

S A B B A T I C A L L E A V E R E P O R T

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Robert T. Elliott

TABLE OF CONTENTS

	PAGE
Introduction	2
History	3
Research	7
First Cycle Workshops	8
Second Cycle Workshops	14
Appendix	21

INTRODUCTION

On the 26th day of April, 1968 Mt. San Antonio College School District granted Robert T. Elliott a sabbatical leave for the school year 1968-69 to write an up-to-date training manual for the aviation mechanics occupation.

This report lists the activities which were carried out during that period.

HISTORY

National Advisory Committee Meeting

The National Advisory Committee for the National Study of the Aviation Mechanics Occupation was convened on April 17, 1968 at the Boston-Sheraton Hotel, Boston, Massachusetts. Principal business of the session was to hear reports on the current status of the National Study and to consider plans for Phase III.

A summary of Phase II was given by Dr. David Allen, and copies of the newly issued Interim Report were distributed. Representing the Research Staff were Dr. Dave Allen, Bill Bowers, Dick Lana, and Keith Teasley of the Airmen and Schools Group, Maintenance Division, Federal Aviation Administration, Washington, D. C.

The committee considered and gave its approval to plans for the next stage in the National Study, to comprise five two-week workshops for aviation mechanic instructors. These workshops were designed to lay the groundwork for basic curriculum to reflect the new FAA certification requirements as outlined in the new FAA Examination Guide, AC 65-2A. It was planned that each workshop would provide participants with an opportunity to familiarize themselves with the most modern educational theory and practice, and also to apply these fundamentals to the development of curriculum for the

training of aviation mechanics. The committee also approved a tentative plan for the distribution of the 80 hours of time allocated to each workshop: 2 hours to workshop mechanics, 8 hours to curriculum concepts, 50 hours to curriculum development, 12 hours to technical information, and 8 hours to instructional refinement.

A discussion of resource personnel to provide technical assistance to the workshops led to a Committee suggestion that aircraft manufacturers' service representatives be added to the list of potential consultants.

The basic plan for Phase III of the National Study envisioned two consecutive series of five two-week workshops for aviation mechanic instructors, where participants would be familiarized with the latest in educational theory and practices. The first series of workshops would analyze the new FAA Examination Guide in terms of student performance goals.

The Examination Guide divides the A&P curriculum into three major subjects: Airframe, Powerplant, and General. These break naturally into five segments: Airframe Structures, Airframe Systems and Components, Powerplant Theory and Maintenance, Powerplant Systems and Components, and General. Each of the five workshops scheduled for the initial series was to be devoted to one of these subjects. The workshops were scheduled at one-month intervals, with ten

instructors attending each, along with industry experts serving as resource persons, and members of the UCLA Aviation Research Staff and Trade/Technical Teacher Training unit.

An additional series of five workshops were planned for the second portion of Phase III.

The instructors were to review the curriculum and instructional materials developed during the first cycle of workshops. Such review was designed to determine whether the student performance goals were in accord with the recommended level of instruction as identified in the FAA Airframe and Powerplant Mechanics Certification Guide, AC 65-2A, and to judge whether the student performance goals, as written, clearly established a minimum acceptable standard of performance.

Divided into three "teams," the instructors cooperated in reviewing the existing instructional materials and refining each other's suggestions for further modification of the core curriculum. Each team first questioned whether the student performance goals could be interpreted uniformly by all instructors who might read and apply them. If a goal was satisfactorily written, the team of instructors then reviewed the supporting instructional materials (key points, feedback questions, skill activities, and references) judging the quality of each item and supplementing them where

necessary. When the team was satisfied with each student performance goal and the instructional materials, they then proposed a sequence for the subject and estimated the time required to accomplish the instructional goal. In this manner, they developed a suggested curriculum for the subject area - geared to the recommendations of the National Study and FAA Advisory Circular 65-2A.

RESEARCH

Based on the recommendations of the National Advisory Committee and the Research Staff at UCLA, Mr. Elliott was able to monitor nine of the ten two-week curriculum development workshops.

Much of the material developed in the workshops to up-date the Aviation Mechanics Curriculum was used in the preparation of the training manual.

In addition to the information gained from the workshops, several conferences were attended in various parts of the United States which contributed to the research material.

A list of these workshops, conferences, and industry consultants appears in the Appendix.

