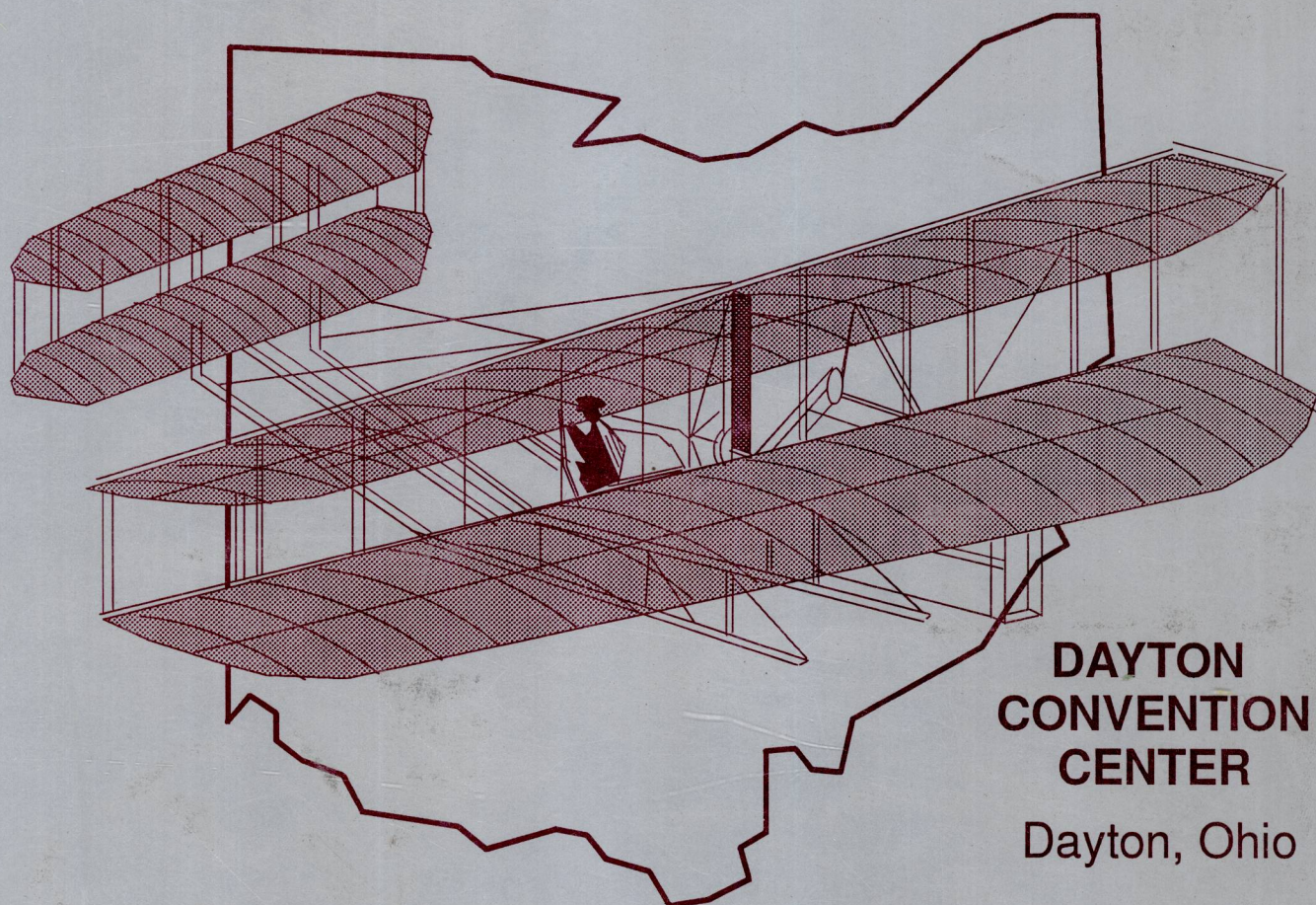


# AUTOTESTCON 92

IEEE AUTOMATIC  
TESTING CONFERENCE

*"The Systems Readiness Technology Conference"*

## CONFERENCE RECORD



**DAYTON  
CONVENTION  
CENTER**

Dayton, Ohio

## 21-24 September 1992

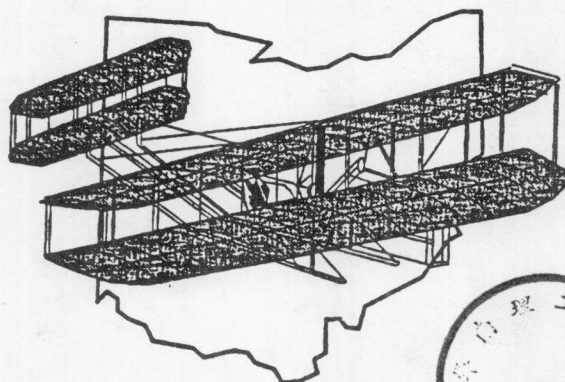


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TP274-53  
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1992

