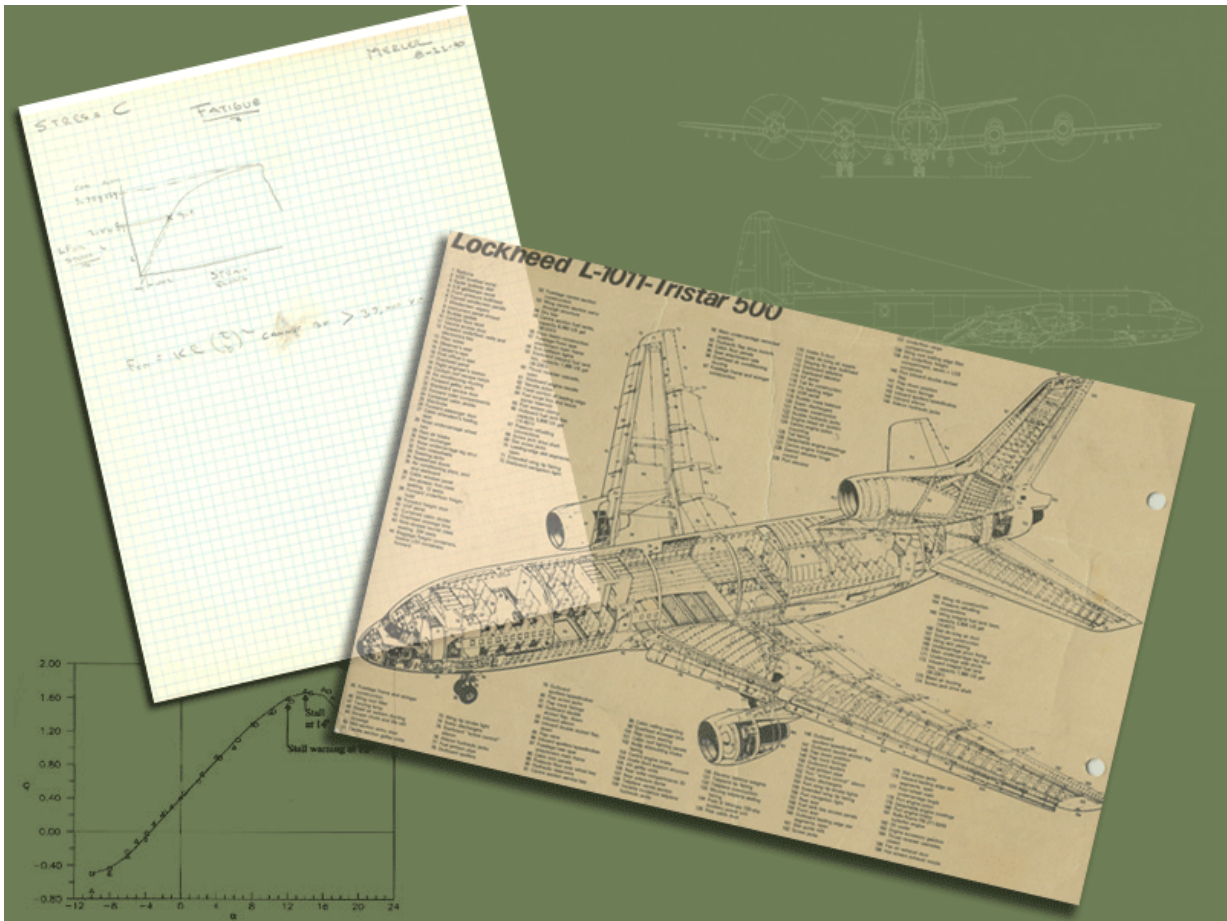


Finding Aid

The Charles R. Mercer Collection



Collection level

Accession Number: PC 2005.002

Level of description: Collection

Title: Charles Mercer Collection

Dates of creation: 1938-1990

Extent and material: 3 feet of textual material

Biographical Sketch:

Charles R. Mercer graduated from the Curtiss-Wright Technical Institute of Aeronautics in 1937 as an aeronautical engineer. He worked briefly for a year at Pased Aircraft Corporation before a long career at Lockheed Corporation.

