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Availability of Passenger Safety Information for Improved Survival in Aircraft Accidents



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16. Abstract The Federal Aviation Administration (FAA) has set goals to be proactive regarding airline passenger education. One of the strategic goals is to identify, develop, and conduct research to improve methods, procedures, and technologies for increasing survival in aircraft accidents. In support of the FAA goals, this study identified safety- and survival-related information currently available to the flying public, providing an opportunity for estimating the general educational level of the typical air traveler. The information available to typical airline passengers was obtained through a survey of air-travel information resources, including all material available from 15 major and 25 minor airlines flying in U.S. airspace. Additional sources were found using an exhaustive search of Internet Web sites, books, periodicals, and journal articles of government agencies, aviation training programs, educational and academic sources, aircraft manufacturers, consultants, U.S. military, corporations, and non-profit companies. An array of important factors was investigated: travel preparation, prohibited goods, in-flight "things-to-know," medical information, safety concerns, emergency aircraft operations, emergency procedures, post-emergency survival-related topics, airport requirements, and international travel information. The results reveal serious inadequacies in the availability of safety information for airline passengers, indicating that reaching the goal of assured air traveler safety and survival in emergencies is problematic but amenable to significant improvement. To increase the probability that air travelers will survive in emergencies, substantially improved safety and survival information needs to be implemented and made available through a well-constructed passenger education program.					
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AVAILABILITY OF PASSENGER SAFETY INFORMATION FOR IMPROVED SURVIVAL IN AIRCRAFT ACCIDENTS

INTRODUCTION

The U.S. Federal Aviation Administration (FAA) has no mission more important than assuring the safety of the more than one million passengers who fly on air carriers every day in the United States. As part of this mission, the FAA has long been active in assuring safe evacuation of transport airplanes in emergencies. To support this effort the FAA has published Advisory Circular (AC) 121-24B (US DOT, 1999), regarding passenger safety information briefings and briefing cards. The AC states that an alert, *knowledgeable* person has a much better chance of surviving a life-threatening situation that occurs during passenger-carrying operations in civil aviation. Further, the FAA Strategic Plan (2001) set goals to be proactive regarding passenger education. Included is the sharing of safety information with passengers to reduce fatal accidents and increase the probability that passengers and crew will survive. Identification and development of improved methods, procedures, and technologies to increase survival in aircraft accidents are key.

In a recent safety study by the National Transportation Safety Board (2000) investigating 46 accidents that occurred between September 1997 and June 1999, there were 2,651 passengers involved in emergency aircraft evacuations. The evacuations were ordered by the crew or initiated by passengers perceiving a threat; these evacuations occurred every 11 days, on average. Detailed analyses were conducted on a subset of the 46 emergency evacuations; these involved fire, suspicion of fire, or inflatable escape slide usage. Questionnaires regarding the preflight safety briefing, emergency exits, carry-on baggage, evacuation slides, passenger behavior, use of seat belts, communication, injury, post-evacuation events, and personal information were sent to the accident survivors. The goal of the study was to identify critical factors that influence evacuations and effect improvements that would promote successful evacuations in the future.

The report provided insight into specific factors, such as crewmember training and passenger behavior, which affected the outcome of the emergency evacuations and

influenced safety. The questionnaire responses indicated that passengers had difficulties in many areas. Most passengers, including those seated in exit rows, did not read the safety briefing cards provided to assist them in understanding the tasks they needed to perform in an emergency. This resulted in slower egress times and unnecessary injuries.

Such a lack of attention to the onboard safety information apparently occurs because of a misconception among airline passengers that there is little hope of survival in accidents, as suggested by studies conducted by Daniel Johnson (1984) and Parkinson and Muir (1995), which investigated passenger perceptions about transport airplane safety. Both studies concluded that passengers believed about 75% of transport airplane accidents are fatal, i.e., without hope for survival. This misperception is not only unfortunate, but dangerous, because statistics show that while passengers with an understanding of what to do in an accident will survive in most cases, passengers without the hope for survival find little need to prepare (Johnson, 1984). This failure to prepare can lead to fatalities.

An example of this situation is the Air Canada Flight 797 (Douglas DC-9-32) accident at the Cincinnati Airport on June 2, 1983, in which 18 passengers and five crewmembers escaped the airplane after an in-flight fire started in the aft lavatory. Regrettably, 23 passengers were unable to get out of the plane and died in the fire; the NTSB report (1986) of the accident indicated that passengers probably lacked an understanding of what to do. Many of the survivors stated they had to travel aftward in the plane to reach the overwing emergency exits and only found the exits in the thick smoke because they had identified the number of seat rows between their seats and the overwing exits when they boarded the airplane. The NTSB concluded that the single most important factor for those surviving the accident was likely the extent to which they took personal responsibility for their own safety; i.e., they had pre-planned their escape, allowing them to react quickly to the emergency.