FIRST CYCLE WORKSHOPS

Airframe Structures

With the approval of the school board, Mr. Elliott was able to attend the initial workshop, on Airframe Structures, from April 29 through May 10, 1968. Among those in attendance was Keith Teasley of the Airmen and Schools Group, Maintenance Division, Federal Aviation Administration, Washington, D. C., who interpreted FAA policy and objectives as expressed in the new examination guide.

The format of the workshops, established in the opening session, included orientation to the overall National Study of the Aviation Mechanics Occupation and to the activities planned for the workshop itself. Modern instructional principles, with emphasis on the concept of the student performance goal, were outlined by Dave Allen and Dick Lano of the Research Staff; Bill Bowers was responsible for day-to-day activities.

The instructors in attendance developed curriculum materials based on the content of the newly issued FAA Airframe and Powerplant Mechanics Certification Guide, AC 65-2A. Student performance goals and feedback were formulated with reference to the FAA's recommended depth of instruction for each major topic. Divided into three "teams," the instructors cooperated in refining each other's suggested

curriculum items. In this way, they established a basis for the development of a suggested curriculum for the subject under discussion, for use in formulating a definite curriculum geared to FAA needs.

Among the industry consultants who presented current developments in airframes were Del Spillman of Norman Larson Co., speaking on "What's New in Beechcraft Structures," Carl May of Aztec Division, giving a talk on Piper aircraft, and Bud Miller of Airflite Corp., discussing "Cessna Structures/Rigging." The latest in rivets and fasteners was presented by R. W. Weber and Earl Carlton of Cherry Rivet Div., Townsend Corp.; Harold Pearson of McDonnell-Douglas and George Sobodos of Trans World Airlines presented new materials and processes with which today's aviation mechanics must cope. Jay Akerman of General Electric Time Sharing System demonstrated the use of the telephone in computerized information retrieval systems.

The group made a field trip to the Burbank plant of Lockheed Aircraft Corp. and were given a conducted tour of Lockheed's new second-generation air transport, the L-1011.

A list of the instructors who attended the Airframe Structures workshop appears in the Appendix.

Powerplant Theory and Maintenance

The Powerplant Theory and Maintenance Workshop was held June 17 through June 28, 1968. Again, the same general

format was used, with the Research Staff presenting the modern instructional principles to be embodied in the emerging curriculum, and industry experts serving as consultants. Travis Boren of the FAA Flight Standards office in Oklahoma City was present throughout the sessions to present FAA policy and objectives in the light of changed certification standards. He also participated fully in the workshop activities.

The latest developments in powerplants were presented by Ivan Gunton of AVCO-Lycoming and Ford Gaultney of Continental Motors. Turbine engines were discussed by Bill Heacock and Fred Tiedemann of Pratt & Whitney Aircraft and Joel Godston of Airesearch Division, Garrett Corporation. Jerry Pascarella of the Trans World Airlines maintenance training staff gave the group an overview of new developments in powerplants affecting the mechanic's responsibilities, and Del Spillman of Beechcraft discussed maintenance requirements of today's general aircraft. Jay Akerman of General Electric Time Sharing System demonstrated the flexibility of telephone-computer tie-ups.

A list of instructors attending the Powerplants workshop appears in the Appendix.

Powerplant Systems and Components

The second portion of the FAA Powerplant examination guide provided the subject matter covered in the July 15

through July 26, 1968 workshop. This comprised topics in the area of powerplant systems and components. As previously, the sessions opened with orientation to the overall National Study and to the content planned for the workshop itself. Instructional principles, with emphasis on the concept of the student performance goal, were outlined by Dave Allen and Dick Lano. Bill Bowers and Bob Elliott were responsible for day-to-day activities.

Principal activity was the development of curriculum materials based upon the content of the FAA Airframe and Powerplant Mechanics Certification Guide, AC 65-2A, with special attention to the FAA's recommended depth of instruction for each major topic. Divided into three teams, the ten instructors cooperated in refining each other's suggested curriculum materials. This contributed to the development of a definite curriculum geared to FAA needs - a major objective of the National Study.

A number of industry consultants were invited to tell the participants about latest developments in powerplants. Among them were Carl Jenson and Bob Wilcock of Bendix Corporation, who discussed magnetos and ignition systems. Jay Akerman of General Electric Time Sharing System spoke on telephone-computer hookups. Dick Volk of the maintenance training unit of Western Airlines presented the maintenance requirements of current powerplant systems, and Arlo

Spangenberg, field service representative for Airesearch Division of the Garrett Corporation, spoke on the characteristics and maintenance requirements of turbosuperchargers.

