

Flight Test NEWS



PUBLISHED BY: THE SOCIETY OF FLIGHT TEST ENGINEERS JULY/AUG., 1972 P. O. BOX 57, CALIFORNIA, MD. 20619

Schedule of Events

Monday — 11 September 1972

7:30-11:00 p.m. Registration & Hospitality Room, Six Flags Inn

Tuesday — 12 September 1972

7:00- 8:15 a.m. Registration
8:15- 8:30 a.m. Opening Address — Sessions 1 thru 5, "Management & Control of Flight Test Programs"

8:30-10:00 a.m. Session No. 1 — FAA; Army

10:00-10:20 a.m. Break

10:30-12:00 a.m. Session No. 2 — Air Force; Navy

12:00- 1:30 p.m. Lunch Break

1:00- 3:00 p.m. Session No. 3 — Boeing - Commercial; Lockheed - Army

3:00- 3:20 p.m. Break

3:30- 5:00 p.m. Session No. 4 — McDonnell-Douglas - Air Force; Grumman - Navy

5:00- 5:30 p.m. American Airline Flight Academy

5:30- 7:30 p.m. Dinner Break

7:30-10:00 p.m. American Airline Flight Academy (Tour)

Wednesday — 13 September 1972

8:30-10:00 a.m. Session No. 5 — "Air Force Prototype Program Management"; "The Role of the Military Flight Test Engineer in Test Management"

10:00-10:20 a.m. Break

10:30-12:00 a.m. Session No. 6 — "Panel Discussion"

12:00- 1:30 p.m. Lunch Break; Sessions 7 & 8 — "The Capabilities of Government Test Facilities"

1:30- 3:00 p.m. Session No. 7 — FAA; Army

3:00- 3:20 p.m. Break

3:30- 5:00 p.m. Session No. 8 — Air Force; Navy

5:30- 6:30 p.m. Break

6:30- 7:00 p.m. Hospitality Room

7:00- 9:30 p.m. Banquet

Thursday — 14 September 1972

8:00 a.m. Depart the Inn of Six Flags for LTV (Tour)

10:00 a.m. Depart LTV for Bell (Tour)

11:30 a.m. Depart Bell

12:00- 1:00 p.m. Lunch

1:00 p.m. Depart Inn for General Dynamics (Tour)

3:30 p.m. Depart General Dynamics

4:00 p.m. The Inn of the Six Flags (Symposium Termination)

National Symposium Set For September 12-14 in Texas

The Third National Symposium sponsored by the Society of Flight Test Engineers will be held on September 12-14, 1972 at the Inn of the Six Flags, Arlington, Texas. Details of the events were announced by officers of the host North Texas Chapter.

The primary theme of the Symposium is "Management and Control of Flight Test Programs." "The Capabilities of Government Test Facilities" is the secondary theme of the three day meeting. The North Texas Chapter planners felt that because of the rapid technological advancement in the aerospace industry, management and control of flight test programs have become increasingly complex and sophisticated. The latest thinking and requirements of various governmental agencies and contractors will be presented, followed by round table discussions between the principal speakers.

Business Meeting Scheduled

The Symposium will also feature the annual business meeting of the Society of Flight Test Engineers. The members will elect the 1972-73 officers in addition to discussing the status and future goals of the Society. Outgoing President Bernard V. Stuber of the Naval Air Test Center will preside over the business meeting.

Numerous special activities have been arranged with various contractors throughout the Dallas-Ft. Worth Area. Tours of the American Airlines Flight Academy, Bell Helicopter, LTV Aerospace, and Convair Aerospace Division of General Dynamics have been scheduled. A Texas-style catered bar-b-que and the symposium banquet should satisfy the appetites of the attendees, who will be representing the international aerospace industry.

Top Speakers Slated

Symposium planners have assembled a



RADM R. M. Isaman, USN
Session 8 Speaker

fast paced program and a group of eminent speakers/panelists from government and industry. Vice Admiral Fredric A. Bardshar, USN will address the members at the Wednesday evening banquet. VADM Bardshar is Director of the Tactical Electromagnetic Programs Office of the Chief of Naval Operations. Background information on all speakers is included in the attached brochure.