The NTSB safety study (2000) also examined passenger performance in exit rows, as passengers seated there were forced to operate the overwing exits in several of the emergency evacuations. These passengers were generally not ready to act quickly in an emergency, because unlike the airplane crew, they had not been individually informed about the proper procedures nor had they received formal training on the necessary tasks. Three main problems were identified. The first was failing to attend to the safety information provided, the second was not knowing to assess conditions outside the exit before opening it, and the third was having difficulty making the decision to open the exit. Many of the passengers who opened the overwing exits also struggled to maneuver the Type-III exit hatch and throw it clear of the opening. Difficulty in opening the exits caused additional delays for other passengers waiting to use them.

The most frequent impediment to rapid emergency evacuation was passengers who carried baggage while trying to evacuate the airplanes. Of the 457 passengers who replied to the questionnaire, only 25 individuals reported having had no bags with them inside the airplane, while nearly 50% (208) of the remaining passengers reported that they attempted to carry a bag outside during the emergency evacuation. This tendency for passengers to retrieve and carry baggage reflects a serious lack of knowledge about the short time available for escape in aircraft accidents and the impediment to successful evacuations that carry-on baggage represents.

Competitive passenger behavior was also an unexpected obstacle described by accident survivors. Many passengers reported seeing competitive behaviors that included pushing, climbing over seats, and aggressive disputes among passengers. Overall, 12.1% of the responding passengers reported they climbed over seats to get out of the airplane and another 20.4% reported that they observed someone climbing over seats. There were also 29% who reported having seen passengers being pushed, 18.7% indicated they had actually been pushed, and 5.6% indicated they personally pushed another passenger. Although climbing over seats and pushing may sometimes prove to be necessary actions for emergency egress, conflicts typically produced by these actions consume valuable time, demonstrating that uneducated passengers are likely to behave negatively when anxiety and heightened emotion are in control.

Precautionary emergency evacuations (PEEvacs) are another category of transport airplane evacuation ordered by the crew, or initiated by passengers, because of a perceived threat (e.g., fire), although the threat never actually develops. An investigation of PEEvac conducted for the Civil Aerospace Medical Institute (CAMI) by

Michael Hynes (1999) found that during a nine-year period from January 1, 1988, through December 31, 1996, there were more than 500 such incidents, occurring about once a week, on average. The 500 PEEvac involved approximately 6,000 passengers, at a direct monetary cost of more than \$11 million annually to the airlines (Hynes, 2000), which resulted in large part from passenger injuries. Hynes concluded that one of the ways to prevent passenger injuries associated with PEEvac is to improve passenger safety information and instruction. This conclusion reaffirms the findings of the NTSB Safety Study (2000) regarding the need for better passenger education.

The foregoing discussion is a mere snapshot of the concerns related to the lack of attention passengers give to safety information on transport airplanes, the resulting lack of safety knowledge passengers possess as a result, and the negative behavioral effects these inadequacies produce. Apparently, the FAA goal of having proactive safety information-sharing with passengers is not being met by the airline safety-information briefing programs in place, and the question remains as to whether there is an alternative information base available to support this goal.

METHODS

The current study was conducted to answer that question, i.e., to identify the aircraft safety and accident survival information currently available to the flying public. The resources reviewed for this study included all materials supplied to passengers by the 15 largest airlines and 25 smaller airlines flying in US airspace. Additional information and material were found using an exhaustive search of Internet Web sites, books, periodicals, and journal articles of government agencies, aviation training programs, educational and academic sources, aircraft manufacturers, consultants, US military, corporations, and non-profit companies (see Appendix for details).

An array of important factors was explored:

- Up-to-date information regarding travel preparation
- In-flight things to know list
- Emergency aircraft operations plan
- Emergency procedures
- Safety concerns and issues list
- Post-emergency survival topics
- Prohibited goods list
- Medical information
- International travel information
- Airport requirements

RESULTS

The search of aviation- and travel-related materials revealed there is relatively little in the way of aircraft-specific safety and accident survival information readily available to the flying public. Indeed, most information is related to travel preparation, recent security concerns, and/or limited interpretations of safety topics. Not a single existing source of information can be considered comprehensive, especially given the current aviation safety and security environment.

Importantly, this information is also universally difficult to obtain. For example, the FAA Internet Web site is one of only three Web sites found to contain advanced passenger safety information. Although recently updated, however, the subject matter remains incomplete and sometimes vague regarding passenger safety in emergencies; i.e.,

in need of interpretation. The other government Web site that has significant passenger safety information is that of Transport Canada, whereas Qantas Airlines provides the only commercial Web site that gives passengers advanced safety information. The single resource that would be considered the most comprehensive, if somewhat dated, is the (out of print) book, *Just in Case*, by Dan Johnson (1984). Table 1 displays the information obtained with ratings for completeness and relative availability.