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# CONFERENCE RECORD



September 21-24, 1992

## THE IEEE SYSTEMS READINESS TECHNOLOGY CONFERENCE

Dayton Convention Center  
Dayton, Ohio



E9462573

*Sponsored by:*

**The Institute of Electrical and Electronics Engineers, Inc.  
Aerospace and Electronic Systems Society  
Instrumentation and Measurement Society  
IEEE Dayton Section**

**92CH3148-4**



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CONFERENCE RECORD



September 21-24, 1992

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TECHNOLOGY CONFERENCE

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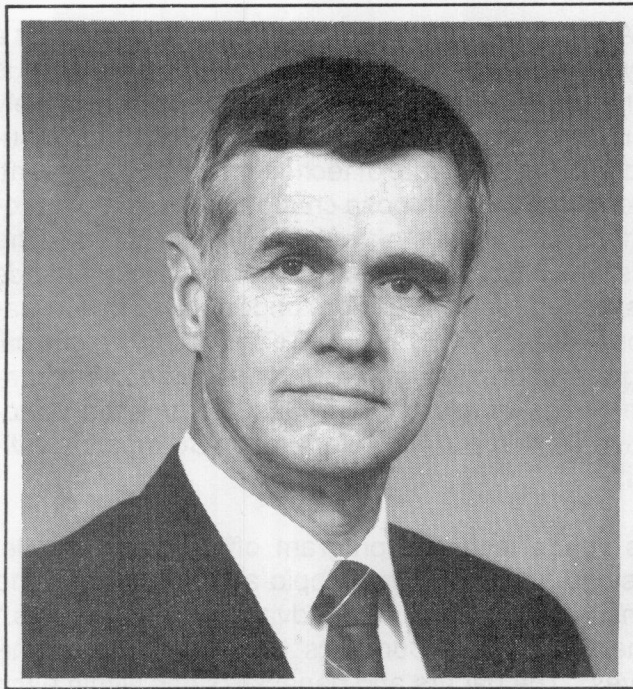
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92CH3148-4

## GENERAL CHAIRMAN'S MESSAGE



**Kenneth D. Wilkinson**  
**General Chairman, AUTOTESTCON 92**

On behalf of the AUTOTESTCON 92 Committee and the sponsoring IEEE organizations listed on the following page, I welcome you to AUTOTESTCON 92 in Dayton, Ohio, the birthplace of aviation. AUTOTESTCON 92 is continuing as the premier Systems Readiness Technology Conference. A large number of individuals representing more than thirty companies and government organizations have volunteered their resources to assemble this conference and assure a quality program. The AUTOTESTCON 92 Committee is sparing no effort to promote the dissemination of system readiness technology among all attendees.

We have arranged broad-based technical presentations and exhibits that reflect the dynamic and rapidly changing world of automatic testing. The technical papers, tutorials, and exhibits stress the synergistic and inseparable iterative relationship be-

tween mission requirements and design required for developing comprehensive and affordable support.

The first day of the conference is dedicated to technical tutorials. The tutorials will update attendees on new techniques and technologies and provide a foundation for those who are new to the automatic testing discipline.

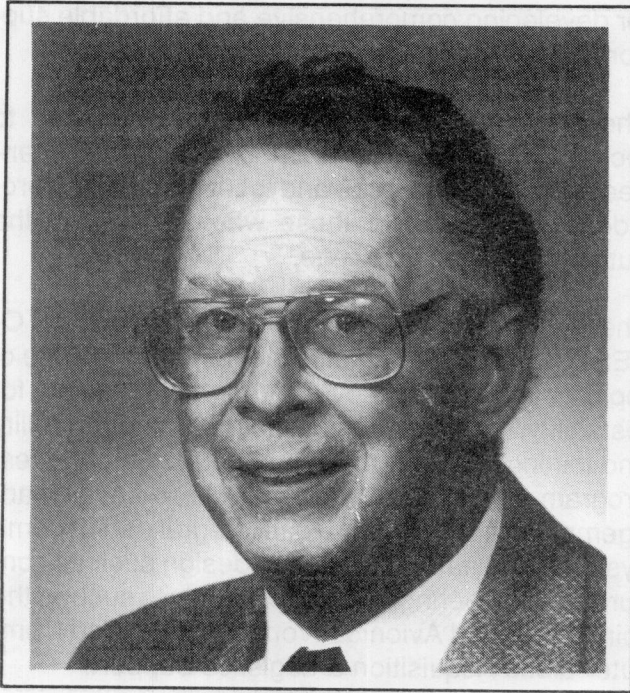
The technical presentations contained in the AUTOTESTCON 92 Conference Record cover a range of topics such as chip-level integration, design for testability, artificial intelligence for supportability and testing with automatic test equipment and test program sets. The presentations also cover management initiatives that are an integral part of prime systems and automatic testing design such as concurrent engineering, and DOD initiatives such as the Joint Integrated Avionics Working Group and Computer-aided Acquisition & Logistics Support.

