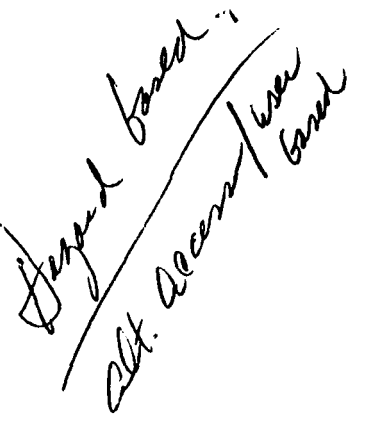
D R A F T Feb. 17, 1996



Guide to and Lessons Learned
From My Accident Prevention Files

C. O. Miller ... Feb. 1996

Introduction

The subject files were begun a little over thirty years ago when I was Director of Research and faculty member at the University of Southern California's Aerospace Safety Division (now known as the Institute of Safety and Systems Management). They were initially intended to support personal teaching and research efforts but later became an integral part of my consulting business on a wide variety of projects, from relatively minor accident investigations to major contracts with government agencies. A few years ago, a professional librarian estimated the collection numbered between 12,000 and 15,000 documents.

The basic criterion for retention of a document was its relevance to aerospace safety; that is, the document contained knowledge to assist someone to prevent an accident. Its objective attempted to implement the axiom, "Learn from the mistakes of others, you will not live long enough to make them all yourself".

Selection of subject coding/indexing categories with individual descriptors was heavily influenced by the fact that, even as the files matured, the most extensive traditional libraries or information centers did not classify material with sufficient safety specificity so as to materially aid the safety professional. Nor did they identify the countless professional papers and articles with a subject code which allowed document retrieval on a practical basis. This continues to this day with the exception of some private files (e.g., at the Air Line Pilots Assn. or the Flight Safety Foundation). Accordingly, my files contain numerous documents otherwise lost in the "information explosion". Each was read and indexed personally based upon my broad education and experience in virtually all aspects of aerospace safety;

albeit in recent years the emphasis has been centered mostly in aviation matters. The smaller documents were stored in folders mainly in legal sized metal file cabinets and in conventional file boxes. Books, of course, were simply on shelves. Some video and audio tapes are also in the collection.

Steps have been underway to transfer of my material to the Center for Aerospace Safety Education at Embry-Riddle Aeronautical University in Prescott, Arizona. Accordingly, this monograph has been prepared to assist university personnel in effecting such a transfer in support of the ongoing establishment of their own, tailored accident prevention information system.

Description of the Miller System

The attachments hereto provide an explanation of the current files' organization and topics. Attachment (1) is a one page "Outline" which gives an overview of the system by expressing only the first two levels of the classification system. The major headings are the same as the original configuration and those at the second level saw only minor changes or additions as time progressed. Note the major "Design" categories which were influenced by my safety engineering background at the time the files were started. Note also the "Reference Information" category which became a catch-all for those subjects either too broad for application to one or more of the detailed subjects or simply did not seem to fit comfortably elsewhere. An example of the latter is "7.10 Safety Know. Personnel" meaning those individuals particularly knowledgeable in given aspects of accident prevention.

Attachment (2) is a "Logic" description of the system, an expansion of what is shown in Attachment (1). "Subject" file folders exist for each of these categories and have been so labeled. Some are broad subjects; some are detailed. Some have very few, if any entries. Others have volumes of material suggesting a further subclassification is in order. Obviously, relationships between categories in different areas exist.

However, as long as the researcher has a comprehensive understanding of the language and nuances of aerospace safety, identifying associative subjects is not usually a problem.

It should be noted at this point that certain procedures necessary in an optimum system were abandoned a decade or more ago due to practical time availability constraints in maintaining the system. For example, in the beginning of the system's operation, multiple indexing of documents was the order of the day; that is, a given document was noted in a number of categories. Interestingly, usually three or four categories were enough. Similarly, conference proceedings were literally pulled apart so as to store individual papers in appropriate files. Hard cover books were a particular problem which was approached by storing a book abstract or review in the "Subject" file and assigning a serial number to the book itself with a separate listing thereof. (File folders do not conveniently accommodate documents more than about a quarter of an inch thick.) Thus, the collection as it stands today has far more information in it than will appear in the folders under a specific subject heading.

