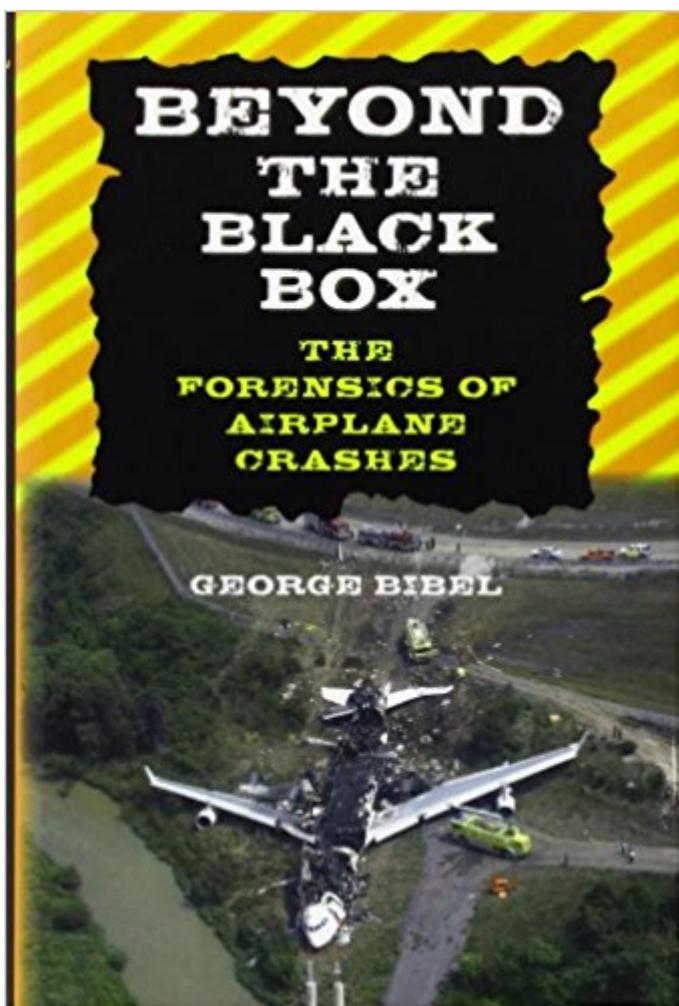


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# Beyond The Black Box: The Forensics Of Airplane Crashes



## Synopsis

The black box is orange— and there are actually two of them. They house the cockpit voice recorder and the flight data recorder, instruments vital to airplane crash analyses. But accident investigators cannot rely on the black boxes alone. Beginning with the 1931 Fokker F-10A crash that killed legendary football coach Knute Rockne, this fascinating book provides a behind-the-scenes look at plane wreck investigations. Professor George Bibel shows how forensic experts, scientists, and engineers analyze factors like impact, debris, loading, fire patterns, metallurgy, fracture, crash testing, and human tolerances to determine why planes fall from the sky—and how the information gleaned from accident reconstruction is incorporated into aircraft design and operation to keep commercial aviation as safe as possible.

## Book Information

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"The author does a first-rate job... The easy-to-read and engaging manner of the writing makes this an interesting historical as well as scientific text." (Charles K. Jervis National Science Teachers Association)"Bibel takes the reader, chattily and with skill, through his analysis of a series of fatal accidents." (Paul Marks New Scientist)"Offering insights into how aviation accident investigations are conducted, Bibel addresses the causes of such accidents, from in-flight breakup to metal fatigue and combustion, and the lessons learned. Enriched with many drawings, graphs, and equations..."

Highly recommended." (Library Journal)"A fascinating book." (Steven D. Levitt New York

Times)"The author succeeds in both science and storytelling." (Choice)"The easy-to-read and

engaging manner of the writing makes this an interesting historical as well as scientific text." (Charles K. Jervis NSTA Recommends)" Beyond the Black Box provides a behind-the-scenes look at plane crash investigations." (Air Safety Week)"Bibel takes responsibility for his readers' understanding... using similes based on everyday events and objects." (Don Fry Virginia Quarterly Review)"Terrific book." (Discover)"A good book that explains how and why airplanes can crash through descriptions of a wide variety of crashes and near-crashes followed by explanations of the science that governed those incidents. The stories of the accidents, and their explanations, read like mysteries; I found myself reading faster to get to the end of the story and find out why things happened the way they did. Bibel clearly has a love for all things aeronautical and that shines through on every page. " (John M. Henshaw, author of Does Measurement Measure Up?)