Approximately two hundred exhibit booths are being presented by companies and government organizations who are leaders in prime system and automatic testing design, development, and acquisition.

Special tours of the F-16 maintenance shops are being conducted by the 906th Tactical Fighter Group at Wright-Patterson AFB, Ohio. The Tuesday keynote and luncheon speeches highlight the dynamic and changing processes for acquiring and supporting prime systems.

An informal atmosphere for the continuation of technical discussions will be provided in social events. A "Flight in Blue" buffet beneath the wings of historic aircraft in the world renowned Air Force Museum will provide a unique setting for discussion of future technology. An Oktoberfest reception in the exhibit area will provide an opportunity for "hands-on" review of current and projected technology for individuals who will be participating in technical sessions during the day.

## TECHNICAL PROGRAM CHAIRMAN'S MESSAGE



**Ernie Forster**  
**Programs Chairman**

As AUTOTESTCON returns to Dayton, Ohio, after a 10-year absence, the automatic testing industry is facing the most significant challenge of its relatively short life span. Recent global political changes, coupled with the rapid rate of technological development, have combined to impose changes of mammoth proportions to the industry; we saw it back in 1982. The skills which have successfully met our military needs must be redirected to explore opportunities in non-traditional areas. The 1992 AUTOTESTCON technical program addresses some of these areas: Environmental Challenges of the 1990s, Commercial Automotive Testing and Next Generation Commercial Aviation.

This year's technical program offers three parallel sessions addressing four topic areas: "Current and Transitional Applications," "Advanced Technologies," "Emerging System Concepts" and "Management Initiatives." The papers and panel sessions within each of the identified areas present as broad a spectrum of technology and management topics as practicable.

The range of topics confirms that achieving and maintaining systems readiness and effectiveness for both military and commercial systems of the year 2000 go far beyond the traditional approaches of the past. Concurrent engineering and integrated product development emphasize the need to make performance assessment capability an integral part of the design process. The Technical Program Committee hopes it has helped AUTOTESTCON meet its intended purpose of keeping the technical community abreast of these and other needs so that they may better serve the user.

I would like to extend my thanks to the session chairpersons and session coordinators for their efforts to organize and manage the technical sessions. Also, special thanks to my committee (J. B. Schroeder of WL/FIGL, Technical Papers; Jim Clark of Research & Technology Resources, Tutorials; Walt Elbinger of ASC/ALXS, Awards; Dave Long of ATEAM Corp, Keynote/Luncheon Speakers; Maj. Steve Topper of ASC/SMGB, Conference Record; Art Bauer of ASC/VLEE and Jack Stout) for their support and assistance. I appreciate the hard work and enthusiasm.

We hope you will acquire the necessary information from the technical sessions that will enhance your technical commitments for current and future programs. Likewise, the tutorials and special functions, such as the 906th Tactical Fighter Group visit, will be highly educational and self-fulfilling. Enjoy your stay in Dayton, Ohio. The Committee has worked extremely hard to make this a "first class show" for you.

## OPERATIONS CHAIRMAN'S MESSAGE



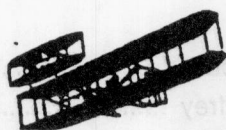
**Gerry Burchfield,  
Operations Chairman**

I and my supporting committee members: Jay Wackler, Bob McAdory, Sue Murphy, Lou Agrios and Marge Foland extend a hearty welcome to each AUTOTESTCON 92 attendee, spouse, associates and friends to Dayton, Ohio, the "home of aviation and the Wright Brothers," the National Aviation Hall of Fame, and the **center of research, development and acquisition programs at Wright-Patterson Air Force Base.**

AUTOTESTCON 92 addresses the advances in engineering and technology which have led to the development of highly sophisticated commercial and military aircraft, including engines, vehicles, and systems that display the fruits of our accomplishments - the finest aerospace technology, while still promoting the quality of goods and services in the global marketplace.

When you leave Dayton, I am sure you can say, "this was a premier event which offered aerospace industry as well as military agencies an unprecedented opportunity to reach domestic and international cus-

tomers in the automatic testing and systems readiness arenas for commercial and military aircraft and equipment." Likewise, I am sure you will say this Conference was personally and educationally rewarding not only in the technical areas, but also from the tutorial and historical standpoints.



