Flight Test NEWS

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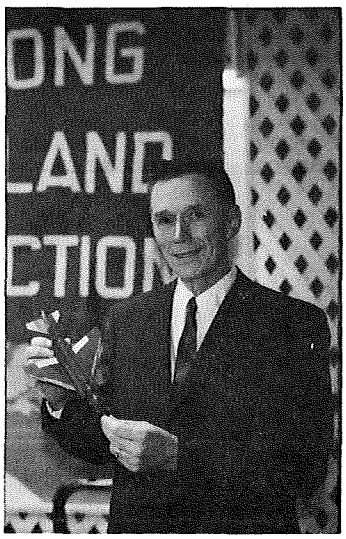
FEBRUARY LONG ISLAND CHAPTER DINNER

MEETING FEATURES J. NIAL ON NAVY SPIN TESTING AND ANNOUNCES NEW OFFICERS



Mr. John A. Nial, Chief Engineer of the Flying Qualities and Performance Branch of the Naval Air Test Center, Flight Test Division, Patuxent River, Maryland, was the guest speaker at the joint dinner meeting of the Long Island Chapter of the Society of Flight Test Engineers and AIAA - Long Island Section. The meeting was held at the Watermill Inn, Smithtown, on February 22. The audience, which consisted of 56 members and non-members was given an exciting, well-illustrated and informative presentation on "The History and Status of the U.S. Navy Stall/Post Stall/Spin Flight Testing".

Mr. Bill Cutler, outgoing president of the local SFTE Chapter and Assistant Head, Flight Sciences, Gruman Flight Test, chaired the meeting. The guest speaker was introduced by Mr. Tom Kastner, Corporate Manager of Automated Telemetry Systems, Gruman.

Mr. Nial went into the background of the incipient spin out-of-control problems experienced by highly maneuverable naval fighter aircraft, and the development of the flight techniques for investigating these problems over a 28 year period, on 58 different Navy airplanes.

The most frustrating aspect of the incipient spin problem is that, whereas it may be difficult to deliberately spin some aircraft, it is often very easy to inadvertently enter a spin in the course of combat maneuver training. The wide variety of spin modes and appropriate recovery techniques, the difficulty of recognizing spin direction and favorable aircraft recovery motion trends by the pilot constitute severe problems.

Historically, only scant contractor spin and recovery flight demonstrations were required in order to satisfy government spin specifications for a given aircraft type. But subsequently, in service, different modes of spin were entered inadvertently and, through lack of awareness of these modes and the required recovery techniques, many aircraft were lost. Ejection occurred because of pilot lack of confidence in spin recovery. In many of these cases, the aircraft recovered by itself from the spin and flew on without the pilot only to crash when all fuel was expended.

The obvious direction, therefore, was to improve on the spin demonstration specification, requiring more extensive demonstrations as part of a three-point plan:

1. Extensive spin model and high angle of attack force model testing, and analyses.
2. Extensive contractor flight tests at and beyond the stall.
3. Naval evaluation of stall, post-stall characteristics through flight and ground training programs.

The main goal of this program was to establish pilot experience and confidence in coping with aircraft post-stall gyrations and spin and recovery phases.

Mr. Nial went into the representative spin modes of various Navy fighter types, illustrated by excellent movie film sequences taken from inside as well as outside the cockpit. These remarkable records indicated the unusually complex spin modes which can be achieved with certain configurations. Some of the airplane design and control system characteristics contributing to these spin modes and successful modifications to improve recovery performance were outlined.

The Navy program is evidently proving to be a valuable approach to the problem and essential to the achievement of effective and safe Naval fighter aircraft operations.

A lively question period followed the presentation.

Announced at the meeting were the Long Island Chapter officers for 1973 consisting of President - Charles Schiano, Gruman Data Systems, Systems Analysis and Development, Automated Telemetry System; Vice President - Thomas Kastner, Gruman Aerospace Corporation, Automated Telemetry System Manager, Flight Acceptance Department; Treasurer - Richard Orr, Grumman Aerospace Corporation, Vehicle Flight Test, Structural Sciences Assistant Head; Secretary - Ross Bracco, Grumman Aerospace Corporation, Vehicle Flight Test, Propulsion; Sargent at Arms - John Newark, Grumman Aerospace Corporation, Vehicle Flight Test, Structural Loads; Delegate - Bill Cutler, Grumman Aerospace Corporation, Vehicle Flight Test, Flight Sciences Assistant Head; Alternate Delegate - Charles Scally, Grumman Aerospace Corporation, Corporate Instrumentation, Section Head.

The Long Island SFTE Chapter contributed fifty dollars to the local newspaper, Newsday, Christmas Adopt-A-Family Fund in the memory of deceased Grumman Aerospace Corporation F-14A pilot Bill Miller.