Also, although automatic data processing systems were considered at various points in the collection's life cycle, they were dismissed. With personal knowledge of the files' content based upon making the entries myself and the success experienced even with a manual system, transitioning to a computer-based system did not seem to be cost or time effective. That, of course, would not be the case for a multiple user or coder system.

Attachment (3) is simply an alphabetical listing of all terms and phrases found in Attachment (2). Even for one familiar with the system, both Attachments (2) and (3) were found to be necessary for quick location of descriptors, especially when the system had not been accessed for awhile.

Lessons Learned Which Should Be Considered in Establishing Any New System

The suggestions listed below (numbered for quick reference purposes) have been influenced not only by my personal collection but also by my participation in past proposals to establish a national aviation safety information system and work with the Flight Safety Foundation. Familiarity with U.S. Technical Information Center, NASA, USAF and other systems also provide a backdrop for the following thoughts:

1. The most important step in creating a new system is to identify the system's user population, now and in the foreseeable future.

2. Closely allied with (1), ascertain the kind of questions that will be asked of the system.

3. The system should be administered by personnel with comprehensive knowledge of the aviation language, preferably with experience in air safety. (The conventional librarian seldom has this capability, let alone the standard library coding systems being virtually useless because of limited depth of indexing.)

4. As implied above, understanding the *logic* of the system as well as the meaning of individual subject codes/descriptors is essential for both the operators and users of the system.

5. Users should be provided personal or written guidance as to how the system is structured before they are permitted to utilize it.

6. For the guidance material indicated in (5), a subject definition list should be available, at least for topics which may have ambiguous meanings.

7. Similar to the above, associated subjects should be identified to to some reasonable degree.

8. Especially as the information center builds, and with proper guidance, the users can be encouraged and solicited to suggest additional categories for a given document, i.e., more cross-indexing.

9. Teaching-staff personnel should provide at least preliminary indexing of new material they encounter in day to day activity that has reasonable value to the information center.

10. Conversely to (9), a "Desired Information Profile" should be established for each appropriate staff member so that as new material is received directly at the Center and indexed, it automatically goes to persons who have a preselected particular interest.

11. Material found conveniently in conventional libraries (e.g., books, major reports and periodicals) should not be stored at the accident prevention information center unless they are clearly specialized in safety matters (e.g., the International Society of Air Safety Investigators' *FORUM* or NTSB Accident reports). To do otherwise greatly expands the workload for the operator of the system not to mention increased storage space requirements.

12. Notwithstanding what has been stated in (11), a need will exist to store for quick access certain broad-based reference material such as bibliographies, other safety information system descriptions, etc; items which may already be in the main library.

13. A given document can be expected to have multiple subject classifications; thus allowance for such cross-referencing between files is mandatory. Note that this assumes a document will be stored in one particular subject file. A perhaps preferred alternate approach is to store documents manually or electronically under a sequential number and file them according to an access code. *Which way to go in this respect becomes a major decision to be made at startup of any new system.*

14. Currency of the document can present a continuing problem. A fine line sometimes exists as to when a document really becomes more of

historical significance than one of present value technically. Thus, publication date must be available prominently.

15. Plans should be made to "archive" or "cull" certain documents periodically as they lose their current significance. True, the ability to trace progress concerning a specified safety issue is important, especially in a learning environment. However, priority should be given to the best, most advanced information.

16. A major subject classification approach should include specifically known hazards (and/or their remedial solution) such as "wind shear", "collision avoidance", "icing", "accelerate-stop", etc.

17. In today and tomorrow's environment, a computer-based system must be considered in either establishing a new system or refining an old one. Thus, although the beginning "Logic" and "Subject" filing might well be manual due to unavailable resources, ADP plans should be made from time zero of the program.

Concluding Remarks

Like any information system, people have to work in establishing it, maintaining it and assist new users personally. The systems are only as good as knowledge people have about it. Accordingly, and as suggested above, indoctrination in the system must be a major effort if it is to succeed. (Routine classroom period for all safety classes?)