# AUTOTESTCON 92

The Systems Readiness Technology Conference

## Committee Members

### GENERAL CHAIRMAN

Ken Wilkinson, ATEAM Corp.  
(513) 237-7971  
Fax (513) 236-4220

### PROGRAM CHAIRMAN

Ernst Forster, ATEAM Corp.  
(317) 535-5093  
Fax (317) 535-5577

#### Technical Papers

J.B. Schroeder, USAF/WL/FIGL  
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## EXHIBITS



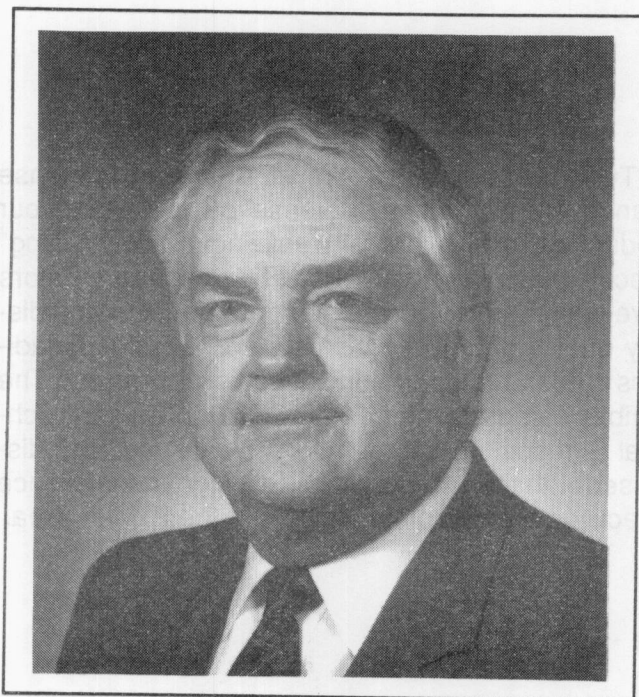
**K. Harold Ledford,  
EXHIBITS CHAIRMAN**

AUTOTESTCON 92 occurs at a time of immense change for the nation, defense business and our product base. We are all realizing a "downsizing" effect in every functional area. This year's exhibitors have assumed the responsibility to develop and display quality products which support Mission Readiness in this Changing World of Logistics Support. The exhibits complement the AUTOTESTCON 92 Technical Symposium and should be reviewed, and discussed with the exhibitors, to insure your conference objectives are complete. Join us in the Exhibit Area.