A list of the instructors who attended the Powerplant Systems and Components workshop appears in the Appendix.

General Subjects

The final workshop in this series was held August 12 through August 23, 1968 and permitted the formation of four three-man teams to deal with the curriculum development aspects of the agenda. In addition, Bill King of the FAA Flight Standards Branch in Oklahoma City was present for the entire two-week session, participating in workshop activities along with the instructors, and also providing interpretation of FAA objectives and policies, as required.

The introductory portion of the workshop included the usual orientation to the National Study and to the modern educational concepts of student performance goals and depth of instruction. The major activity, as before, consisted of development of curriculum materials for the subjects included in the "General" section of the new FAA Certification Guide, AC 65-2A.

FAA publications, records, and forms were presented by Jack Redmond of the FAA Los Angeles office. R. H. Hallsted, Supervisor of Maintenance Training for Trans World Airlines,

showed two motion pictures delineating the role of the mechanic in turbine powerplant maintenance. The United Air Lines curriculum for the training of apprentice mechanics was discussed by Howard Dodge of the UAL Education and Training Division.

A feature of this workshop was a visit to the Los Angeles International Airport at the invitation of The Flying Tiger Line. With J. F. McDonald, Vice President for Maintenance and Engineering, serving as host, the group was given a three-quarter hour bus tour of the International Airport, and then was taken through the extensive Flying Tiger installations at the field.

Instructors who attended the concluding workshop in the current series are listed in the Appendix.

SECOND CYCLE WORKSHOPS

Airframe Structures Workshop - Second Cycle

The initial workshop of this second cycle was scheduled October 21 through November 1, 1968. The format of this series of workshops, as established in the opening session, included orientation to the overall National Study of the Aviation Mechanics Occupation and an outline of activities planned for the workshop.

An overview of the National Study, with emphasis on the concept of student performance goals, was presented to the participating instructors. The instructors were then directed to review the curriculum and instructional materials developed during the first cycle of workshops. Such review was designed to determine whether the student performance goals were in accord with the recommended level of instruction as identified in the FAA Airframe and Powerplant Mechanics Certification Guide, AC 65-2A, and to judge whether the student performance goals, as written, clearly established a minimum acceptable standard of performance.

Divided into three "teams," the instructors cooperated in reviewing the existing instructional materials and refining each other's suggestions for further modification of the core curriculum. Each team first questioned whether the student performance goals could be interpreted uniformly by

all instructors who might read and apply them. If a goal was satisfactorily written, the team of instructors then reviewed the supporting instructional materials (key points, feedback questions, skill activities, and references) judging the quality of each item and supplementing them where necessary. When the team was satisfied with each student performance goal and the instructional materials, they then proposed a sequence for the subject and estimated the time required to accomplish the instructional goal. In this manner, they developed a suggested curriculum for the subject area - geared to the recommendations of the National Study and FAA Advisory Circular 65-2A.

Industry consultants who participated in the Airframe Structures workshop included: Messrs. R. W. Weber and Earl Carlton, who presented film slides and practical demonstrations of the installations and application of various fasteners and tooling manufactured by the Cherry Rivet Division of Townsend Corporation. Mr. George Sobodos, Instructor - Maintenance Training, Trans World Airlines, discussed airline procedures and techniques for repair of honeycomb/bonded structures, and demonstrated the skills that a mechanic must acquire in such repair practices. Jay Akerman of General Electric displayed ways in which a telephone link can be used for exchange of computer stored information. Mr. Adolfo Astorga, Manager, Engineering, Ted Smith Aircraft,

described the concepts that influenced the design and construction of the "Aerostar."

This workshop featured a visit to Los Angeles International Airport at the invitation of The Flying Tiger Line. With FTL technical personnel serving as hosts, the participating instructors were given a bus tour of International Airport, then visited the extensive Flying Tiger maintenance installations at the field.

Instructors who participated in the Airframe Structures workshop are listed in the Appendix.

Aircraft Systems and Components Workshop

The Aircraft Systems and Components workshop was held November 11 through November 22, 1968. With subject content change, it followed the same general plan as the Airframe Structures workshop.