Finally, one problem has been encountered for which a solution has not been established. Safety "information" really has three dimensions. The first is "Data" which are things about which few people can argue (e.g. numbers of fatalities in a given year) Formally defined, "Data" means "facts or figures...from which conclusions may be inferred". Thus the second dimension might be called "Conclusions" or something similar wherein it represents assessments and judgments about what the "Data" means (e.g., what an annual number of fatalities signifies in the grand scheme of air transport safety.) The third dimension might

be called "Intelligence"; that is what can or should be done about what came out of "Data" and "Conclusions" (e.g. implement accident prevention programs). This is somewhat similar to the "Facts", "Analyses", "Findings, "Recommendations" approach of accident investigations; however, they are not really the same.

The challenge of a modern accident prevention (nee "safety") information systems is to efficiently lead the user in a timely manner to what can be the best way to avoid accidents. As stated earlier, "Learn from the mistakes of others..." That's what it is all about.

Enclosure 1

Safety Files - OUTLINE
C. O. Miller ... Consultant-System Safety
(As of 1/18/96)

1.1 Accident Prevention
- 1.1 Safety Techniques
- 1.2 System Safety

2.0 Systems
- 2.1 Aviation
- 2.2 Missile/Space
- 2.3 Transportation (Other)
- 2.4 Safety Fields (Other)

3.0 Safety Management
- 3.1 Economics
- 3.2 Ethics
- 3.3 Industrial Relations
- 3.4 Legal
- 3.5 Morale/Leadership
- 3.6 Organization/Control
- 3.7 Personnel Management
- 3.8 Policies/Philosophies
- 3.9 Production/Manufacturing
- 3.10 Public Relations
- 3.11 Risk Management
- 3.12 Staffing
- 3.13 Systems Management

4.0 Aerospace Operations
- 4.1 Flight Operations
- 4.2 Ground Operations
- 4.3 Personnel Performance
- 4.4 Weather Operations

5.0 Design Safety
- 5.1 Crash Injury Prevention
- 5.2 Crew Station and Cabin
- 5.3 Escape Systems (In Flight)
- 5.4 Environmental Factors
- 5.5 Vehicle Sub-Systems

6.0 Design Support Functions
- 6.1 Aerodynamics
- 6.2 Auto. Data Processing
- 6.3 Aviation Medicine
- 6.4 Chemistry
- 6.5 Human Factors
- 6.6 Maintainability
- 6.7 Operations Research
- 6.8 Physics
- 6.9 Quality Assurance
- 6.10 Reliability
- 6.11 Robotics
- 6.12 Statistical Analysis
- 6.13 Structures
- 6.14 Systems Effectiveness
- 6.15 Systems Engineering
- 6.16 Technical Publications
- 6.17 Test and Evaluation
- 6.18 Value Engineering

7.0 Reference Information
- 7.1 Accident Reports
- 7.2 Bibliographies
- 7.3 Book Reports
- 7.4 Cases
- 7.5 Glossaries/Symbols
- 7.6 Handbooks
- 7.7 Historical
- 7.8 Information Systems
- 7.9 Miscellaneous Reading
- 7.10 Safety-Know. Personnel
- 7.11 Statistical Data
- 7.12 Topographical Charts

Enclosure 2

Subject Files - LOGIC

(As of 1/18/96)

1.0 Accident Prevention (General)

- 1.1 Safety Techniques (General)
  - 1.1.1 Accident Investigation
    - 1.1.1.1 Pathology/Forensic Science
    - .2 Probable Cause
    - .3 Recorders
  - .2 Communications
  - .3 Councils/Committees
  - .4 Education/Training
    - 1.1.4.1 Awareness/Motivation
  - .5 Emergency Procedures
  - .6 Hazard Analyses
  - .7 Incident Reporting/Analysis
  - .8 Plans
  - .9 Regulations/Specifications
  - .10 Research
  - .11 Surveys/Inspections/Audits
  - .12 Technical Information Systems
- 1.2 System Safety (General)
  - 1.2.1 System Safety Definitions
  - .2 System Safety Discipline
  - .3 System Safety Models/Factors
  - .4 System Safety Programs
  - .5 System Safety Requirements
  - .6 System Safety Tasks