DISCUSSION

Accident reports indicate that passengers are generally uninformed about airplane accidents, emergency evacuation, and accident-survival issues. For example, passengers lack knowledge about performing emergency tasks, are unaware that they should leave their carry-on

Table 1. Available Safety Information

Resource name	Total	Rating *					Notes
		1	2	3	4	5	
Airline Supplied Materials	40	19	11	9	1		15 Major Airlines & 25 Smaller Airlines
Government	22	16		2	4		10 U.S. & 12 International
Educational/Academic	10	10					
Internet Sources	19	15	1	2	1		
Books & Publications	9	3	5			1	Internet search found 12,417 "Aviation Safety" titles. Search narrowed by "Commercial Aviation Safety" and then by "Passenger Safety" to reach a total of nine books that fit the objective.

* Rating Scale

1. No travel preparation or emergency information
2. Minimal travel preparation information / No emergency data
3. Minimal travel preparation information / No emergency data / Links to other Web sites
4. Good travel preparation information / No emergency data
 - Possible subject matter: Travel Preparation, How To Dress, Baggage, Travel Documents, Special Needs, Dangerous Goods & Prohibited Items List, Medical Information, Airport Requirements, In-Flight Advice, Frequently Asked Questions, International Travel, Customs, and In-Flight Health.
5. No Travel Preparation Information / Good Safety & Emergency Information Available
 - Possible Subject Matter: Types of Accidents, Behavior, Decompressions, In-Flight Emergencies, How To Prepare For a Crash, Fire, Emergency Escape On Land, Ditching, Stress Reactions After an Accident.

Appendix A contains a complete list of all information sources surveyed.

baggage behind during an emergency aircraft evacuation, and have little idea about what to expect during and after emergency evacuations. These shortcomings result from the general lack of safety information readily available to the public, suggesting that minimal importance has been placed on making passengers part of the *safety equation*. Thus, passengers are often unaware of the factors they need to know to enhance their survival in emergencies.

A consequence of this approach to passenger safety is that most passengers believe that survival in an airplane accident is highly unlikely, although the reverse situation is, in fact, true. Importantly, it has been recognized that if passengers believe they can influence their own survival, they will be more willing to attend to safety information. Such safety information may differ from airplane to airplane, which is the reason that exit locations, floor path marking systems, and oxygen equipment are all discussed in the pre-flight oral safety briefing and displayed on the seat-back safety information cards aboard airplanes.

The existence of such differences is only one factor that passengers need to be made more aware of, in order to heighten their attention to all safety information. Parkinson and Muir (1995) showed that increased awareness generated via safety training raised passenger awareness of other important safety issues and increased passenger motivation to pay attention to the safety information available. This led to increased behavioral effectiveness in an emergency. These effects were greatest for those passengers who experienced direct practice with safety-related tasks, although the authors also found that mental practice, alone, improved performance. Additional gains could be expected through increased compliance with safety regulations and greater personal responsibility for accident survival.

Much of the safety information that needs to be presented is already known and only needs to be compiled or applied to the commercial aviation environment, although some additional aviation-specific safety information ought to be developed. Therefore, creative and effective methods should be employed to enhance and convey safety information for passengers, in order to achieve the FAA goal of assuring that air travelers have the information necessary for effective survival in any emergency. Provision of such information, because of its large scope, will likely require a significant passenger education program beyond that currently employed for airline passengers; that is, onboard safety briefings and passenger safety information cards need to become the last link in the chain of safety information provided for the flying public.

RECOMMENDATIONS

The following strategies for educating air travelers will support the FAA goals of being proactive regarding passenger education:

1. Develop a comprehensive aircraft safety education curriculum. Toward this end:
 - a. Conduct surveys of known travel safety information outside aviation to identify the extent to which additional safety information is available and/or needs to be developed.
 - b. Conduct surveys to obtain information from the general public as to exactly what they know regarding safety in all emergencies, but especially aircraft accidents. The surveys should be constructed to identify insufficiencies in current materials to inform about future directions for development of safety information and educational materials. A Web site linked to commercial airline travel Web sites (e.g., Orbitz, Expedia) could be used to obtain broad-based participation.
 - c. Develop and implement state-of-the-art methods for educating air travelers, using creative technologies such as interactive CD-ROMs that could be passed out at airports, air shows, and public events. Airline magazines could be used to assist in the distribution effort and provide self-tests regarding facts about safety, security, and emergency readiness.
 - d. Set up portable training devices (e.g., interactive kiosks and airplane-exit simulators) at airports and other public venues to allow individuals to gain better information and get hands-on experience.
2. Develop and teach proactive safety procedures in public schools as part of a first aid and lifesaving skills training curriculum.
3. Provide travel safety information on the public broadcast channels.
4. In the interim, the *Passenger* section of the FAA Internet Web site should be enhanced and a plan created to inform the general public of its existence, in order to address current deficiencies in airplane passenger safety education. Topics should include:

SAFETY AND SURVIVAL INFORMATION

Safe Flight Information

- Safety on the Tarmac
- In-Flight Health
- Preparedness for Emergencies
- In-Flight Emergency Information