The Symposium will conclude on Thursday, September 14 with plant tours. A large turn-out is anticipated, and members are urged to submit the registration forms from the brochure as early as possible.

CHAPTER NEWS

SEATTLE

19215 Wallingford Ave. N.
Seattle, Washington 98144

The Seattle Chapter, SFTE, recently elected the following officers for 1972:

President - *W. E. Fagerberg*, 3030 N.W. 95th St., Seattle, Washington 98107; Vice Pres. - *W. S. Lieberman*, 720 Lakeside So., Seattle, Washington 98144; Secy.-Treas. - *B. T. Cameron*, 19215 Wallingford Ave. N., Seattle, Washington 98133.

According to the Seattle Chapter Bylaws, the Governing Board includes these officers and the immediate past President, Mr. H. B. Klopfenstein.

PATUXENT RIVER

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BRITISH AVIATRIX ADDRESSES PATUXENT RIVER CHAPTER

Miss Shelia Scott, the renowned British aviatrix who holds over 100 aviation records for women, addressed the Patuxent River Chapter of the Society of Flight Test Engineers at a joint meeting with the Society of Engineers and Scientists on June 6. In an hour-long talk at the Cedar Point Officers' Club, Miss Scott related the experiences of her record setting flight over the North Pole last summer. She flew from equator to equator over the Arctic Ocean in a twin-engine Piper Aztec, becoming the first woman to fly solo over the North Pole.

The former actress described how she had waited four years for funds and sponsors to make the polar flight. Finally after one sponsor backed out at the last minute, she got money on a loan to finance her twin-engine airplane. She then negotiated with the NASA Goddard Space Center to test some aircraft tracking equipment on her flight (in conjunction with the Naval Air Test Center).

Miss Scott told of the often gruelling flight training she went through to learn how to survive in the freezing Arctic and quipped that because most flight gear was designed for men, her specially modified equipment for "calls of nature" in flight included "Tupperware."

She discussed some of the problems in

the actual flight, including control problems resulting from the initial overweight, out-of-cg-limit take-off; malfunctions in the landing gear retraction system which forced her to fly "wheels down" over the Arctic Ocean at a much slower speed and higher fuel consumption rate than planned; and exceedingly turbulent weather for one leg of the trip.

As she passed over what she hoped to be the North Pole she threw out the Union Jack for Britain and a Snoopy doll (her American pet) for the United States. It was not until she landed at Barter, Alaska that she learned from the NASA/NATC tracking team that she had indeed passed directly over the North Pole. From Alaska, she flew southward, to Australia, then flew from Australia to London in three and a half days.

Miss Scott started flying in 1959. She now holds both British and American licenses with commercial and instrument multi-engine ratings, seaplane and helicopter commercial ratings. She has flown gliders and jet aircraft. She has won over 50 trophies from racing events, the latest being the London to Australia Air Race 1969 Ford Women's prize. She has been presented many awards, including the U.S.A.'s internationally famous Harmon Trophy (1967) for the world's outstanding aviatrix and the British Britannia Trophy (1968) of the Royal Aero Club.

In commenting on her achievements, Miss Scott said the recognition and achievement of her record setting trips were "nice for a moment" when she stood on the wing and drank champagne and was handed roses. "But, it's

absolutely grim when I wake up the next day and realize my aim is now gone."

Transpo '72 Visited

Twenty members from the Patuxent River Chapter visited TRANSPO '72 at

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F-15 Rollout Held at MDC

The F-15 air superiority fighter MDC built for the U.S. Air Force made its first public appearance in St. Louis on Monday, June 26, with top military, government and industry officials looking on.

The public debut was part of a rollout ceremony held on the McDonnell Aircraft Company flight ramp. Invited guests witnessed the rollout which highlighted a program which began with a press briefing conducted jointly by Maj. Gen Benjamin N. Bellis, F-15 system program director for the Air Force; Donald Malvern, MCAIR vice-president, F-15 general manager, and an official of Pratt & Whitney, builder of the plane's engines.