Mercer held various positions at Lockheed Corporation during his 42 years with the company. He began as a design engineer and draftsman on the P-38, Model 18 Lodestar, Constellation, and P-58. As the years went by his position changed from flight engineer to senior design engineer to being a manager in numerous test programs. Mercer also served as research and design engineer on the P-3 Orion Project in 1968. The following six years he spent on the L-1011 designing the flight station. Finally in 1980 he retired from the Lockheed Corporation to start his own consulting firm. Mercer was a member of the Lockheed California Company Accident Investigation Team from 1945-1980. He was qualified as Investigation Coordinator and Committee representative for Human Factors, Operations and Witness. He has participated in litigation and proceedings as an expert witness in actions arising out of aircraft accidents. Mercer aided in the investigation of some high profile aviation accidents such as the 1972 accident of Eastern Airlines which crashed into the Florida Everglades.

Mercer has aided in aviation education by lecturing for the University of Southern California in Aircraft Accident Investigating and Aviation Safety Program Management. He also taught at Glendale College, CA from 1947-1954. Mercer was the ISASI (International Society of Air Safety Investigators) Los Angeles Chapter President and vice president. He had been a continuing member of ISASI since 1968.

Scope and content:

The Charles R. Mercer Collection consists of documents that he has collected over the span of 60 years. Most of the collection contains documents from the Lockheed California Company at which Mercer was employed for 42 years. Also contained in this collection is some school work from Mercer from 1940 detailing stress class notes. This Collection additionally has an array of ICAO Manuals from the 1970s. The collection consists of the following series: Series One – ICAO; Series Two – Lockheed Development Program; Series Three - Other Reports; Series Four - Other Publications. The collection also consists of several items that are not part of any series.

System of arrangement:

This collection is divided into four series:

Series 1. ICAO. – 1970-1980

Series 2. Lockheed Development Program. – 1942-1978

Series 3. Other Reports. – 1968-[1993?]

Series 4. Other Publications – 1946-1991

Two series can be broken down into files.

Lockheed Development Program Series. Lockheed Papers File – 1938-1940

Other Reports Series. International Society of Air Safety Investigators File – 1985-1993

Series and Files consist of several items. Only some are described at the item level.

Conditions governing access: access unrestricted

Immediate source of acquisition: Material donated by the creator.

Date of description: Last update: 2005/05/03

Access points:

Mercer, Charles

Lockheed California Company

aviation safety

Engineering - Aeronautical & astronautical

International Society of Air Safety Investigators

International Civil Aviation Organization

Series Level

Reference code: PC 2005.002 Series 1

Level of description: Series. Part of Charles Mercer Collection

Title: ICAO

Dates of creation: 1970-1980.

Extent and material: 6 inches textual records

Administrative History:

ICAO, International Civil Aviation Organization, was formed in 1947 and has 187 member nations. This United Nations agency is involved with civil aviation. ICAO has established consistent standards for aircraft such as airworthiness, aircraft markings, and licensing of pilots. ICAO has laid the foundation for a set of rules and regulations regarding air navigation. The main headquarter for ICAO is in Montreal.

Scope and content:

Series contains seven ICAO (International Civil Aviation Organization) Manuals ranging in dates from 1970-1980. There are two manuals from the International Standards and Recommended Practices series, one is Aerodomes Annex 14, 7th edition (1976) and the second is Aircraft Accident Investigation Annex 13, 7th edition (1988). The third ICAO Manual is the Manual of Aircraft Accident Investigation, 4th Edition (1970). There are also two Manuals for the Airports Services series, one is Control of Obstacles (1977) and

the other is Airport Emergency Planning (1980). The final Manual is a Heliport Manual (1979). The last item in the series is an ICAO Aircraft Accident Investigation Colloquium summary of discussions (1998).