- Know Your Exits
- Seat Belts
- Exit Row Seating
- Turbulence
- Electronics Safety
- Decompression
- Oxygen Mask
- Brace for Crash Positions
- Flotation Devices
- Fire and Smoke
- Using the Escape Slide

Post-crash Emergency Information

- Crash on Take-off or Landing
- Panic
- Fire and Smoke
- Ditching
- Rescue
- Stress Reaction

ADDITIONAL INFORMATION

Before You Travel

- How to Pack
- What to Wear
- Checking Flight Status
- At the airport
- Traveler Services
- Identification
- Health
- Children and Flying
- Travelers With Special Needs
- Traveling With Pets
- How to File Airline Complaints

Baggage Tips

- Things to Bring
- Things NOT to Bring
- Carry-on Baggage
- Checked Baggage
- Wrapped Packages
- Sporting Equipment
- Musical Instruments

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¹This publication and all Office of Aerospace Medicine technical reports are available in full-text from the Civil Aerospace Medical Institute's publications Web site: <http://www.cami.jccbi.gov/aam-400A/index.html>

APPENDIX A
Sources of Passenger Information

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
FAA / CAMI	http://www.faa.gov http://www1.faa.gov/index.cfm/apa/1076 http://www.camii.jccbi.gov/	4+	Traveler Preparation Data – Safety Information – Pilot/Passenger Health and Safety. FAA.gov – ALERTS – Security Tips for Air Travelers – Most of The Information is Geared Toward Pilots - Links to Safety Sites.
Transportation Security Administration (TSA)	http://www.tsa.gov/public/display?theme=175	4	Links to Local Weather, National Center for Infectious Disease, and US Customs.
Transport Canada	http://www.tc.gc.ca/en/menu.htm	4	Traveler Preparation Documented / No Emergency Data.
"What To Take When Traveling"	http://www.voyage.gc.ca/destinations/menu_e.htm	1	Link for Transport Canada CD.
"Survivability of Accidents Involving Part 121 U.S. Air Carrier Operations, 1983 Through 2000"	http://www.ntsb.gov/Publictn/2001/sr0101.htm	1	Link from www.ntsb.gov
Civil Aviation Safety Authority (Australia)	http://www.casa.gov.au/index.htm	4	Travel Preparation Documented / No Emergency Data.
American Academy of Otolaryngology	http://www.entnet.org/healthinfo/ears/altitude.cfm	1	
National Transportation Safety Board	http://www.ntsb.gov	1	No Traveler Information.
The Federal Aviation Administration	http://www.faa.gov http://www.asy.faa.gov/asy_internet/flysmart/default.htm	4	Difficult to Find Specific Traveler Information Lacking Detailed Emergency Information.
FAA Office of System Safety	http://www.asy.faa.gov/	1	No Traveler Info Available.
Qantas	http://www.qantas.com.au/info/flying/beforeYouTravel/index	4	What You Should Know Before You Travel.
Australian Department of Foreign Affairs and Trade	http://www.dfat.gov.au/consular/advice/index.html	1	Travel Advisories Only.
In-flight Safety	http://www.warman.demon.co.uk/anna/inflight.htm	2	Anna Damski – British Airways Safety Training Dept.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Airsafe.com	http://www.airsafe.com	4-	Not All Information is Correct. Contains Information/Links Regarding Travel for Children. Links to the FAA Fly Smart Site.
Airsafe.com Tips for Travel Under New Security Rules	http://www.airsafe.com/issues/security/waiting.htm	"	
Airsafe.com Top 10 Airline Safety Questions	http://www.airsafe.com/ten_faq.htm	"	Names of Airlines are Included in Answers that are Inappropriate.
Airsafe.com Suggestions For Reducing Security Related Threats (Hi-jacking)	http://www.airsafe.com/events/war/moresafe.htm	"	
Airsafe.com Baggage Information Resources	http://www.airsafe.com/issues/baggage.htm	"	
Airsafe.com Child Safety In The Air	http://www.airsafe.com/kidsafe.htm	"	Includes News Articles and an Airline Comparison Done by USA Today.
Airsafe.com Air Rage Information	http://www.airsafe.com/issues/rage.htm	"	
Landings.com	http://www.landings.com	1	Misc. Travel Information For Pilots.
Airlines Safety.com	http://www.airlinesafety.com/	1	No Traveler Information. Misc. Travel Information for Pilots.
Air Safety Online	http://www.airsafetyonline.com/	1	No Traveler Information.
National Air Disaster Alliance/Foundation	http://www.planesafe.org/	1	Contains Links to Airline Support Groups. Deals with Airline Issues.
The Aviation Safety Network	http://aviation-safety.net/airlinesafety/index.html	3	Small Amount of Traveler Safety Info / Links to FAA Site.
Aircraft Crash Database	http://www.crashdatabase.com/	1	Crash Information Only. No Traveler Information.
Airline Safety Records.com	http://www.airline-safety-records.com/	1	A Report Card on Airlines. No Traveler Information.
Aviation Reference Desk	http://www.aviationreferencedesk.com/?source=overview#Weather%20&%20Travel	1	Links to Airline Safety Records. No Traveler Data.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Compare Airlines	http://travel.simplyquick.com/discount-airfares/airlines.html	1	No Traveler Data / Rates Airline Service and Safety. No Traveler Information.
About.com – Traveling With Diabetes	http://diabetes.about.com/cs/travelidiabetes/	2	
Abe's Safety Tips	http://www.travel-safety-and-health.com/	3	
Free Travel Tips.com	http://www.freetraveltips.com/	4	Information from a Travel Agency. Goal is to Get You to Purchase Tickets. All Topics Lead to a Purchase. Information is Bulky And Hard to Work Through. Includes Packing List & Kids Traveling Tips. Links to Other Travel Sites.
National Center For Disease Control	http://www.cdc.gov/travel/	1	Check on Health Information for Specific Travel Areas. (Disease Outbreaks Or Concerns).