Industry representatives who presented information that would have bearing upon the training of aviation mechanics included Messrs. Riley L. Drake, Supervisor-Field Service Training, and Warren Sweetnam, Supervisor-Service Engineering, Airesearch Manufacturing Company. Messrs. Drake and Sweetnam described the effect of the latest type cabin atmosphere control systems to both airlines and general aviation aircraft and the associated maintenance requirements. Mr. E. M. Zerr and Mr. W. R. Tonge, B. F. Goodrich Company, described the techniques and mechanic skills

required to maintain their company's products. Mr. Jack Burlew presented information relative to installation and maintenance of autopilot and navigation/communication systems manufactured by Brittain Industries, a division of Narco Systems, Inc.

This group of instructors made a field trip to the Long Beach plant of McDonnell-Douglas Corp. and were given a conducted tour of the new DC-10 mock-up. Technical personnel, using slides and other visual aids, described the system concepts envisioned for this second-generation air transport.

Instructors who participated in the Aircraft Systems and Components workshop are listed in the Appendix.

Powerplant Theory and Maintenance Workshop

This workshop was scheduled for the time period of January 13 through January 24, 1969. As established in the original series of workshops, the opening session included an orientation to the National Study and an explanation of the activities planned for this particular workshop. The concept of student performance goals and levels of instruction and testing was presented by Dave Allen and Richard Lano.

Among the industry consultants who were present to discuss recent developments in powerplant maintenance were R. H. Hallsted, Supervisor of Maintenance Training for Trans

World Airlines; Ivan Gunton, Regional Manager, AVCO-Lycoming; Ford Gaultney, Regional Manager, Continental Motors; and Jim Hurbein of Pratt-Whitney Aircraft.

Instructors participating in this workshop made a tour of the Pacific Airmotive Corporation powerplant and airframe overhaul facilities in Burbank, California. With Pacific Airmotive technical personnel acting as hosts, the instructors participated in discussions pertaining to reliability, costs, and changes in maintenance concepts.

A listing of the instructors who participated in each workshop is in the Appendix of this report.

Powerplant Systems and Components Workshop

The Powerplant Systems and Components workshop (February 17 through February 28, 1969), with subject content change, followed the same general plan as the Powerplant Theory and Maintenance workshop.

Industry representatives who appeared to present new technical information - or update maintenance concepts - included Messrs. Carl Jenson, Bendix Corporation, and R. E. Weiller, Pacific Airmotive Corporation. The instructor group visited Northrop Technical Institute to observe students in training and then toured the training and maintenance base of Western Airlines at Los Angeles International Airport.

See Appendix for a listing of participating instructors.

General Section Workshop

The final workshop of this curriculum development phase of National Study was conducted March 17 through March 28, 1969.

With a format closely following the schedule established for the entire second cycle of workshops, the instructors refined, polished, and re-worked the instructional materials which had been developed by the initial workshops. In addition, they recommended a sequence and made estimates of time required to accomplish the student performance goals.

This workshop had the opportunity to listen to Mr. William Glenn of the Santa Monica, California, Federal Aviation Administration office. He discussed and responded to questions pertaining to FAA forms, publications, and records. Mr. Richard Looney, technical representative for Universal Air Lines, described the technical training required for the mechanics employed by a large supplemental carrier. The inter-dependence of equipment, spares, personnel, and training was the focal point of his presentation.

In two separate industry visits, these instructors were provided the opportunity to observe the operations of McDonnell-Douglas Aircraft at Long Beach, California and The Flying Tiger maintenance base at Los Angeles. These visits provided insight into the maintenance/training require-

ments for new aircraft. In size, complexity, and performance....a new era is approaching.

APPENDIX

	PAGE
National Advisory Committee	1
Workshop Participants	3
Participating Schools in Aviation Workshops	12
Industry Consultants	16
Industry Visits	18
Conferences	19

NATIONAL ADVISORY COMMITTEE

A National Study of the Aviation Mechanics Occupation

N. Birta	Principal, Aero Mechanics High School, Detroit, Michigan
J. E. Christopher	General Aviation Specialist, Flight Standards Division, Federal Aviation Administration, Fort Worth, Texas
A. W. Elwell	Supervisory Examination Specialist, Maintenance Technical Standards Branch, Federal Aviation Administration Aeronautical Center, Oklahoma City, Oklahoma
J. M. Fisher	Vice President, Pittsburgh Institute of Aeronautics, Pittsburgh, Penna.
J. Hite	Manager, Aircraft Maintenance Service, Atlantic Aviation, Wilmington, Del.
Richard L. Lano	Aircraft Electronics Consultant, University of California, Los Angeles
R. H. Madeira	President, Page Aircraft Maintenance, Inc., Dothan, Alabama
H. A. Palmer	Service Manager, Vroman Aviation, Inc., Midland, Texas
R. J. Rich	Manager, Components Overhaul, American Airlines, Tulsa, Okla.
H. Rosen	Assistant Director of Research, U. S. Department of Labor, Washington, D. C.
C. W. Schaffer	Principal Maintenance Inspector Federal Aviation Administration West Mifflin, Pennsylvania