**Bob Snyder,  
Exhibits Vice Chairman**

## ARRANGEMENTS COMMITTEE

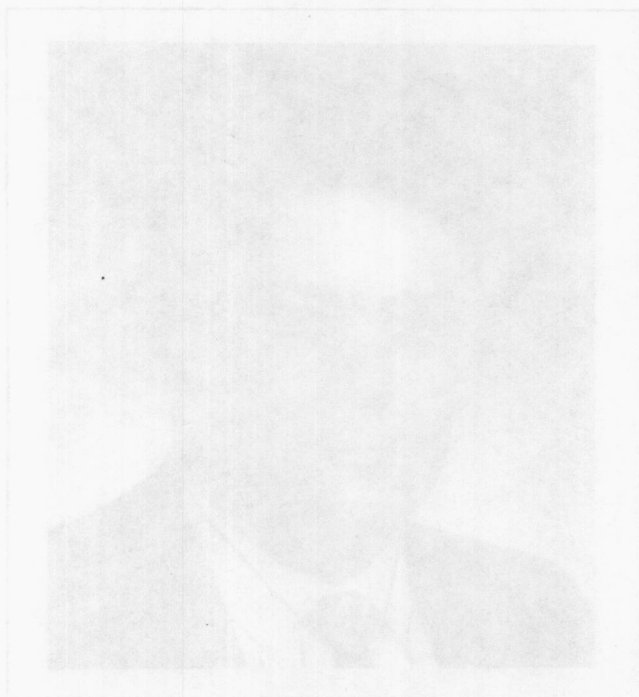


**Malcolm M. Knopf,  
Arrangements Chairman**

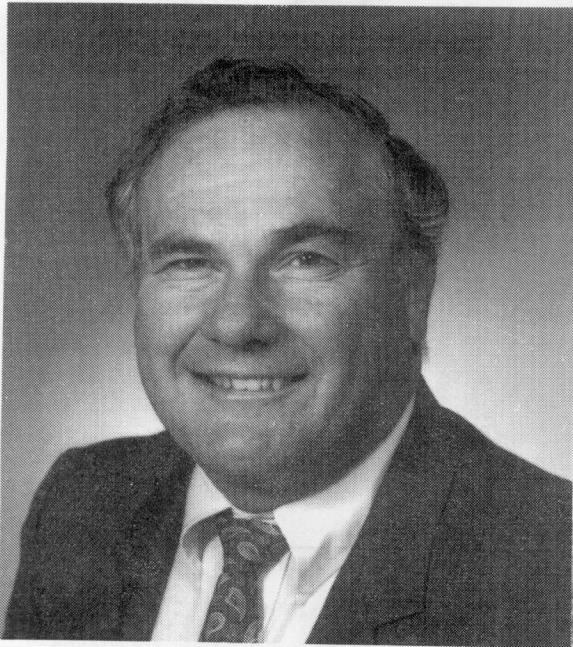
Since its inception in the late sixties, I have always found AUTOTESTCON to be both personally and professionally rewarding. This year's conference has been planned to be one of the best. Whether you're an exhibitor, author, guest, or attendee, there is something here for everyone. We are a unique community of professionals, dedicated to the advancement of testing technology while sharing a special camaraderie amongst users and suppliers. On behalf of the Arrangements Committee – enjoy. See you around at the events.

***Absent:***

**Fred Pumroy,  
Vice Chairman**



## THE FINANCE COMMITTEE



**Jerry Bereda,  
Finance Chairman**

Terry Dersham and I would like to welcome you to this year's AUTOTESTCON in Dayton, Ohio.

We all know that money is tight these days so I hope when you leave for home at the end of the Conference you will feel that your time and money were well spent in gaining some technical insights and a few minutes of joy with some old friends and/or associates.



**Terry Dersham,  
Finance Vice Chairman**



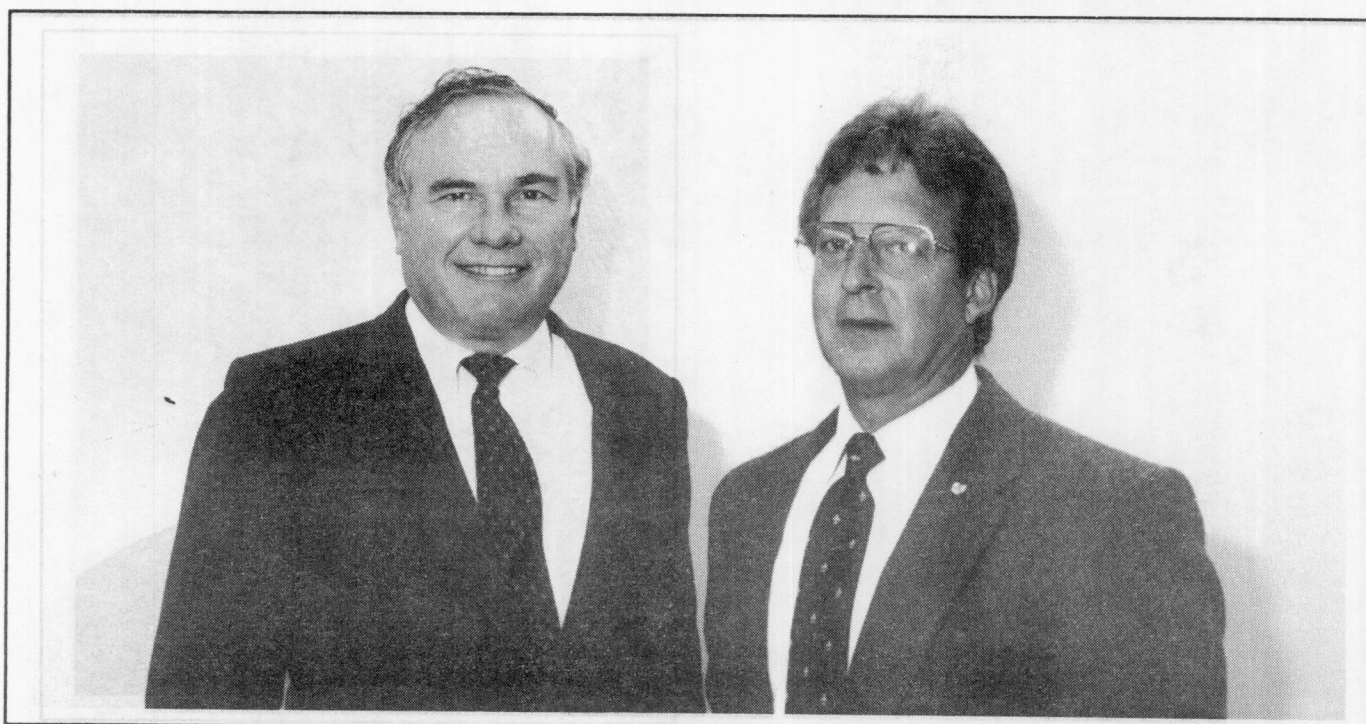
# **PRIME CHAIRMEN**

## **1st Row:**

**Left:** ERNIE FORSTER – Programs  
**Center:** KEN WILKINSON – General Chairman  
**Right:** GERRY BURCHFIELD – Operations