CabinSafety.com	http://www.cabinsafety.com/home.html	1	Briefing Cards Only.
Aviation Safety Magazine	http://www.aviationsafetymagazine.com/index.html	1	Magazine for General Pilots.
Equipped To Survive	http://www.equipped.com	2	Survival Equipment / No Traveler Info Specific. Good Ditching and Equipment Info.
RP Technologies	http://www.rp-technologies.com	1	
Aeroweld	http://aeroweld.com	1	Builds Aviation Training Simulators.
International Civil Aviation Organization	http://www.icao.org	1	List Of Membership Organizations.
A Study Of Factors Influencing The Evacuation Of Occupants In Fire Related Accidents		1	Database of Accidents.
Academics Of Flight	http://members.aol.com/aofwebpage/fa.html	1	Flight Attendant Training Company.
Flight Safety Foundation	http://www.flightsafety.org/home.html	1	Foundation for Independent Research, Auditing, Education and Advocacy. Cabin Crew Safety Articles Available.
Advanced Composite Technologies, Inc.	http://www.advancedcompositetech.net/	1	ICAO Member - Builds Aircraft Instrument Panels.
Airbus Training Center	http://www.airbus.com/customer/training.asp	1	Training for Flight Crews Only.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
AirCare International Ltd.	http://www.facts-aircare.com/index.cfm?menugroup=FACTS+Home	1	Training for Flight Crew Only.
Airline Ground Schools, Inc.	http://www.agschools.com/index.htm	1	Ground School and Flight Training Only.
Airman Flight Schools, Inc.	http://www.airmanflightsschool.com/	1	Pilot Training Only.
Airpack Inc.	http://www.airpack.com/	1	Air Freight Dangerous Chemicals Training (Packing and Handling).
Airspace Safety Analysis Corp.	http://www.asacinc.com/home.phtml	1	FAA Regulatory Compliance Training.
American Airlines	http://www.aa.com	2	
Aerospace Medical Association	http://www.asma.org/Publication/Tips_For_Travelers2001.pdf	2	General Health Information for Travelers.
Averett University	http://www.averett.edu/cat0204/aviation.html	1	Aeronautical Management Degree Program.
Aviation Consultant Enterprise	http://www.technojobs.co.uk/pages/D39789.html	1	Aviation Recruiters.
International Air Transport Assoc. (IATA)	http://www1.iata.org/index.htm	1	Aviation Training for Travel Agents.
Aviation Language Schools Inc.	http://web.idirect.com/~als/home.htm	1	Courses for Pilots, Flight Attendants, Maintenance Personnel, and Aircraft Dispatchers.
Aviation Training Management, Inc.	http://www.aviationtrainingtm.com	1	Pilot Training Only.
Aviation Training Services / United Services	http://www.ualservices.com/html/index.html	1	United Airlines Craftsmanship Training.
United Airlines	http://www.ual.com/page/article/0,,1821,00.html	2	Minimal Information Available.
AviationCRM.com	http://www.aviationCRM.com	1	Crew Resource Management Training Only.
Aviem International Inc.	http://www.aviem.com/services.html#information	1+	Trains in Airline Disaster Response. No Traveler Information.
United Kingdom Air Accident Investigation	http://www.aalb.dft.gov.uk/index.htm	1	United Kingdom's Equivalent to American NTSB.
AVSEC Inc.	http://www1.iata.org/ice/avsec2002/index	1	Pre-empting the Threat – Conference Conducted by the International Air Transport Assoc. / Aviation Security Div.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Big Bend Community College / Aviation	http://www.bigbend.edu	1	Airframe and Powerplant Maintenance Training.
Bijan Air, Inc.	http://www.bijanair.com/school.html	1	Pilot Flight Training.
Center For Advanced Aviation System Development (CAASD) The MITRE Corp.	http://www.caasd@mitre.org	1	Provides Engineering, Research and Development, Information Technology. Federally Funded Research for the DOD, FAA, IRS.
Central Missouri State University	http://www.cmsu.edu/aviation	1	College of Aviation Only.
Cloverpark Technical College	http://www.cptc.edu	1	Aviation Maintenance Program.
Cochise College / Aviation	http://www.cochise.org/aviation/index_le.htm	1	Professional Flight Technology, Aviation Maintenance and Avionics Technology Programs Only.
College of Aeronautics Aviation Training Institute	http://education.service-sites.com/aviation-school.htm	1	Airframe and Powerplant Maintenance Training.
University of Illinois / Aviation	http://www.aviation.uiuc.edu	1	Human Factors, Aircraft Maintenance, Airport Operations, Airport Fire and Professional Pilot Programs.
Comair Aviation Academy	http://www.comairacademy.com	1	Pilots Training Only.
Community College Of Beaver County	http://www.ccbc.cc.pa.us	1	Aerospace Management, Professional Pilots, Air Traffic Control.
Crouse-Hinds Airport Lighting Products	http://www.chalp.com	1	Airport Runway Lighting.
CTI Consulting aka Counter Technology Inc.	http://www.countertech.com/aboutus.html	1	Airport Vulnerability Assessments, Security Plan Development, Security Systems Design, Employee Background Investigations.
Airport Council International (ACI) / North America	http://www.aci-na.org	3	Small Amount of Traveler Preparation Info / Links to the TSA Site.
AAAE: Archives Of American Aerospace Exploration	http://scholar2.lib.vt.edu/spec/aerosp/aerohp.htm	1	Digital Library and Archives, University Libraries, Virginia Polytechnic Institute and State University.
Aircraft Owners And Pilots Association	http://www.aopa.org	2	Provides Aircraft Owners and Pilots a Monthly Magazine Focused Primarily on Aviation Safety and Pilot Education. The Only Traveler Preparation Information Available is in Magazine Articles.
Daniel Webster College / Aviation	http://www.dwc.edu	1	Pilot Training Program Only.