Series Level

Reference code: PC 2005.002 Series 2

Level of description: Series. Part of Charles Mercer Collection

Title: Lockheed Development Program

Dates of creation: 1942-1978.

Extent and material: 1.5 feet textual records

Administrative History:

Lockheed is an aerospace company formed in 1912 and located in California. It was originally named Loughed from the brothers that started the company but later changed the name to Lockheed Corporation. In 1995 Lockheed merged with Martin Marinetta to form Lockheed Martin. Throughout the years Lockheed has produced aircraft of a diverse nature which ranges from fighter to transport. Lockheed released the P-38 during World War II which became known as the only fighter plane to last through the War. Other planes that got Lockheed to its superior status include the L-1011, Constellation, SR-71, C-130 and the F-104.

Scope and content:

This series consists of all documents in the collection pertaining to Lockheed California Company (currently known as Lockheed Martin). There are 6 binders that pertain to the Supersonic Transport Development Program from 1963-1966. Also included in the Lockheed series are various jet trainer proposals and training manuals. Additional items of the Lockheed series are reports written by employees of Lockheed California Company on various issues and a large Space Science design handbook.

Series Level

Reference code: PC 2005.002 Series 3

Level of description: Series. Part of Charles Mercer Collection

Title: Other Reports

Dates of creation: 1968-[1993?].

Extent and material: 3 inches textual records

Scope and content:

Series three consists of a file comprised of ISASI (International Society of Air Safety Investigators) reports and unrelated other reports. The ISASI file contains 7 reports presented at ISASI or created by the ISASI organization. The rest of the reports in this series are from various individuals and groups.

Series Level**Reference code:** PC 2005.002 Series 4**Level of description:** Series. Part of Charles Mercer Collection**Title:** Other Publications**Dates of creation:** 1946-1991.**Extent and material:** 4 inches textual records**Scope and content:**

Series four contains other publications from various groups including the Civil Aeronautics Administration, ALPA, the FAA and the Transport Safety Institute. These publications are all aviation related and mostly contain information for the safety of flight. A few of the publications in the collection are Flying Magazine, FAA General Aviation News and a Maintenance TWA Information Letter.

File Level**Reference code:** PC 2005.002**Level of description:** File. Part of Other Reports Series**Title:** International Society of Air Safety Investigators File**Dates of creation:** 1985-1993.**Extent and material:** 1 inch textual records**Administrative History:**

ISASI, International Society of Air Safety Investigators, was founded in 1964. It is basically a society formed of Aviation professionals who share their ideas, thoughts and information on safety in aviation. Affiliated National/Regional Societies are located in the United States, Canada, Australia, Europe, New Zealand and Russia. Charles Mercer served as the President of the Los Angeles ISASI Chapter from 1975-1976 and as Vice President from 1980-1982. He has been a member of ISASI since 1968.

Scope and content:

This file consists of various reports written for ISASI conferences. These reports all contain aviation safety information or research for information.

File Level**Reference code:** PC 2005.002**Level of description:** File. Part of Lockheed Development Program Series**Title:** Lockheed Papers**Dates of creation:** 1938-1940**Extent and material:** 1 inch textual records

Scope and content:

This file consists of Lockheed papers collected by Mercer and one paper that is the result of a technical session that is not a Lockheed numbered paper. The papers are numbered and they provide information on specific aspects of aircraft design, engineering, production, specifications, etc. There are also several articles on issues of management and administration as they apply to a corporation

Item Level**Reference code:** PC 2005.002**Level of description:** Item. Part of Charles Mercer Collection**Title:** Stress Class Notes**Dates of creation:** 1940**Extent and material:** 1 inch textual records**Scope and content:**

The notes and material in this folder are from Chuck Mercers training with Lockheed Martin. The Stress Class Notes from Charles Mercer are collected in a folder. They are all from his engineering training in 1940. This folder includes class notes, tests and design papers from Lockheed. Approx. 50 pages total.