## **2nd Row:**

**Left:** BOB SYNDER – Vice Chairman  
**Cntr:** MALCOLM KNOPF – Exhibits Arrangements  
**Right:** JERRY BEREDA – Finance



# **FINANCE**

**JERRY BEREDA – Chairman**  
**TERRY DERSHAM – Vice Chairman**



### PROGRAM COMMITTEE

#### *1st Row:*

*Left:* J.B. SCHROEDER – Technical Papers

*Center:* ERNIE FORSTER – Chairman

*Right:* WALT ELBINGER – Awards

#### *2nd Row:*

*Left:* CAPT. SAM BATMAN – Conference Record

*Left Center:* ART BAUER – Conference Record

*Right Center:* DAVE LONG – Speakers

*Right:* JIM CLARK – Tutorials

*Absent:* MAJOR STEVE TOPPER – Conference Record



### EXHIBITS COMMITTEE

#### *Left to Right*

BOB SYNDER – Vice Chairman

PAT LONG – Exhibitors Reception

NED EVANS – Exhibit Sales



### OPERATIONS COMMITTEE

*Left to Right*

BOB McADORY – Conference Record/Printing

GERRY BURCHFIELD – Chairman

MARGE FOLAND – On-Base Registration

JAY WACKLER – Publicity/Awards

*Absent:* SUE MURPHY – Registration

LOU AGRIOS – Advertising



### ARRANGEMENTS COMMITTEE

*1st Row:*

*Left:* DIANE WILKINSON – Spouse Program

*Center:* MALCOLM KNOPF – Chairman

*Right:* FLO SMITH – Catering

*2nd Row:*

*Left:* FRED PUMROY – Vice Chairman

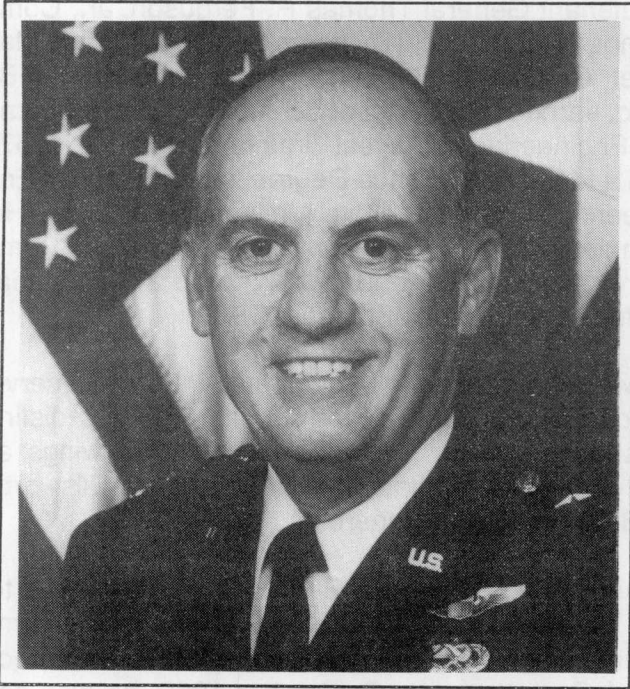
*Center:* JERRY RUZICKA – Protocol

*Right:* JIM CASTANIAS – Accommodations

*Absent:* CHARLES OUTLAW - Convention Center; BOB STANTON - Buffet

## KEYNOTE SPEAKER

### LIEUTENANT GENERAL CHARLES J. SEAROCK, JR.



Lieutenant General Charles J. Searock, Jr.

Lieutenant General Charles J. Searock, Jr. is Vice Commander of the newly established Air Force Materiel Command (AFMC), Wright-Patterson AFB, Ohio. He provides logistics, engineering and management resources across various elements of systems acquisition, systems support or sustainment, science and technology, test and evaluation and base operations for over 450 programs involving over 10K aircraft, 32K engines and the Integrated Weapon System Management (single manager) concept to keep Air Force units and weapons systems in a state of readiness and sustain their operations in peace, war, and contingencies. The Command manages these systems from their inception on the drawing board through their retirement from the inventory. The Command carries out this mission via 18 specialized centers and over 125,000 military and civilian employees around the world.