George Bibel, a former NASA summer faculty fellow, is a professor of mechanical engineering at the School of Engineering and Mines, University of North Dakota. He recently completed the Air Line Pilots Association Advanced Accident Investigation Course.

(by this persons daughter)I was having a quarter life crisis (25 years old) when I had an epiphany one day. I always been fascinated by plane crashes, I had seen all the Air Crash Investigation (and Mayday) clips on plane incidents on YouTube.I decided I needed to go back to school...and train to become an air plane mechanic (an AP). If you can't read this book and enjoy it....then becoming a mechanic is not up your alley.But if you find the subject matter fascinating, and you end up going through 4 pens jotting notes, then perhaps becoming a mechanic is what you are destined for. This includes trying to talk to co-workers about how a 737 hull can fail, and still land safely, like what happened to South West April 2011, and trying to compare this incident to Aloha 243 on April 28,1988. Then comparing these two planes to the British Comet plane crashes.Now keep in mind one person who gave this book 4 stars, obviously works (ed) for the NTSB or FAA did criticize the authors description of how TWA Flight 800 came apart, but went on to say he thought that the author did and overall good job.The book even covers a brief, but exciting chapter on the perfection and testing of the ejection seat(and the passenger seat in commercial flight), the man who volunteered to be a human test dummy, and Murphy s law.You will never look at a plane in the sky the same way again, complain on how uncomfortable the seats are in coach, or think about ones career possibility's in the aviation world.

If you are an aviation "geek" and are fascinated by the science behind the investigation of aviation

accidents then this is the book for you. It gets pretty deep into the physics of it and at times is more physics or materials science text than "book" but if you have a technical or science background you will appreciate the in depth explanations and technical depth of this book. Great way to get younger folks interested in physics and science.

I got this book after seeing it recommended by Atlantic writer and pilot James Fallows. I'm professionally acquainted with spacecraft safety assurance, but I still learned a lot from this book, which covers commercial passenger aircraft. There is a lot here about various crash mechanisms and their frequency, and how they progress. The author takes a high school physics approach to explaining, say, the physics behind hull ruptures due to pressure differentials, and sudden deceleration due to contact with the ground. Incidentally, due to the author's upbeat, "we can fix it" attitude, the book does not come off as morbid in the slightest. I have read it while flying, with no ill effects.

An excellent textbook on the subject of aircraft accident forensics. The author does not presume too much knowledge by the reader. Technical subjects are clearly, yet simply, explained.

I read this book after reading one from NTSB accident summaries in the 1990s, and one from a British author about various flying incidents that had survivors. This book actually references several of those accidents, going over the physics involved in crashes. The writing style is very fluid and easy to read. Even if you gloss over the equations, you will likely still learn something. It's a great way to study classical physics as well, and may be good for supplementing a physics class--this sure makes it a lot less boring.

I had to use this book as a text book for a class at The University of North Dakota with the author as the teacher. My college career has taught me to be leery of that, however, it is not the case with this book. After telling some of my co-workers about the book, they have been passing it around to read. It is an extremely interesting book for technical people that have to travel a lot,

As an airline pilot and safety researcher, I ordered "Beyond the Black Box" as soon as it became available. This book is different from most books about aircraft accidents in that it focuses on the actual dynamics and mechanical processes of aircraft accidents rather than Human Factors: I found Dr. Bibel's book to be illuminating from a physical sciences viewpoint. The book uses very basic

science and math principles (as well as simple experiments suitable for home or classroom use) to explain important points about these accidents. Some of these accidents are quite well known, even outside of the industry (United 232), while most have been forgotten by everyone other than those directly involved in aviation safety and engineering (the Comet decompression accidents, the British Midland 737 accident at Kegworth, England, etc.), but all are excellent examples of different accident modes. I have studied numerous accidents over the years, and have taught several aviation safety courses, and I think this book is the best introduction to the physical sciences and engineering involved in aviation accidents available to the public. It is written with both expert professional and interested observer in mind, and is easily comprehended; all math and science concepts are thoroughly explained, as are higher order concepts like metal fatigue and fracture analysis. I recently had the privilege of meeting Dr. Bibel and hearing him speak on aircraft accidents. He was very gracious and approachable, and I enjoyed both his presentation and his book greatly. This book is not written from a pilot's perspective, and as such contains some generalizations about flying procedures and techniques, but as an accessible scientific introduction to the science and dynamics of airplane accidents, this is an enjoyable and engaging book, and I recommend it without reservation.

This will make a great gift for family member for the holidays.

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