Keith Teasley

Chief, Airmen and Schools Group,
Maintenance Division, Federal
Aviation Administration, Wash-
ington, D. C.

J. J. Tordoff

Manager of Personnel Management,
United Air Lines, San Francisco,
California

A. Vai

Director, Aviation Maintenance
Training, Northrop Institute of
Technology, Inglewood, California

F. Woehr

Principal, Aviation High School
Long Island City, N. Y.

Participants in
AIRFRAME STRUCTURES WORKSHOP
April 29 - May 10, 1968

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Santo Frontario	Aviation High School Long Island City, New York
J. C. Harder	LeTourneau College Longview, Texas
Leonard Haubl	Purdue University Lafayette, Indiana
Sam Merrill	Utah State University Logan, Utah
J. H. Minga	Northwest Alabama State Technical Inst., Hamilton, Alabama
Frank Moran	Embry Riddle Aeronautical Insti- tute, Daytona Beach, Florida
Kenneth Pfister	East Coast Aero Technical School Lexington, Massachusetts
George O. Rittler	Honolulu Community College Honolulu, Hawaii
George Sobodos Consultant	Trans World Airlines Los Angeles, California

Participants in
POWERPLANT THEORY AND MAINTENANCE WORKSHOP
June 17-28, 1968

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Jay Ackerman	Long Beach City College Long Beach, California
Travis Boren	Flight Standards Branch Federal Aviation Administration Oklahoma City, Oklahoma
A. Carley	Columbus Technical Institute Columbus, Ohio
Clement W. S. Chun	Honolulu Community College Honolulu, Hawaii
Howard Lerom	Big Bend Community College Moses Lake, Washington
E. Moe Mayfield	Gavilan Junior College Hollister, California
Vic Murgolo	Los Angeles Trade Technical College, Los Angeles, California
William E. Rakestraw	Schilling Institute Salina, Kansas
Gene G. Richards	Idaho State University Pocatello, Idaho
Roy Shirlen	Piedmont Aerospace Institute Winston-Salem, North Carolina
Jerry Pascarella Consultant	Trans World Airlines Los Angeles, California

Participants in
GENERAL SUBJECTS WORKSHOP
August 12-23, 1968

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mr. San Antonio College Walnut, California
Bob Lyons	Vincennes University Vincennes, Indiana
Terry Holburn	Schilling Institute Salina, Kansas
Frank H. Myers, Jr.	Parks College of Aero Tech. East St. Louis, Illinois
Earl Jim Follmuth	Minneapolis Area Vocational School, Minneapolis, Minnesota
Herb Normandy	Lake Area Vocational School Watertown, South Dakota
Walter E. Ditzler	University of Illinois Urbana, Illinois
William L. Monroe	Delgado College New Orleans, Louisiana
Brother James Tufo	Lewis College Lockport, Illinois
Ralph E. Davey	Wentworth Institute Boston, Massachusetts
William Korizek	Helena Vocational Technical School, Helena, Montana
Robert Ring	San Jose State College San Jose, California
Ben Harlamert	Columbus Technical Institute Columbus, Ohio
Bill King	Federal Aviation Administration Oklahoma City, Oklahoma

Participants in
POWERPLANT SYSTEMS AND COMPONENTS WORKSHOP
July 15-26, 1968

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Jester J. Phinazee	Alabama Institute of Aviation Technology, Ozark, Alabama
Dean Paskewitz	Area Vocational-Technical School Thief River Falls, Minnesota
W. J. Thompson	Deuel Vocational Institution Tracy, California
Ian M. Pynigar	East Coast Aero Technical School Lexington, Mass.
Floyd Bishop	LeTourneau College Longview, Texas
Paul Gero	Mid-Continent Aviation Inc. Kansas City, Kansas
Domingo Beniamino Figueroa	Miguel Such Metro. Vocational School, Rio Piedras, P. R.
Joseph C. Miles	Northrop Institute of Technology Inglewood, California
Hugh A. Evans	Oklahoma State University Stillwater, Oklahoma
S. H. Coe	Piedmont Aerospace Institute Winston-Salem, N. C.