General Searock earned a Bachelor of Arts degree in General Education from the University of Nebraska in 1962 and a Master's degree in Management from Central Michigan University in 1970. He completed

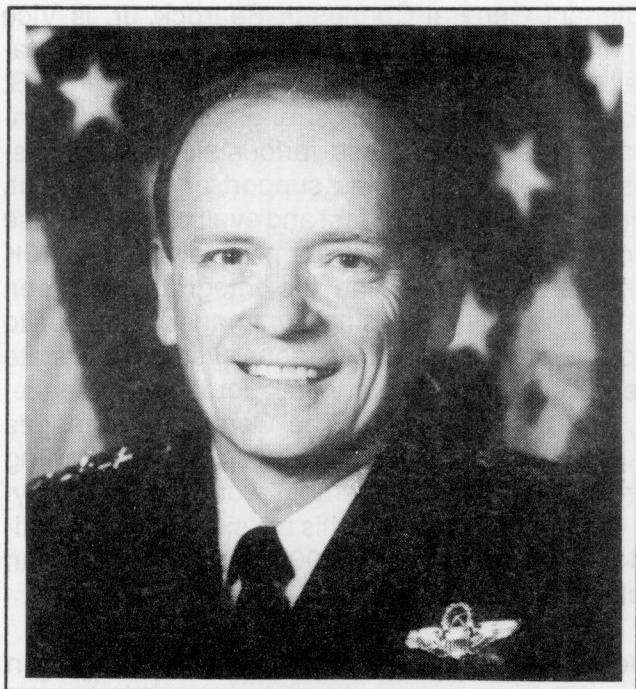
Squadron Officer School in 1963, Air Command and Staff School in 1973, and the Army Air War College in 1976.

General Searock began his military career as a member of the California National Guard. In July 1956, he entered active duty as an aviation cadet, graduating from pilot's training school at Reese Air Force Base, Texas in 1958. General Searock has served as a KC-97 pilot, a B-52 instructor pilot, and an FB-111 instructor pilot. After duty in the Directorate of Operations at HQ USAF, he joined the White House military staff as Assistant for Plans to the Military Assistant to the President of the United States. He was Commander of the 306th and 380th Bombardment Wings and Executive Officer to Deputy, Headquarters, U.S. European Command, Stuttgart-Vaihingen, West Germany. After duty as Vice Commander of the Oklahoma City Air Logistics Center, he became Deputy Chief of Staff for Logistics at Headquarters, Strategic Air Command, Offutt Air Force Base, Nebraska. He was assigned as Vice Commander, Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio, in June 1991. He assumed his current position on 1 July 1992.

General Searock is a command pilot with more than 7,000 flying hours and 152 B-52 combat missions in support of the defense of the Republic of Vietnam. His military awards and decorations include the Air Force Distinguished Service Medal, Defense Superior Service Medal, Legion of Merit with one oak leaf cluster, Distinguished Flying Cross, Meritorious Service Medal, Air Medal with six oak leaf clusters, and Air Force Commendation Medal.

## **TUESDAY LUNCHEON SPEAKER**

### **LIEUTENANT GENERAL THOMAS R. FERGUSON, JR.**



**Lieutenant General Thomas R. Ferguson, Jr.**

Lieutenant General Thomas R. Ferguson, Jr., Commander, Aeronautical Systems Center, Air Force Materiel Command (AFMC), Wright-Patterson AFB, Ohio, earned a Bachelor of Science Degree in Chemical Engineering from West Virginia University in 1957, and a Master of Science Degree in Metallurgical Engineering from Ohio State University in 1968. He completed Squadron Officer School in 1962, Air Command and Staff College in 1973, and the Industrial College of the Armed Forces in 1979.

He was commissioned through the Air Force Reserve Officer Training Corps Program in 1957 as a distinguished graduate. He received his pilot wings at Vance AFB, Oklahoma, then transferred to Ellsworth AFB, South Dakota, where he flew B-52's.

In August 1968, General Ferguson was assigned to HQ 7th AF, Tan Son Nhut AB, Republic of Vietnam, where he served in several positions under the Director of Operations. In September 1969, he was assigned to AF Materials Laboratory, Wright-Patterson AFB, Ohio, as a technical manager.

In June 1973, he was a program element monitor, Office of the Deputy Chief of Staff, Research and Development, Headquarters, USAF, Washington, D.C. In June 1976, he transferred to HQ AFSC, Andrews AFB, Maryland, as Chief of the Flight Vehicle Division, Directorate of Science and Technology. He later served as Chief, Avionics and Weapons Division. After graduation from the Industrial College of the Armed Forces in June 1979, he returned to Headquarters, Air Force Systems Command, Andrews Air Force Base, Maryland, as Deputy to the Director of Science and Technology.