2.0 Systems (General)

- 2.1 Aviation System
  - 2.1.1 Aerial Application
  - .2 Air Carrier (Major)
  - .3 Balloons
  - .4 Commuters/Regional
  - .5 EMS (Emergency Medical Service)
  - .6 General Aviation (Business/Private)
  - ,7 Glider/Soaring
  - .8 Helicopter
  - .9 Military
  - .10 Sport/Experimental
  - .11 SST (Supersonic Transport)
  - .12 Ultralights
  - .13 V/STOL (Fixed wing)
- 2.2 Missile/Space Systems
  - 2.2.1 Commercial Space Operations
  - .2 Manned Space Flight
  - .3 Missiles/Unmanned Space Vehicles
- 2.3 Safety Fields - Other
  - 2.3.1 Explosives
  - .2 Industrial/Worker
  - .3 Nuclear Power
  - .4 Nuclear Weapons
- 2.4 Transportation Systems - Other
  - 2.4.1 Highway/Traffic
  - .2 Marine (Surface)
  - .3 Rail/Mass Transit
  - .4 Undersea

3.0 Safety Management

- 3.1 Economics
- .2 Ethics
- .3 Industrial Relations
- .4 Legal
  - 3.4.1 Products Liability
- .5 Morale/Leadership
- .6 Organization/Control
- .7 Personnel Management (Basic Theories)
  - 3.7.1 Management by Objectives
    - .2 Productivity
- .8 Policies/Philosophies
- .9 Production/Manufacturing
- .10 Public Relations
- .11 Risk Management
- .12 Staffing
- .13 Systems Management

4.0 Aerospace Operations

4.1 Flight Operations

4.1.1 ATC (Air Traffic Control)

.2 Approach/Landing

4.2.2.1 GPWS (Ground Proximity Warning System)

.3 Bird Strikes

.4 Cabin Safety

.5 Collision Avoidance

.6 Critical Altitude Operations

.7 Ditching

.8 ETOPS (Extended Twin-engine Operations)

.9 Flight Planning

.10 Flight Testing

.11 Navigation (Operations)

.12 Obstruction Avoidance

.13 Preflight/Checkout/Launch

.14 Radar

.15 Search/Survival/Rescue

.16 Sonic Boom

.17 Standardization

.18 Stopping the Aircraft

.19 Takeoff performance (Accelerate-Stop)

.20 Wake Vortex

.21 Weight and Balance

.22 Wire Strikes

4.2 Ground Operations

4.2.1 Airport Facilities/Procedures

.2 Cargo Operations

.3 Crash Rescue/Fire Fighting

.4 Dangerous Materials

.5 Disaster Planning

.6 FOD (Foreign Object Damage)

.7 Maintenance/Overhaul

.8 Navigation Aids (Ground)

.9 Sabotage/Security/Hijacking

4.3 Personnel Performance

4.3.1 CRM (Cockpit/Crew Research Management)

.2 Pilot Proficiency/Evaluation

4.4 Weather Operations

4.4.1 All-Weather

.2 Cold Weather

.3 Icing

.4 Lightning/Static Electricity

.5 Low Visibility

.6 Turbulence/Thunderstorm

.7 Wind Shear

5.0 Design Safety (General)

- 5.1 Crash Injury Prevention
  - 5.1.1 Crash Fire Protection
    - .2 Emergency Egress
    - .3 Impact Design (Structural)
    - .4 Seating/Restraint
    - .5 Survival Equipment
- 5.2 Crew Station and Cabin
  - 5.2.1 Controls Configuration/Layout
    - .2 Galleys/Ancillary Equipment
    - .3 Instrumentation
      - 5.2.3.1 Altimeters
    - .4 Life Support
    - .5 Lighting (Internal)
- 5.3 Escape Systems (In Flight)
  - 5.3.1 Capsule
    - .2 Ejection Seats
      - 5.3.2.1 Martin Baker Seat
    - .3 Parachutes
- 5.4 Environmental Factors
  - 5.4.1 Acceleration/Vibration
    - .2 Noise
    - .3 Radiation
    - .4 Thermal
    - .5 Toxicity
- 5.5 Vehicle Sub-Systems (General)
  - 5.5.1 Computer Based Systems
    - .2 Electrical/Electronic
    - .3 Fire Prevention/Control
    - .4 Fuel
    - .5 Hydraulic/Pneumatic
    - .6 Landing Gear
      - 5.5.6.1 Arresting Gear
        - .2 Brakes/Anti Skid
        - .3 Tires
        - 4 Wheels