Embry-Riddle Aeronautical University	http://www.erau.edu	1	Aviation and Aerospace Education.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Delegated Engineering Representative Services Group Inc.	http://www.ders-group.com	1	DER's
Delta Airlines	http://www.delta.com/home/index.jsp	2	Available Information Applicable to Delta Airlines Travel Service Questions Only.
Dangerous Goods International (DGI) Training Inc.	http://www.dgitic@dgitraining.com	1	Dangerous Goods / Hazardous Materials Transportation Training Specialist.
FACTS Training International / AirCare International	http://www.facts-aircare.com	1	Flight Crew Training.
Falco Dangerous Goods Services	http://www.falcoDCservices@cs.com	1	Dangerous Goods Training.
Family Assistance Foundation	http://www.fafonline.org	1	Airline Disaster Support Services.
Flight Dispatch Careers, Inc.	http://www.flightdispatcher.org/classes/index.html	1	FAA Approved Flight Dispatch Training.
Innovative Solutions Inc	http://www.isicns.com	1	Satellite Based Communications, Navigation and Surveillance.
Lufthansa Cargo	http://www.lufthansa-cargo.com/ccLIVN-5FECF9.html	1	Air Cargo Company.
Reem Aviation Security Consultants	http://www.gsctraining.com/gscs.htm	1	Ground Security Training / FAA Approved.
Survival Systems USA, Inc.	http://www.survivalsystemsinc.com/avcourselist.html	1	Aviation and Marine Safety Survival Courses.
US Department of Transportation	http://www.dot.gov/safety.html	3	Links to FAA and CAMI Web Sites.
Internationalbenefits.com	http://www.internationalbenefits.com/travel-safety-tips.htm	1+	(Search: Traveler Safety Tips) This Site Is For An Insurance Company. No Aviation Related Information.
Jorbins.com	http://www.jorbins.com/travel_vacationing_magazine/safetytravel.html	1+	Magazine Article For Women Travelers. No Aviation Related Information.
Center for Disease Control	http://www.cdc.gov/travel	1+	No Aviation Related Information.
Southwest Airlines	http://www.flyswa.com	3	Links to TSA Web Site with Links to FAA/CAMI Web Site.
Enviro-Tech International	http://www.etisurvival.com/pil.htm	1	(Search: Post Emergency Procedures) Aircraft Pilot Survival Training Company.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Safe Skies International	http://www.safe-skies.com/airline_safety.htm	3	Aviation Professionals Who Provide News, Safety Awareness, Aviation Knowledge And Regulatory Insight for the Flying Public.
Jet Safety.com	http://www.jetsafety.com	3	Crash Data, Safety Links.
Barnes And Noble	http://www.barnesandnoble.com	2	12,417 Books on "Safety", 354 Books "Aviation Safety", 84 Books on "Commercial Aviation Safety", 9 Books on "Passenger Safety". None Contain Accident Survival Information.
Waldenbooks	http://www.waldenbooks.com	2	Links to Amazon Web Site Only.
Amazon	http://www.amazon.com	2	230 Books (100 the Same As Barnes & Noble)
Bureau Of Transportation Statistics / Pocket Guide To Transportation	http://www.bts.gov/publications/pocketguide/pdf/entire.pdf	1	DOT Statistical Data.
Continental Airlines	http://www.continental.com	3	Links to TSA Web Site.
Northwest Airlines	http://www.nwa.com	1	
Frontier Airlines	http://www.flyfrontier.com	1	
Jet Blue	http://www.jetblue.com	3	Links to TSA Web Site.
Champion Air	http://www.championair.com	1	
ATA (American Trans Air)	http://www.ata.com	1	
Air Tran Airways	http://www.airtran.com	2	Available Information Applicable to Air Tran Travel Questions Only. (Baggage Info)
U S Airways	http://www.usair.com	3	Links to TSA Web Site.
Vanguard Airlines	http://www.flyvanguard.com/home.asp	1	Filed Chapter 11 Bankruptcy.
Lufthansa German Airlines	http://cms.lufthansa.com/pre/de/en/homepage_noframes/0_4449_0-0-605242_00.html	1	German Airline.
Joint Aviation Authorities (JAA)	http://www.jaa.nl	1	The European Joint Aviation Authorities.
Eurocontrol	http://www.eurocontrol.be	1	European Organization for the Safety of Air Navigation.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Civil Aviation Authority (CAA)	http://www.caa.co.uk	1	British Equivalent to the FAA.
La Direction Generale de l'Aviation Civile	http://www.dgac.fr/default_gb.htm	1	French Equivalent to the FAA.
Luftfahrt-Bundesamt	http://www.lba.de	1	German Equivalent to the FAA.
Ente Nazionale per l'Aviazione Civile	http://www.enac-italia.it	1	Italian Equivalent to the FAA.
Federal Aviation Authority of Russia	http://www.civilavia.ru	1	Russian Equivalent to the FAA.
Alaska Airlines	http://www.alaskaair.com	3	Site Includes a Letter to Jim Loy, Head of The Transportation Safety Administration. Links to TSA Web Site. Duplicate Sites / Same Owner.
Horizon Airlines	http://horizonair.alaskaair.com		
Aloha Airlines	http://www.alohaairlines.com/aq/index.shtm	1	
Arrow Airlines	http://www.arrowair.com/index.htm	1	Became a Cargo Airline After the Crash of Flight 1285.
Atlantic Coast Airlines	http://www.atlanticcoast.com	2	Connects to Delta and United Airlines' Web Sites.
Chautauqua Airlines	http://www.flychautauqua.com	1	
Big Sky Airlines	http://www.bigskyair.com/index.php	1	
Chicago Express Airlines	http://www.ata.com/prod_svcs/ata_connex.html	1	
Colgan Air, Inc.	http://www.colganair.com	3	Links to US Airways.
Crystal Airways	http://www.crystalairways.com	1	
Hawaiian Airlines	http://www.hawaiianair.com/about	1	
Mesa Air	http://www.mesa-air.com/aircraft.html	1	
Miami Air International, Inc.	http://www.miami-air.com	1	
Midwest Express Airlines	http://www1.midwestexpress.com/home.asp	2	
Pan Am Airlines	http://www.flypanam.com	1	
Sky Service Airlines	http://www.skyserviceairlines.com	2	