A number of high-ranking Air Force officers and government officials attended. Representatives of firms supplying major subsystems for the F-15 also were on hand. Invited guests and members of the news media viewed the external configuration of the new airplane for the first time. The F-15 was scheduled to make its first flight in July.

The event was one of the highlights of the Air Force's observance of its 25th anniversary year.

The F-15 - described as the fighter pilot's fighter - is designed to out-perform and outfight any potential fighter threat of the late 1970's and 1980's. It will fulfill a vital need for U.S. tactical air forces to gain and maintain control of the sky in battle areas.

A twin-engine tactical fighter, the F-15 will have unprecedented maneuverability for air-to-air combat. This will be possible because of new lightweight, powerful engines and a revolutionary new wing design.

FLIGHT TEST NEWS

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Phantom Makes First Fly-By-Wire Flight

St. Louis

An F-4 Phantom, modified by MDC under an Air Force program, made its first flight on April 29 with a Survivable Flight Control System including fly-by-wire flight control. This is the first flight of fly-by-wire on a high performance fighter aircraft.

Pilot of the test aircraft on the flight from McDonnell Douglas facilities at Lambert-St. Louis International Airport was Charles P. Garrison, McDonnell Douglas experimental test pilot. Garrison said that no problems were encountered and that control of the aircraft was noticeably improved.

Electrical sensors

In the fly-by-wire system, electrical sensors measure both pilot commands, in the form of stick and pedal movements, and the aircraft's flight path responses in pitch, roll and yaw. Computers process the sum of the sensors' inputs and act to provide electrical signals which move the primary control surfaces, such as ailerons, to produce the desired aircraft motion. The electrical signals are carried to the controls over four redundant channels.

The aircraft used in the test flight was equipped with mechanical controls as a backup and they were used during take-off and landing and some parts of the flight. The mechanical controls will be removed later in the program, which is directed by the Air Force Flight Dynamics Laboratory, Wright-Patterson Air Force Base, Ohio.

In present central systems, a failure at any one point in the mechanical control system could result in loss of control and subsequent loss of the aircraft. In fact, combat experience has shown that minor damage of small arms fire can result in destruction of aircraft due to loss of pilot control. This is caused either by weapon hits in the hydraulic power distribution system or by damage which cuts single-thread mechanical flight control linkages.

With the fly-by-wire approach, suitable identical channels of electrical signals or paths of information can be provided to minimize the effects of failures within the system.

Other benefits

The fly-by-wire configuration has other benefits: superior aiming, tracking

and weapon delivery; reduced pilot workload; flight control design and installation savings; decreased cost; and more airframe design freedom.

Incorporation of motion sensors and analog computers gives the pilot a simple means of commanding the aircraft flight path with significantly reduced physical effort. Thus the pilot can fly smoothly and precisely with less effort devoted to flying the aircraft, enabling him to concentrate more on other important tasks.

John Stack Fatally Injured

John Stack, former Corporate Vice President - Engineering and Consultant for Fairchild Industries, was fatally injured Sunday, June 18 when he fell from the horse he was riding.

Mr. Stack joined Fairchild in 1962 as a vice president following his retirement as Director of Aeronautical Research for the National Aeronautics and Space Administration (NASA).

He pioneered many experimental aerospace techniques. Mr. Stack advocated and directed research which led to development of America's high speed aircraft and exploration of transonic and supersonic flight. The results of his work in aeronautical research won him nearly every accolade possible in the field of aviation, including the Wright Brothers Memorial Trophy, Collier Trophy (twice), the Institute of Aerospace Sciences Sylvanus Albert Reid Award, the Air Force Association Science and Research Award and the Society of Engineers (Sweden) medal.

Mr. Stack was a member of the joint N A S A - D e p a r t m e n t o f Defense - Federal Aviation Agency task group on supersonic transport development; Aeronautical Technical Advisory Panel, Department of Defense Scientific Advisory Committee; Visiting Committee of the Massachusetts Institute of Technology Mathematics Department; Director of the Citizens National Bank, Hampton, Virginia; a trustee of Hampton Roads (Virginia) Academy and a member of the Virginia Peninsula Industrial Committee.