5.5.7 Lubrication
.8 Power Transmission
.9 Propulsion Systems (General)
5.5.9.1 Jet Engines
.2 Propellors
.3 Reciprocating Engines
.4 Rocket Engines
.5 Turboprop Engines
.10 Surface Controls
5.5.10.1 Automatic Flight Controls/Autopilot

6.0 Design Support Functions

- 6.1 Aerodynamics
  - 6.1.1 Aerodynamic Performance (General)
  - .2 Asymmetric Thrust
  - .3 Configuration Effects
  - .4 Fluid Dynamics
  - .5 Stability and Control
  - .6 Stall/Spin
- 6.2 ADP (Automatic Data Processing)
  - 6.2.1 Software Safety
- 6.3 Aviation Medicine
  - .1 Aging
  - .2 Alcohol/Drugs
  - .3 First Aid
  - .4 Hypoxia/Hyperventilation
- 6.4 Chemistry
- 6.5 Human Factors (General)
  - 6.5.1 Anthropometry
  - .2 Disorientation/Illusion
  - .3 Fatigue (Human)
  - .4 Human Engineering/Ergonomics
  - .5 HPES (Human Performance Enhancement System)
  - .6 Human Reliability/ Human Error
  - .7 Judgment/Decision-Making
  - .8 Physiology
  - .9 Psychology
  - .10 Simulation
  - .11 Stress/Fear/Panic
  - .12 Task Analysis
  - .13 Vision
  - .14 Warnings
- 6.6 Maintainability/Maintenance Engineering
- 6.7 Operations Research
- 6.8 Physics
  - 6.8.1 Atomic/Nuclear Energy
  - .2 Lasers

6.9 Quality Assurance/Control
6.9.1 Non Destructive Testing
.2 Spectrometric Oil Analysis
6.10 Reliability
6.10.1 Design Reliability
.2 Failure Reporting/Analysis
.3 Reliability Analysis
.4..Reliability Management and Control
.5 Reliability Specifications
.6 Sub Contractor Reliability
6.11 Robotics
6.12 Statistical Analysis Methods
6.13 Structures
6.13.1 Corrosion
.2 Fasteners/Couplings
.3 Fatigue (Structural)
.4 Loads/Stress Analysis
.5 Materials
.6 Welding
6.14 Systems Effectiveness
6.15 Systems Engineering
6.16 Technical Publications
6.17 Test and Evaluation
6.18 Value Engineering

7.0 Reference Information (Miscellaneous)

- 7.1 Accident Reports/Indexes
- .2 Bibliographies
- .3 Book Reports
- .4 Cases (Miscellaneous)
  - 7.4.1 ATR-42/72
  - .2 DC-10 (Paris)
  - .3 MU-2
- .5 Glossaries/Symbols
- .6 Handbooks
- .7 Historical
- .8 Information Systems
  - 7.8.1 Accident Codes
  - .2 ASRS (Aviation Safety Reporting System)
  - .3 Film Indexes
  - .4 Publication Indexes
- .9 Miscellaneous Reading
- .10 Safety Knowledgeable Personnel
  - 7.10.1 Bruggink
  - .2 Consultants (General)
  - .3 Lederer
- .11 Statistical Data
- .12 Topographical Maps/Aeronautical Charts

Enclosure 3

Subject Files - ALPHABETICAL

(As of 1/18/96)

Book Reports (7.3)
Brakes/Anti Skid (5.5.6.2)
Bruggink (7.10.1)

Cabin Safety (4.1.4)
Capsule (5.3.1)
Cargo Operations (4.2.2)
Cases (Miscellaneous) (7.4)
Chemistry (6.4)
CRM (Cockpit/Crew Resource Management) (4.3.1)
Cold Weather (4.4.2)
Collision Avoidance (4.1.5)
Commercial Space Operations (2.1.1)
Communications (1.1.3)
Commuters/Regional (2.1.4)
Computer Based Systems (5.5.1)
Configuration Effects (6.1.3)
Consultants (General) (7.10.2)
Controls Configuration/Layout (5.2.1)
Corrosion (6.13.1)
Councils/Committees (1.1.2)
Crash Fire Prevention (5.1.1)
Crash Injury Prevention (5.1)
Crash Rescue/Fire Fighting (4.2.3)
Crew Station and Cabin (5.2)
Critical Altitude Operations (4.1.6)