Item Level**Reference code:** PC 2005.002**Level of description:** Item. Part of Charles Mercer Collection**Title:** Supersonic Trip Time Comparator**Dates of creation:** [196-?]**Extent and material:** 1 artifact**Scope and content:**

The Supersonic Trip Time Comparator translates trip time between Piston, Subsonic and Supersonic aircraft. It consists of one circular flat object which has a small circle on top of a large circle. The smaller circle on top is movable to produce different results at different settings.

Item Level**Reference code:** PC 2005.002**Level of description:** Item. Part of Charles Mercer Collection**Title:** Simulated Wing Tank**Dates of creation:** 1966**Extent and material:** 1 photograph

Scope and content:

Photograph shows a 500 gallon simulated wing tank. A sign in the photograph indicates that there were 72 flight cycles in August 18, 1966. It also states 'Nitrogen Purge and Pressurization ENCO Turbo Fuel A1.'

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Charles Mercer Collection

Title: Paper on Product Assurance

Dates of creation: 1967

Extent and material: 1 writings

Scope and content:

Paper consists of three typed pages on Product Assurance. This was written by Mercer for a course at Lockheed on aircraft operations and it appears to be notes for an oral presentation. In the text of this paper he indicates that the discussion will be about Maintainability, Reliability Programs, Quality Assurance, Value and Producibility Program, Value and producibility in Design, Standardization, and Product Support and Training.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Other Publications Series

Title: Path of Flight

Continuation of Title: Practical Information about Navigation of Private Aircraft

Dates of creation: 1946

Extent and material: 1 published item

Scope and content:

Item consists of a booklet that is the second in a series of short manuals prepared by the Civil Aeronautics Administration to provide the private pilot with information on the safe operation of his aircraft

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Lockheed Development Program Series

Title: Safety With Comfort in the Passenger Cabin

Dates of creation: 1975

Extent and material: 1 writings

Scope and content:

This paper was for presentation at the Fourth Flight Safety Seminar, Orient Airlines Association, in Kuala Lumpur May 1975. It is a 28 page booklet that contains 34 figures

and associated text. The paper reviews areas where safety and comfort relate to the passenger cabin design of aircraft.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Lockheed Development Program Series

Title: Supersonic Transport Development Program Phase III Proposal

Continuation of Title: Volume IV-B System Integration Test book 1 of 2

Dates of creation: 1966

Extent and material: 1 textual record

Scope and content:

This binder consists of a submission to the Federal Aviation Agency [FAA] about a development program for supersonic transport. It is binder 1 of 2 and is a response to the FAA's request for proposal for the supersonic development program dated June 1966. The total submission consists of volumes I through VII, this IV-B being specifically about System Integration Test.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Lockheed Development Program Series

Title: Supersonic Transport Development Program Phase III Proposal

Continuation of Title: Volume IV-B System Integration Test book 2 of 2

Dates of creation: 1966

Extent and material: 1 textual record

Scope and content:

This binder consists of a submission to the Federal Aviation Agency [FAA] about a development program for supersonic transport. It is binder 2 of 2 and is a response to the FAA's request for proposal for the supersonic development program dated June 1966. The total submission consists of volumes I through VII, this IV-B being specifically about System Integration Test.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Lockheed Development Program Series

Title: L-1011 Tristar Performance Engineers Manual

Continuation of Title:

Dates of creation: 1977

Extent and material: 1 textual record

Scope and content:

This engineers manual for the L-1011 TriStar consists of three sections - General, Aerodynamic Data, and Engine Data. The front page indicates that it was received by C.R. Mercer on July 29, 1977.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Lockheed Development Program Series

Title: Flight Crew Introduction to the L-1011

Dates of creation: 1969

Extent and material: 1 textual record

Scope and content:

This manual contains two sections: Flight Station information and Flight Handling Performance. Each section contains a description of features of the aircraft (such as approach visibility) as well as photographs and figures. Safety features such as fire safety, crashworthiness, and evacuation are discussed in the Handling Performance section.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Lockheed Papers File

Title: A Symposium on Mechanical Surface Finish

Continuation of Title: Technical Session held at the Machine and Tool Progress Exposition, Convention Hall, Detroit Michigan, March 15, 1939

Dates of creation: 1939

Extent and material: 1 textual record

Scope and content:

This item was reprinted from the April 1939 issue of The Tool Engineer. It contains the text of presentations made by several individuals about the different methods of producing fine finishes.