Participants in
AIRFRAME STRUCTURES WORKSHOP
October 21 - November 1, 1968

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Gerald M. Cady	Eastern New Mexico University Roswell, New Mexico
Rosco Hutton	East Bay Skills Center Oakland, California
Thomas P. Kendig	Long Beach City College Long Beach, California
Karl E. Lehmann	Embry Riddle School of Aero- nautics, Daytona Beach, Florida
John L. Riddle	Iowa Western Community College Council Bluffs, Iowa
Donald Schoonhoven	Area Vocational-Technical School Thief River Falls, Minnesota
James S. Wigg	Lewis M. Lively Area Voc. Tech. School, Tallahassee, Florida
Lewis Flowers	Alabama Institute of Aviation Tech., Ozark, Alabama
Wilfred Betz	G. T. Baker Aviation Miami, Florida

Participants in
AIRFRAME SYSTEMS AND COMPONENTS WORKSHOP
November 11-22, 1968

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Brother John Duffy	Lewis College Lockport, Illinois
Ralph Jewett, Jr.	Aero Mechanics School Kansas City, Missouri
Richard Nichols	Aero Mechanics High School Detroit, Michigan
Gregory Ductor	Burgard Vocational High School Buffalo, New York
Neil Hocker	Emily Griffith Opportunity School Denver, Colorado
Gary Redmond	Vincennes University Vincennes, Indiana
George W. Thomas, Jr.	East Coast Aero Technical School Lexington, Massachusetts
Alfred Lonky	Aviation High School Long Island City, New York
Harold Keilman	Helena Vocational-Technical School, Helena, Montana
A. W. Elwell	Federal Aviation Administration Oklahoma City, Oklahoma

Participants in
POWERPLANT THEORY AND MAINTENANCE WORKSHOP
January 13-24, 1969

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Gordon Furnish	Phoenix Union High School Phoenix, Arizona
Franz Sjowall	Minneapolis Area Vocational School, Minneapolis, Minnesota
Warren Susan	Laney College Oakland, California
G. C. M. Ellsworth	Lane Community College Eugene, Oregon
Leon Hill	Utah State University Logan, Utah
Richard F. Carton	Purdue University Lafayette, Indiana
Ralph Hawn	Iowa Western Community College Council Bluffs, Iowa
Richard Roberts	G. T. Baker Aviation Miami, Florida
Robert Sprague	San Bernardino Valley College San Bernardino, California
Thomas H. Bailey	University of Illinois Savoy, Illinois

Participants in
POWERPLANT SYSTEMS AND COMPONENTS WORKSHOP
February 17-28, 1969

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Robert Caley	Columbus Technical Institute Columbus, Ohio
Dale Crane	LeTourneau College Longview, Texas
Houston Choate	Laney College Oakland, California
Willard Bolton	Embry Riddle Daytona Beach, Florida
Charles H. Thompson	Northrop Institute of Technology Inglewood, California
David Kohten	Clover Park Vocational Tech. School, Lakewood Center, Wash.
John Brown	Southern Nevada Voc. Tech. Center Las Vegas, Nevada
Charles J. Lori	Pittsburgh Institute of Aero- nautics, West Mifflin, Pennsylv.
Felix Duhaylongsod	Honolulu Community College Honolulu, Hawaii
Richard MacKellar	Southwestern Michigan College Dowagiac, Michigan
Robert Hicks	Los Angeles Trade Tech. College Los Angeles, California

Participants in
GENERAL SUBJECTS WORKSHOP
March 17-28, 1969

<u>Instructor</u>	<u>School</u>
Robert Elliott	Mt. San Antonio College Walnut, California
Charles Macon	Cochise College Douglas, Arizona
Nicholas Bonacci	Lewis College Lockport, Illinois
Jeffrey Benger	Western Nebraska Voc. Tech. School, Sidney, Nebraska
Sidney Fladeland	Minneapolis Area Vocational School, Minneapolis, Minnesota
Andor Andrews	Seattle Community College Seattle, Washington
Charles Bacon	Everett Community College Everett, Washington
Ed Wheeler	Moody Bible Institute Chicago, Illinois
George Capek	Academy of Aeronautics Flushing, New York
E. A. Da Rosa	Southern Illinois University Carbondale, Illinois
John Vaughan	East Coast Aero Tech. School Lexington, Massachusetts
Linden Wasson	Southern Nevada Voc. Tech. Center Las Vegas, Nevada