Dangerous Materials (4.2.4)
Design Reliability (6.10.1)
Design Safety (5.0)
Design Support Functions (6.0)
Disaster Planning (4.2.5)
Disorientation/Illusion (6.5.2)
Ditching (4.1.7)
DC-10 (Paris) (7.4.2)

Economics (3.1)
Education/Training (1.1.4)
Ejection Seats (5.3.2)
Electrical/Electronic (5.5.2)
Emergency Egress (5.1.2)
Emergency Procedures (1.1.5)
EMS (Emergency Medical Services) (2.1.5)
Environmental Factors (5.4)
Escape Systems (In Flight) (5.3)
Ethics (3.2)
Explosives (2.3.1)
ETOPS (Extended Twin-engine Operations) (4.1.8)

Failure Reporting/Analysis (6.10.2)
Fasteners/Couplings (6.13.2)
Fatigue (Human) (6.5.3)
Fatigue (Structural) (6.13.3)
Film Indexes (7.8.3)
Fire Prevention and Control (5.5.3)
First Aid (6.3.3)
Flight Operations (4.1)
Flight Planning (4.1.9)
Flight Testing (4.1.10)
Fluid Dynamics (6.1.4)
FOD (Foreign Object Damage) (4.2.6)
Fuel (5.5.4)

Galleys/Ancillary Equipment (5.2.2)
General Aviation (Business/Private) (2.1.6)
Glider/Soaring (2.1.7)
Glossaries/Symbols (7.5)
GPWS (Ground Proximity Warning System) (4.2.2.1)
Ground Operations (4.2)

Handbooks (7.6)
Hazard Analyses (1.1.6)
Helicopter (2.1.8)
Highway/Traffic (2.4.1)
Historical (7.7)
Human Engineering/Ergonomics (6.5.4)
Human Factors (General) (6.5)
HPES (Human Performance Evaluation System) (6.5.5)
Human Reliability/Human Error (6.5.6)
Hydraulic/Pneumatic (5.5.5)
Hypoxia/Hyperventilation (6.3.4)

Icing (4.4.3)
Impact Design (Structural) (5.1.3)
Incident Reporting/Analysis (1.1.7)
Industrial Relations (3.3)
Industrial/Worker (2.3.3)
Information Systems (7.8)
Instrumentation (5.2.3)

Jet Engines (5.5.9.1)
Judgment/Decision-Making (6.5.7)

Landing Gear (5.5.6)
Lasers (6.8.2)
Lederer (7.10.3)
Legal (3.4)
Lightning/Static Electricity (4.4.4)
Loads/Stress Analysis (6.13.4)
Low Visibility (4.4.5)
Lubrication (5.5.7)

Maintainability (6.6)
Maintenance/Overhaul (4.2.7)
Management by Objectives (3.7.1)
Manned Space Flight (2.2.2)

Marine (Surface) (2.4.2)
Martin Baker Seat (5.3.2.1)
Materials (6.13.5)
Military (2.1.9)
Miscellaneous Reading (7.9)
Missile/Space Systems (2.2)
Missiles/Unmanned Space Vehicles (2.2.3)
Morale/Leadership (3.5)
MU-2 (7.4.3)

Navigation Aids (4.2.8)
Navigation (Operations) (4.1.13)
Noise (5.4.2)
Non Destructive Testing (6.9.1)
Nuclear Power (2.2.3)
Nuclear Weapons (2.3.4)

Obstruction Avoidance (4.1.12)
Operations Research (6.7)
Organization/Control (3.6)

Parachutes (5.3.3)
Pathology/Forensic Science (1.1.1.1)
Personnel Management (Basic Theories) (3.7)
Personnel Performance (4.3)
Physics (6.8)
Physiology (6.5.8)
Pilot Proficiency/Evaluation (4.3.2)
Plans (1.1.8)
Policies/Philosophies (3.8)
Power Transmission (5.5.8)
Preflight/Checkout/Launch (4.1.13)
Probable Cause (1.1.1.2)
Production/Manufacturing (3.9)
Productivity (3.7.2)
Products Liability (3.4.1)