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
SkyWest Airlines	http://www.skywest.com	1	
Spirit Airlines	http://www.spiritair.com/welcome.cfm?msg=Yes&Language=English	3	Links to TSA Web Site.
Sun Country Airlines	http://www.suncountry.com	2	
Trans State Airlines	http://www.transstates.net	2	Customer Survey Included on Web Site. Your Opinion Matters!
West Jet Airlines LTD.	http://c0dsp.westjet.com/internet/sky	2	
Great Plains Airlines	http://www.gpair.com/index.htm	1	
America West Airlines	http://www.americawest.com/homeIE.asp	3	Links to TSA Web Site.
British Airways	http://www.britishairways.com/travel/home/public/en_us	2	
Title: Survival For Aircrew Author: Sarah-Jane Prew ISBN: 1 84014 521 8	Publisher: Ashgate Publishing Ltd Call Number: TL 553.7 .P748 1999 / CAMI Library	2	Crew Training.
Title: Just In Case, A Passenger's Guide To Airplane Safety And Survival Author: Johnson, Daniel A. ISBN: 0306415763	Publisher: New York / Plenum Call Number: WD 740 J66J 1984 CAMI Library Book Out Of Print – Needs Updates	5	Provides Passenger Emergency Information On Types Of Accidents, Behavior, Decompressions, In-flight Emergencies. How To Prepare For A Crash, Fire, Emergency Escape On Land, Ditchings, And Stress Reactions. No Traveler Preparation Data.
The Volpe National Transportation Systems Center	http://www.volpe.dot.gov	1	Research And Special Programs Administration Conducting Aviation Research For Advances In Technology.
Title: Air Travel: How Safe Is It? Author: Taylor, Laurie ISBN: 0-632-03163-8	Publisher: Blackwell Science Ltd. Call No: TL 553.5 T34 1988 CAMI Library	1	Aircraft Design, Bird Strikes, Structure Failure, Weather Data, Etc.
Title: Jet Smarter: The Air Traveler's Rx Author: Fairchild, Diana ISBN: 1892997495	Publisher: Anahola Hawaii: Flyana Rhyme Call No: WM 188 F35 1992 CAMI Library	2	One Chapter On Passenger Education. "The Smarter Journey." The Book Contains Negative Input.
Title: The Backseat Flyer: Plane Sense About Flying As A Passenger Author: Anderson, Nina ISBN: 1884820352	Publisher: Safe Goods, 1998	2	Provides A Small Amount Of Traveler Information.

