997, available from <http://www.nts.gov/speeches/speeches.htm>.
- "NTSB Sources of Information," *NTSB Home Page*, n.p.; on-line, Internet, 30 January 1997, available from <http://www.nts.gov/info/sources.htm>.
- NTSB Report on Proceedings, Vol. II, March 1994
- OSAF ALMAJCOM message 311904Z Aug 95
- Thompson, Mark. "Way, Way Off in the Wild Blue Yonder", *Time*, 29 May 1995
- "Too Slow to Act on Airline Safety?", *Consumer Reports*, June 1995

DISTRIBUTION A:

Approved for public release; distribution is unlimited.

Air Command and Staff College
Maxwell AFB, Al 36112