Mr. Stack was born in Lowell, Massachusetts, in September 1906. In

"Power-by-wire"

A second significant element of the Survivable Flight Control System is "power-by-wire" which incorporates an integrated actuator package. Since the integrated actuator package generates its own hydraulic power in proximity to where it is used, the vulnerable hydraulic lines interlaced throughout the aircraft disappear.

The program is being conducted by McDonnell Douglas under a \$16 million contract.

1928 he graduated from the Massachusetts Institute of Technology, and in that same year joined the National Advisory Committee for Aeronautics, the forerunner of the National Aeronautics and Space Administration.

He is survived by his widow, Mrs. Helen Sturtevant Stack; a daughter, Mrs. John Sim of Yorktown, Virginia; a son, John Peter Stack of Yorktown, and seven grandchildren.

Funeral services were held at 4:00 p.m., Tuesday, June 20, at Grace Episcopal Church, Yorktown, Virginia, with burial in the churchyard cemetery.

Symposium Theme

Because of the rapid technological advancement in the aerospace industry, management and control of flight test programs have become increasingly complex and sophisticated. Consequently, it is important that some refinement be made in the conduct of future flight test programs.

The primary theme for the third national symposium of the Society of Flight Test Engineers is "Management and Control of Flight Test Programs." To this end, the latest thinking and requirements of various governmental agencies and contractors will be presented. These presentations will be followed by roundtable discussions between the principal speakers.

The secondary theme, "The Capabilities of Government Test Facilities," presentations will cover the flight test facility capabilities of the various government agencies.

Third National Symposium — General Information —

Advanced Registration

Attendance at the Third National Symposium of SFTE is by paid registration only. Unnecessary delays can be avoided by advance registration. Fill out the attached registration form and mail to the address shown. Make all checks payable to the Society of Flight Test Engineers.

Transportation

Limousine service is available from Love Field to the Inn of the Six Flags where all sessions will be held. Love Field also offers auto rentals of your choice.

Lodging and Meals

All rooms have double beds. Deluxe rooms also have double hide-a-bed sofas. All meals are planned in group fashion to improve service and insure a prompt schedule.

If you do not want to participate in group meals, you are free to make your own arrangements and schedules. Meal tickets will be inserted into your registration package according to information shown on your registration card.

Message Center

A message center will be provided at the Inn of the Six Flags on Sept. 11 and 12. You may call 817-261-4211 and ask for the SFTE message center.

Technical Papers

Technical papers will not be available at the symposium but all papers will be printed in a single book later. You may order copies at the registration desk during the symposium for \$10.00 per copy.

Chapter News (Continued)

(Continued from Page 2)

Dulles Airport, Washington, D.C. on June 1, 1972. Although this international exposition featured all types of transportation systems, an emphasis on aviation was apparent in the trade pavilions, static displays and product demonstration periods which preceded the afternoon air show.

The SFTE members were guests of North American Rockwell for the day. It was an opportune time to visit the exposition, since the morning events were closed to the general public.

SFTE Tour

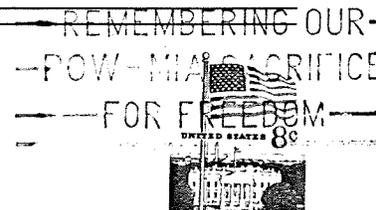
On June 19, 1972, the Patuxent River Chapter of SFTE toured the Smithsonian

Institution, National Air and Space Museum; Preservation, Restoration and Storage Division at Silver Hill, Maryland.

Twenty-seven members and guests including several wives, took advantage of this outstanding opportunity to see numerous aircraft of the past. Mr. Donald K. Merchant, chief of the division, gave the group enlightening facts and answered questions about the various aircraft during the walk around tour.

This tour provided the group an excellent opportunity to examine closely various aircraft of the past and have the novel design and operating features of these aircraft pointed out as well as the historical features.

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