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of Other Reports Series

Title: Aircraft Accident Investigation

Continuation of Title: Pre-accident Plan and Training Guide

Place of Publication: FSO Digest, USAF Norton AFB

Dates of creation: 1968

Extent and material: 1 published item

Scope and content:

This photocopied article is part three of a three part package that was published in installments in the FSO Digest journal. This article is intended to provide guidance to effect an immediate and developed response by board members and others in formal accident investigation

Item Level

Reference code: PC 2005.002

Level of description: Item. Part of ICAO Series

Title: International Standards and Recommended Practices Aircraft Accident Investigation Annex 13

Continuation of Title: To the Convention on International Civil Aviation

Edition: Seventh

Dates of creation: 1988

Extent and material: 1 published item

Scope and content:

This is the seventh edition of ICAO's Annex 13. It provides the standards and recommended practices for aircraft accident inquiries.

Box and File List

Box 1

- File 1 ICAO Manual – International Standards and Recommended Practices Aerodomes Annex 14 to the convention on International Civil Aviation. 7th Edition, June 1976
- File 2 ICAO Manual – International Standards and Recommended Practices Aircraft Accident Investigation Annex 13 to the convention on International Civil Aviation 7th Edition, May 1988
- File 3 ICAO Manual – Manual of Aircraft Accident Investigation 4th Edition 1970 DOC 6920-AN/855/4
- File 4 ICAO Manual – Airport Services Manual Part 6 “Control of Obstacles” 1st Edition 1977 DOC 9137-AN/898 Part 6
- File 5 ICAO Manual – Airport Services Manual Part 7 Airport Emergency Planning 1st edition 1980

Location: Box 1- File 5

- File 6 ICAO Manual – Heliport Manual
1st Edition 1979
DOC 9261-AN/903
- File 7 ICAO Aircraft Accident Investigation Colloquium summary of
discussions, 11/1998

Box 2

- File 1 Binder = Lockheed California Company, Aerospace Vehicle Design,
Aircraft design
By K.D. Wood. 1963
- File 2 Binder = Lockheed California Company, Supersonic Transport
Development Program.
Phase III Proposal, 1966
Volume IV-B System Integration Test
Book 1 of 2
- File 3 Binder = Lockheed California Company, Supersonic Transport
Development Program.
Phase III Proposal, 1966
Volume IV-B System Integration Test
Book 2 of 2
- File 4 Binder = Lockheed California Company, Supersonic Transport
Development Program.
Phase III Proposal, 1966
Volume IV-C System Integration Product Assurance
Book 1 of 3
- File 5 Binder = Lockheed California Company, Supersonic Transport
Development Program.
Phase III Proposal, 1966
Volume IV-C System Integration Product Assurance
Book 2 of 3
- File 6 Binder = Lockheed California Company, Supersonic Transport
Development Program.
Phase III Proposal, 1966
Volume IV-C System Integration Product Assurance
Book 3 of 3
- File 7 Lockheed Model 580 Proposal- Jet Fighter Trainer

- File 8 Lockheed Jet Trainer T-33 Proposal
- File 9 Lockheed TO-2 Jet Trainer Proposal, 19
- File 10 Lockheed S-3A Pilot Flight Training Manual, 1974

- File 11 “Lockheed Papers” – file contains misc. technical papers bound in a folder, 1940
- File 12 Manual – “Flight Crew Introduction to the L-1011” from Lockheed California Company, 1969
- File 13 Report- “High Altitude,” by Lloyd Jenka, Lockheed Aircraft Corporation 1942