Propellors (5.5.9.2)
Propulsion Systems (General) (5.5.9)
Psychology (6.5.9)
Publication Indexes (7.8.4)
Public Relations (3.10)

Quality Assurance/Control (6.9)

Radar (4.1.14)
Radiation (5.4.3)
Rail/Mass Transit (2.4.3)
Reciprocating Engines (5.5.9.3)
Recorders (1.1.1.3)
Reference Information (Miscellaneous) (7.0)
Regulations/Specifications (1.1.9)
Reliability (6.10)
Reliability Analysis (6.10.3)
Reliability Management and Control (6.10.4)
Reliability Specifications (6.10.5)
Research (1.1.10)
Risk Management (3.11)
Robotics (6.11)
Rocket Engines (5.5.9.4)

Sabotage/Security/Hijacking (4.2.9)
Safety Fields - Other (2.3)
Safety Knowledgeable Personnel (7.10)
Safety Management (3.0)
Safety Techniques (General) (1.1)
Search/Survival/Rescue (4.1.15)
Seating/Restraint (5.1.4)
Simulation (6.5.10)
Software Safety (6.2.1)
Sonic Boom (4.1.16)
Spectrometric Oil Analysis (6.9.2)
Sport/Experimental (2.1.10)

Stability and Control (6.1.5)
Staffing (3.12)
Stall/Spin (6.1.6)
Standardization (4.1.17)
Statistical Analysis Methods (6.12)
Statistical Data (7.11)
Stopping the Aircraft (4.1.18)
Stress/Fear/Panic (6.5.11)
Structures (6.12)
Sub Contractor Reliability (6.10.6)
SST (Supersonic Transport) (2.1.11)
Surface Controls (5.5.10)
Surveys/Audits/Inspections (1.1.11)
Survival Equipment (5.1.5)
System Safety Definitions (1.2.1)
System Safety Discipline (1.2.2)
System Safety (General) (1.2)
System Safety Models/Factors (1.2.3)
System Safety Programs (1.2.4)
System Safety Requirements (1.2.5)
System Safety Tasks (1.2.6)
Systems Effectiveness (6.14)
Systems Engineering (6.14)
Systems (General) (2.0)
Systems Management (3.13)

Takeoff Performance (Accelerate-Stop) (4.1.19)
Task Analysis (6.5.12)
Thermal (5.4.4)
Technical Publications (6.16)
Technical Information Systems (1.1.12)
Test and Evaluation (6.17)
Tires (5.5.6.3)
Topographical Maps/Aeronautical Charts (7.12)
Toxicity (5.5.5)
Transportation Systems - Other (2.4)

C. O. Miller
Files Transferred To ERAU
as of Mar. 23, 1996

	Original	Latest Additions
Accident Investigation	11/21/91	3/23/96
Alcohol/Drugs	1/10/92	"
Collision Avoidance	2/16/94	"
Communications	7/13/93	"
Crash Fire Protection	11/21/91	"
Crash Injury Prevention	"	"
Crash Rescue/Fire Fighting	"	"
Disorientation/Illusions	7/5/93	"
Ditching	11/21/91	
Emergency Egress	"	3/23/96
Hazard Analyses	9/3/94	"
Human Engineering	1/10/92	
Human Factors (General)	"	3/23/96
Human Reliability	"	
Icing	10/29/92	3/23/96
Impact Design (Structural)	11/21/91	
Pathology/Forensic Science	1/10/92	
Physiology	"	3/23/96
Safety Management	9/25/95	"
Search/Survival/Rescue	11/21/91	"
Seating/Restraint	"	"
Stopping the Aircraft	4/24/92	
System Safety Definitions	1/20/92	
System Safety Discipline	1/20/92	
System Safety (General)	"	3/23/96
System Safety Models/Factors	"	
System Safety Programs	"	3/23/96
System Safety Requirements	"	"
System Safety Tasks	"	"
Takeoff Performance	7/19/95	"