In October 1981, he was assigned to Headquarters, Aeronautical Systems Division (ASD), Wright-Patterson AFB, Ohio, as Assistant Deputy for Development Planning. From August 1982 to July 1984, he was Director of the AGM-65 Maverick Missile System Program Office under the Deputy for Tactical Systems. He was named System Program Director for the Advanced Medium Range Air-to-Air Missile, Armament Division, Eglin AFB, Florida, in July 1984. From August 1988 until February 1990, he was Deputy Chief of Staff for Technology and Requirements Planning, Headquarters, Air Force Systems Command, Andrews AFB, Maryland. He was Deputy, Office of the Assistant Secretary of the Air Force for Acquisition, Washington, D.C., from April 1990 until June 1990. He became Commander of Aeronautical Systems Division, Wright-Patterson AFB, Ohio, in June 1990. He assumed his present position on 1 July 1992.

General Ferguson is a command pilot with 4,016 flying hours. His military decorations include the Defense Superior Service Medal, Legion of Merit with two oak leaf clusters, Bronze Star Medal, Meritorious Service Medal with oak leaf cluster, Air Medal, Air Force Commendation Medal with oak leaf cluster, and Combat Readiness Medal.

## **1992 BEST PAPERS AWARDS**

Annually, AUTOTESTCON recognizes outstanding technical presentations (Best Papers Awards), whereby a special technical program committee selects the winners. This year's Best Paper Awards will be presented at the Thursday Awards Luncheon. Awards for the Best Paper, Runner-up and Best New Author will be made for each of the following technical program topic areas: New Technologies, Management Initiatives, Current and Transitional Applications and Emerging System Concepts. Best paper selection is based on a combined evaluation of the published paper and the presentation at the AUTOTESTCON technical sessions. In addition, two major awards are presented: The IEEE Walter E. Peterson Award for New Technology and the IEEE David M. Goodman Award for Management.

### **WALTER E. PETERSON AWARD**

The Walter E. Peterson Award, an IEEE AUTOTESTCON Best New Technology Paper Award, perpetuates the memory of Mr. Peterson and his leadership, interest and inspiration in encouraging the introduction of new technology and applications at AUTOTESTCON. The award is presented annually by the IEEE Aerospace and Electronic Systems Society and the IEEE Instrumentation and Measurement Society. The recipient receives a certificate and a cash award of \$500.

### **DAVID M. GOODMAN AWARD**

The David M. Goodman Best Paper Award for Management. The award salutes the memory of David M. Goodman and recognizes his early participation in and encouragement of the AUTOTESTCON Conference and the implementation of project SETE at New York University. The award is presented annually and is jointly sponsored by the IEEE Aerospace and Electronic Systems Society and the IEEE Instrumentation and Measurement Society.

### **BEST PUBLISHED PAPERS**

"Best published papers," a \$500 cash award, will also be presented for current and transitional applications, plus system concepts topics. Each runner-up will receive \$250 and each new author will be presented \$100 for each of the four topic areas. These will be presented at the Awards Luncheon.

# 1991 AUTOTESTCON BEST PAPER AWARDS

**WALTER E. PETERSON**

## 1ST PLACE

### IMPLEMENTATION OF AUTOMATED MINIMUM RESOLVABLE TEMPERATURE TESTING

Harold Orlando,  
Neil Nelson,  
Mike Pappas,  
Larry Scherr

Northrop, Electronics Systems Division  
Hawthorne Site  
2301 West 120th Street  
Hawthorne, CA 90251-5032

## 2ND PLACE

### FAST, WIDEBAND SEARCH FOR SPURIOUS RESPONSES

Kevin Cassidy,  
Jay Snell

Digital Signal Processing Unit  
Tektronix Federal Systems, Inc.  
Beaverton, Oregon

**DAVID M. GOODMAN**

## 1ST PLACE

### COMMANDER'S INDEPENDENT THERMAL VIEWER AND HULL/TURRET ELECTRONICS UNIT - BUILT-IN-TEST AND DIAGNOSTICS: TWO DIFFERENT APPROACHES TO MEETING M1A2 SUPPORTABILITY REQUIREMENTS

Rex Sallade

Texas Instruments Incorporated  
P.O. Box 869305, M/S 8407  
Plano, Texas 75086

## 2ND PLACE

### PAPERLESS MULTIMEDIA INFORMATION AND DATA COLLECTION SYSTEM FOR ATE: A PRAM PROJECT REPORT

Fred L. Willis

Ogden Air Logistics Center,  
Software Engineering Division  
Technology and Industrial Directorate  
Hill AFB, UT 84056-5320