PARTICIPATING SCHOOLS IN AVIATION WORKSHOPS

Academy of Aeronautics Flushing, New York	George Capek
Aero Mechanics High School Detroit, Michigan	Welton Lawrence Richard Nichols
Aero Mechanics School Kansas City, Missouri	Ralph Jewett, Jr. Claude Clear
Alabama Institute of Aviation Technology, Ozark, Alabama	Jester J. Phinazee Lewis Flowers
Area Vocational-Technical School Thief River Falls, Minnesota	Dean Paskewitz Donald Schoonhoven
Aviation High School Long Island City, New York	Santo Frontario Alfred Lonky
G. T. Baker Aviation Miami, Florida	Wilfred Betz Richard Roberts
Big Bend Community College Moses Lake, Washington	Howard Lerom
Burgard Vocational High School Buffalo, New York	Gregory Ductor
Clover Park Vocational-Technical School, Lakewood Center, Wash.	Dale Welfringer David Kohten
Cochise College Douglas, Arizona	Charles Macon
Columbus Technical Institute Columbus, Ohio	A. Carley Ben Harlamert Robert Caley
Delgado College New Orleans, Louisiana	William L. Monroe
Duel Vocational Institution Tracy, California	W. J. Thompson
East Bay Skills Center Oakland, California	Rosco Hutton

East Coast Aero Technical School Lexington, Massachusetts	Kenneth Pfister Ian M. Pynigar George W. Thomas, Jr. John Vaughan
Eastern New Mexico University Roswell, New Mexico	Gerald M. Cady
Embry Riddle Aeronautical Institute, Daytona Beach, Florida	Frank Moran Karl E. Lehmann Willard Bolton
Everett Community College Everett, Washington	Charles Bacon
Gavilan Jr. College Hollister, California	E. Moe Mayfield
Emily Griffith Opportunity School Denver, Colorado	William F. Nickoles Neil Hocker
Helena Vocational-Technical School, Helena, Montana	Edward W. McCurdy William Korizek Harold Keilman
Honolulu Community College Honolulu, Hawaii	George O. Rittler Clement W. S. Chun Felix Duhaylongsod
Idaho State University Pocatello, Idaho	Gene G. Richards
Iowa Western Community College Council Bluffs, Iowa	John L. Riddle Ralph Hawn
Lake Area Vocational School Watertown, South Dakota	Herb Normandy
Lane Community College Eugene, Oregon	D. M. Dickinson G. C. M. Ellsworth
Laney College Oakland, California	Warren Susan Houston Choate
LeTourneau College Longview, Texas	J. C. Harder Floyd Bishop Dale Crane

Lewis College Lockport, Illinois	Brother James Tufo Brother John Duffy Nicholas Bonacci
Lewis M. Lively Area Voc. Tech. School, Tallahassee, Florida	James S. Wigg
Long Beach City College Long Beach, California	Jay Ackerman Thomas P. Kendig
Los Angeles Trade Tech. College Los Angeles, California	Vic Murgolo Robert Hicks
Mergenthaler Vocational-Tech. High School, Baltimore, Maryland	Walter Fritts
Mid-Continent Aviation, Inc. Kansas City, Kansas	Paul Gero
Miguel Such Metro. Vocational School, Rio Piedras, P. R.	Domingo Beniamino Figueroa
Minneapolis Area Vocational School, Minneapolis, Minnesota	Earl Jim Follmuth Franz Sjowall Sidney Fladeland
Moody Bible Institute Chicago, Illinois	Ed Wheeler
Mt. San Antonio College Walnut, California	Robert Elliott
Northrop Institute of Technology Inglewood, California	Joseph C. Miles Charles H. Thompson
Northwest Alabama State Tech. Inst., Hamilton, Alabama	J. H. Minga
Oklahoma State University Stillwater, Oklahoma	Hugh A. Evans
Parks College of Aero Tech. East St. Louis, Illinois	Frank H. Myers, Jr.
Piedmont Aerospace Institute Winston-Salem, N. C.	Roy Shirlen S. H. Coe
Phoenix Union High School Phoenix, Arizona	Gordon Furnish