Box 3

- File 1 Lockheed California Company L-1011 Tri-Star Performance Engineers Manual 1977
- File 2 Report – “We are all in this together” Presented at the 1978 Engineering and Maintenance Forum. Author: E.A. Green, V.P. Airline Customer Support, Lockheed California Company, 1969
- File 3 Report – “Safety with comfort in the passenger cabin” by Charles Mercer, May 1975, presented at the Orient Airlines Association fourth flight safety seminar. (Personal note cards also with report)
- File 4 Report- “Inherent Safety Design in Current and Future Aircraft” Presented at the Orient Airlines Research Bureau Safety Seminar. Author: T.F. Laughlin, Lockheed California Company
- File 5 Report- “Designing the Lockheed L-1011 to meet airline needs beyond 1970,” Author: J.B. Beach, Division Engineer, Lockheed California Company
- File 6 Report- “From Propellers to Jets in Fight Aircraft Design,” Author: R.L. Foss, Lockheed California Company, 1978
- File 7 Design Handbook- “Space science” by Lockheed California Company, 1962

- File 8 ISASI reports
- Report – “Structural crashworthiness experiments of the controlled impact demonstration” Authors: Robert Hayduk, Edwin Fasanella, Emilio Alfaro-Bou Presented at ISASI , 09/1985
 - ISASI Report- “Designing for safety is no accident” Author: H. Mark Baseley, Rolls Royce Aerospace Group 1992
 - ISASI information pamphlet (1993?)
 - ISASI Report/Presentation- “Accident investigation and evolution of on-board data acquisition and recording systems,” 10/1987
 - Report- “Aircraft manufacturers contribution to air safety investigations in the Microprocessor age” 10/1987
- File 9 Research Paper- “Anatomy of an Investigation”
Author: Lt. Col Charles L. Pockock, PE 11/1978
- File 10 Report- “An analysis of the crew complement issue concerning air carrier two-engine turbojet aircraft” Author: Claude Schonberger, 09/1980
- File 11 USAF Report- “FSO Digest” USAF accident investigation paper report 1968
- File 12 Report – “Watch out there may be ice about” Presented at Flight Safety Foundation Conference, 11/1992
- File 13 Report- Evaluation of Scratch Marks in Mid-Air Collisions 1964
- File 14 Edwards Air Force Base Guide 1995
- File 15 FAA General Aviation News, 04/1978
- File 16 San Francisco Int. Airport Emergency Operations, 05/1988
- File 17 San Francisco Int. Airport Earthquake Preparedness Pamphlet
- File 18 Magazine- “Flying” 09/1990 and 12/1990 publications
- File 19 DC-10 Auto Flight Study Guide (No date)
- File 20 Handout material of various GA (general aviation) aircraft
- File 21 Swiss Reinsurance Company publication “System Errors in Aviation” 1992
- File 21 Bell Helicopter “Helicopter Emergency Lifesaver Plan,” 11/1990

- File 22 The ALPA Guide to Accident Survival Factors, 1989
- File 23 TWA Maintenance Information Letter
- File 24 Report – “Resource directory and material” Presented at 1991 Airport
Emergency Response Seminar
Author: Steven Valenzuela
- File 25 Garrett Turbine Engine Company Brochures
- File 26 GE90- The Next Era in Aircraft Engine Technology and Reliability 1992
- File 27 Transport Safety Institute Handbook- Jet Engine Accident Investigation
(1989?)
- File 28 Civil Aeronautics Administration “Path of Flight” by George Sidney
Stanton, 1946
- File 29 “Stress Class Notes” from Mercer, 1940
- File 30 Folder of misc. NTSB loose papers
- File 31 Folder of misc. FAA loose papers
- File 32 Folder of misc. USC loose papers
- File 33 Letter – to Mercer from Air Accidents Investigation Branch with
description of Lockerbie Pan Am 103 aircraft accident database created
from this accident. 1989
- File 34 Windshear Article from “Airliner”, Jan- March 1985.
- File 35 The Naval Aviation Safety Programs, 1979.
- File 36 Mercer: Quality Assurance Paper – 1967
- File 37 Photograph- “500 Gallon Simulated Wing Tank”
- File 38 Artifact - Supersonic Trip Time Comparator.