President's Column

Beginning with this issue of the Flight Test News, we will be periodically publishing reprinted articles from various aerospace publications. The intent is to print articles that we feel are of interest to our membership. These articles will be published as a Technical Supplement in the absence of original articles by contributors. In order to print articles appealing to you, please let us know what subjects you are interested in.

Since our last issue, we have had a couple of suggestions from our membership that I would like to present. The first one has to do with offering an SFTE decal the same size as the lapel pin. The purpose being to allow members to attach the decal to their company identification badge to create some esprit de corps among SFTE members. I would very much like to hear the pros and cons of this suggestion from the membership.

The second suggestion was to investigate the feasibility of trying to establish a retirement seniority system between aerospace companies. The primary purpose of this is to offset the loss of seniority when moving from company to company. As we all know, flight test engineers are often required to move where the contracts are. It is not the intent of the Board of Directors to get involved in politics or company policy. At press time this issue had not been presented to the full Board of Directors; however, it will be on the agenda for the next meeting. Since I am a government employee I do not have much of a feel for the implications of a program of this sort, therefore, I'm relying on the membership to educate me and let me know how you feel.

747F SETS NEW WEIGHT RECORD

A Lufthansa German Airlines 747F set a new record for airlift March 11 when it carried 219,562 pounds of cargo in a single load from Frankfurt, Germany, to New York. This figure is equal to 99,620 kilograms, or 109.8 U.S. tons.

The Boeing-built airplane, only one like it in the world, is operated on six round trip flights a week between the two cities. The load exceeded Lufthansa's previous record of 211,952 by 7,610 pounds, the difference being about the load of one old DC-3. Although loads very widely, typical loads for the airplane are about 140,000 pounds. The 747F has the structural capability of carrying about 260,000 pounds over shorter distances.

Since Lufthansa put the big cargo jet into service April 19, 1972, the 10-month average load factor from Frankfurt to New York has been 69 per cent while the load factor back to Frankfurt has averaged 56.9 per cent, according to Lufthansa figures. Total cargo moved to date has exceeded 54 million pounds.

Beginning April 1, the 747F will operate to New York via Boston three days a week and via Philadelphia one day a week, and continue its present schedule the other two days.

Another of the jumbo freighters is scheduled to begin transatlantic service in 1974 with the delivery of the first of three 747Fs ordered by Seaboard World Airlines, Inc. In addition, three 747Cs (convertibles) which can carry either freight or passengers have been ordered by World Airways for delivery beginning in May.

LIGHTPLANE PLUS...A 747's wing is so efficient that the superjet with all four engines can travel 17.3 miles forward for each 5,280 feet it descends. This 17.3-to-1 glide angle is even better than that of modern lightplanes (up to about 12-to-1), but the glide speed is higher—Mach .825 at the highest weight and altitude.

Local SFTE Chapter Addresses

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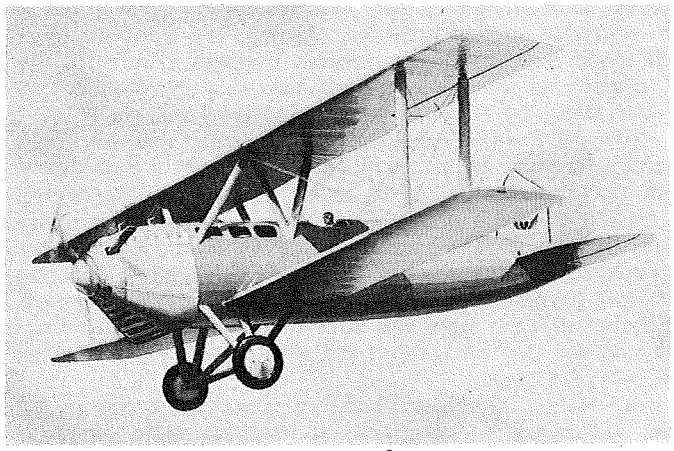
   Lancaster, Calif. 93534
2. Long Island
   Charles Schiano
   P.O. Box 38A
   Ridge, New York 11961
3. North Texas
   David Lackey
   1000 Wade Drive
   Bedford, Texas 76021
4. Patuxent River
   Sam Porter
   NATC/Flight Test Div(FQ&P)
   Patuxent River, MD. 20670
5. Los Angeles
   John Cook
   6150 Bay Shore Walk
   Long Beach, Calif. 90803
6. Wichita
   (Inactive)
7. Seattle
   W. E. Fagerberg
   3030 N.W. 95th St.
   Seattle, Wash. 98107
8. St. Louis
   James R. Hanson
   1654 Renoir Lane
   St. Louis, MO. 63141