Pittsburgh Institute of Aero- nautics, West Mifflin, Penn.	Charles J. Lori
Purdue University Lafayette, Indiana	Leonard Haubl Richard F. Carton
Sacramento City College Sacramento, California	Gene Gilbert
San Bernardino Valley College San Bernardino, California	Robert Sprague
San Jose State College San Jose, California	Robert Ring
Schilling Institute Salina, Kansas	William E. Rakestraw Terry Holburn
Seattle Community College Seattle, Washington	Andor Andrews
Southern Nevada Voc. Tech. Center Las Vegas, Nevada	John Brown Link Wasson
Southern Illinois University Carbondale, Illinois	E. A. Da Rosa
Southwestern Michigan College Dowagiac, Michigan	Richard MacKellar
Spartan School of Aeronautics Tulsa, Oklahoma	Charles Staggers
University of Illinois Urbana, Illinois	Walter E. Ditzler Thomas H. Bailey
Utah State University Logan, Utah	Sam Merrill Leon Hill
Vincennes University Vincennes, Indiana	Walter Hollingsworth Bob Lyons Gary Redman
Wentworth Institute Boston, Massachusetts	Ralph E. Davey
Western Michigan University Kalamazoo, Michigan	C. N. Van Deventer
Western Nebraska Voc. Tech. School, Sidney, Nebraska	Jeffrey Benger

INDUSTRY CONSULTANTS

R. H. Hallsted
Trans World Airlines

Ford Gaultney
Continental Motors

Carl Jenson
Bendix Corporation

William Glenn
FAA - Santa Monica

R. W. Weber & Earl Carlton
Cherry Rivet Division of Townsend
Corp.

Jay Akerman
General Electric

Riley L. Drake & Warren Sweetnam
Airesearch Manufacturing Co.

Jack Burlew
Brittain Industries

Arlo Spangenberg
Airesearch Mfg. Co.

Jack Redmond
FAA Los Angeles Office

Del Spillman
Norman Larson Co. (Beechcraft)

Ivan Gunton
AVCO-Lycoming

Jim Hurbein
Pratt-Whitney

Richard Looney
Universal Airlines

R. E. Weiller
Pacific Airmotive Corp.

George Sobodos
Trans World Airlines

Adolfo Astorga
Ted Smith Aircraft Co.

E. M. Zerr & W. R. Tonge
B. F. Goodrich Co.

Dick Volk
Western Airlines

Bill King
FAA Flight Standards
Branch, Oklahoma City

Howard Dodge
United Airlines

Carl May
Astec Division (Piper)

Bud Miller
Airflite Corp. (Cessna)

R. L. Fields
Gunnell Aviation Inc.
(Cessna)

Lee McQuary
R. V. Weatherford Co.

Joel Godston
Airesearch Mfg. Co.

Keath Teasley
FAA Airman and Schools
Group, Maintenance Divi-
sion, Washington, D. C.

Travis Boren
FAA Flight Standards
Branch, Oklahoma City

Harold Pearson
McDonnell-Douglas

Bert Draper
United Airlines

Bill Heacock & Fred Tiedemann
Pratt & Whitney

Jerry Pascarella
Trans World Airlines

A. W. Elwell
FAA Flight Standards
Branch, Oklahoma City

INDUSTRY VISITS

Pacific Airmotive Corporation
Burbank, California

Northrop Technical Institute
Los Angeles, California

Western Airlines
Los Angeles, California

McDonnell-Douglas
Long Beach, California

Flying Tiger Line
Los Angeles, California

Los Angeles International Airport
Los Angeles, California

Lockheed Aircraft Corporation
Burbank, California

CONFERENCES

September 1-15, 1968 Tour of general aviation facilities in Alaska and meeting with FAA regarding special operating rules in the north country.

September 18-19, 1968 Meeting with Mr. Keith Teasley, Chief of Airmen and Schools Group, Maintenance Division, Federal Aviation Administration, Washington, D. C. Meeting concerned proposed regulation changes.

December 2-5, 1968 Annual FAA Maintenance Symposium, Oklahoma City.

March 7, 1969 In service training for the Boeing 747, San Francisco.

April 22, 1969 National Advisory Committee for the National Study of the Aviation Mechanics Occupation, Washington, D. C.

April 23-25, 1969 Ninth annual conference of the Aviation Technician Education Council, Pittsburg, Pennsylvania.

May 16-17, 1969 In service training, concerning the mechanics school, San Jose, California