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
Flying With Confidence	http://www.uwillfly.com	2	Travel Preparation Information.
Title: Survival Psychology Author: Leach, John ISBN: 0-8147-5090-7	Publisher: New York University Press Call No: BF 789.D5 L43 1994 CAMI Library	1	Psychological Responses To Disaster.
Title: On A Wing And A Prayer Author: MacPherson, Malcolm ISBN: 0060959789	Publisher: Harperperennial Library, 2002 Call No: TL 553.7 M34 CAMI Library	1	Personal Accounts Of Airline Crash Survivors.
Title: Safe Air Travel Companion Author: McKinnon, Dan ISBN: 0071406875	Publisher: New York: McGraw Hill C2002 Call No: HE 9779M35 2002eb CAMI Library	1	Good Information On Dealing With Terrorism.

ADDITIONAL RESOURCES:

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
National Transportation Safety Board (2000). Safety Study. Emergency Evacuation of Commercial Airplanes. NTSB: SS-00/01	http://www.ntsb.gov/publictn/2000/SS0001.pdf		NTSB Report Regarding Emergency Evacuation.
Why Planes Burn Written And Produced By Alec Nisbett	NOVA / 1988		Video with Information from the FAA Tech Center on Aircraft Accidents/Incidents That Included a Fire.
720 Crash Test	NOVA / 1988		Video of Crash Test from the FAA Tech Center.
Slide Methods	CAMI / 1995		Video of Slide Beam Strength Performance During Egress.
McLean, Palmerton, Chittum, George, & Funkhouser (1998). Office of Aviation Medicine Report. Inflatable Escape Slide Beam and Girt Strength Tests: Support for Revision of Technical Standard Order (TSO) C-69b. DOT/FAA/AM-98/3	CAMI – OAM Report		
Proceedings of the Third International Aircraft Fire & Cabin Safety Research Conference, Oct 22 – 25, 2001	DOT/FAA/AR-02/48 TP13910E JAA-OSPAG-2002-1 SM-169		CD-ROM

Name of Web Site/Document	Source	Rating (1-5) *	Special Notes
McLean, George, Funkhouser, & Chittum (1996). Office of Aviation Medicine Report. Aircraft Evacuations Onto Escape Slides and Platforms I: Effects of Passenger Motivation. DOT/FAA/AM-96/18	CAMI – OAM Report		
Parkinson, S.E.and Muir, H.C. (1995). The Effect of Training, Overtraining and Transfer of Training on Passenger Performance in a Simulated Aircraft Emergency.	Research Report From The Department of Applied Psychology, Cranfield University, UK		12 th Annual International Aircraft Cabin Safety Symposium.
Flashover, Learning To Beat It. (1991)	Swede Survival Systems, Inc.		Video on Flashover
Turbulence Education And Training Aid – A Little Bumpy Air. (1997)	Air Transportation Association of America / McDonnell Douglas		Training Video
Why Planes Go Down. (1996)	VDI/ Fox Broadcasting Company		Video On Aircraft Accidents

*** Rating Scale**

1. No travel preparation or emergency information available
2. Minimal travel preparation information available / No emergency data
3. Minimal travel preparation information available / No emergency data / Links to other Web sites
4. Good travel preparation information available / No emergency data
 - Possible Subject Matter: Travel Preparation, How to Dress, Baggage, Travel Documents, Special Needs, Dangerous Goods and Prohibited Items List, Medical Information, Airport Requirements, In-Flight Advice, Frequently Asked Questions, International Travel, Customs, and In-Flight Health.
5. Good safety and emergency information available
 - Possible Subject Matter: Types of Accidents, Behavior, Decompressions, In-Flight Emergencies, How to Prepare for a Crash, Fire, Emergency Escape on Land, Ditchings, and Stress Reactions After an Accident.