Patuxent River Chapter News

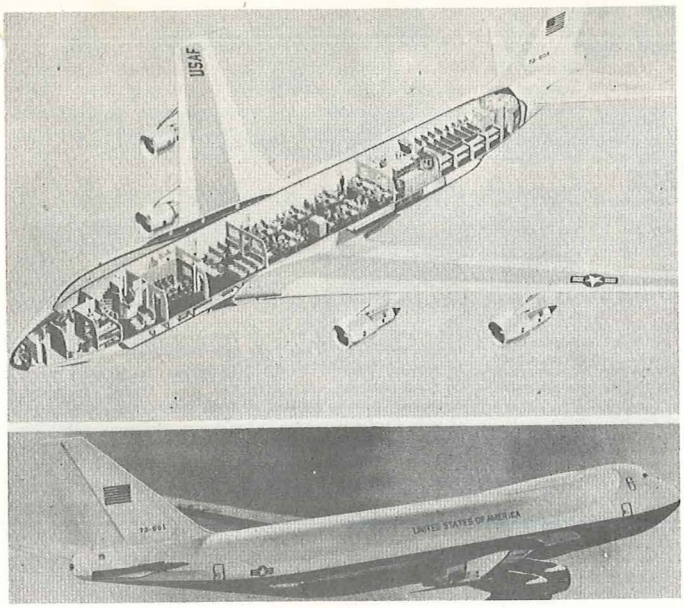
Mr. Lou Davis, public relations director of the Airline Pilot's Association, addressed the Patuxent River chapter and their guests on the subject of hijacking on the evening of March 1. More than seventy members and guests of the chapter heard the presentation at the social dinner meeting. Through a film presenting a hijacked pilot's experiences and personal observations, Mr. Davis related the A.L.P.A.'s views on hijacking, the problems confronting the airline industry and its customers, and A.L.P.A.'s efforts in attempting to solve the hijacking problem.

As a part of the evening's scheduled events, the newly elected chapter's officers from 1973 were introduced to the chapter's membership by outgoing president, Donald House. Installed as chapter officers were: President, Samuel Porter; Vice-President, David Bischoff; Secretary, James Edris; and Treasurer, Paul Chapin.



Can you name this Mystery Plane?

Advanced To Command Status



Here are artists' conceptions of the interior and exterior views of the advanced airborne command post 747 jet transport, two of which the Air Force has ordered with an option on a third. The first two craft will be delivered under a $59 million fixed-price contract. A total of seven 747s are planned for the program, if Congress appropriates funds for the additional four. Total value of the seven-airplane program would be $500 million.

Air Force Buys Two 747Bs, Opts For One Additional For Command Post Duties

The Department of the Air Force has announced the purchase from Boeing of the first two 747B jet transports for the Advanced Airborne Command Post (AABNCP) program. The $59 million firm, fixed-price contract also includes an option for a third 747.

A total of seven 747s is planned for the program, dependent for congressional appropriations for four additional aircraft. The 747s, replacing EC-135 airborne command posts of the National Military Command System and the Strategic Air Command, will carry a wider variety of airborne electronics for improved command and control by the national command authorities.

The aircraft to be acquired will be outfitted with essentially the electronic equipment currently installed on the EC-135 airborne command posts to allow for early operation of the aircraft with an expanded battle staff. Competitive selection of a contractor to perform this modification and transfer is expected in May 1973.

The first phase of the program will provide aircraft of greater endurance, thereby increasing the survivability of the aircraft. The increase in space provided will allow the larger staffs necessary to support decision makers in a more flexible, esponse capability. Follow-on phases will extend survivability and communications capability.

The work will be accomplished at Boeing's 747 facility at Everett, Washington.

"We are gratified at this award," said Douglas E. Graves, vice president, manager, Aeronautical and Information Systems Division. "It represents a great deal of hard work by the men and women in the 747 military systems applications organization, plus a truly great basic airplane."

He pointed out that the 747's commercial version has flown approximately 1.5 million hours and carried more than 36 million passengers. The 197 aircraft delivered so far have amassed an impressive reliability record, he said.

Total value of the eternal seven–airplane program, Graves pointed out, will be approximately $500 million. "The contract award to Boeing for the first two airplanes is the beginning of a significant improvement frogram for strategic force management and command and control," he said.

Although 197 747s have been built and delivered to commercial users, the seven planned for the AABNP program will be the first of this type to be used operationally by the Air Force.

New Members

We would like to extend our sincere welcome to the following new members:

AT LARGE

Tracy A. Scanlan	Wright-Patterson AFB Ohio

ANTELOPE VALLEY

Alexander Mackenzie	Lockheed-California Co. Burbank, California

ITEMS FOR SALE

Several members have asked about items the SFTE has for sale. The few items listed below are available from the National Office. There are numerous items that can be made for the SFTE if there is sufficient interest. If you have something you are interested in, let us know about it and we will try to generate sufficient interest to make it practical to have it made.

Item	Price
lapel pin	$4.00
decal (inside or outside)	.50
shoulder patch	1.50

FLIGHT TEST NEWS

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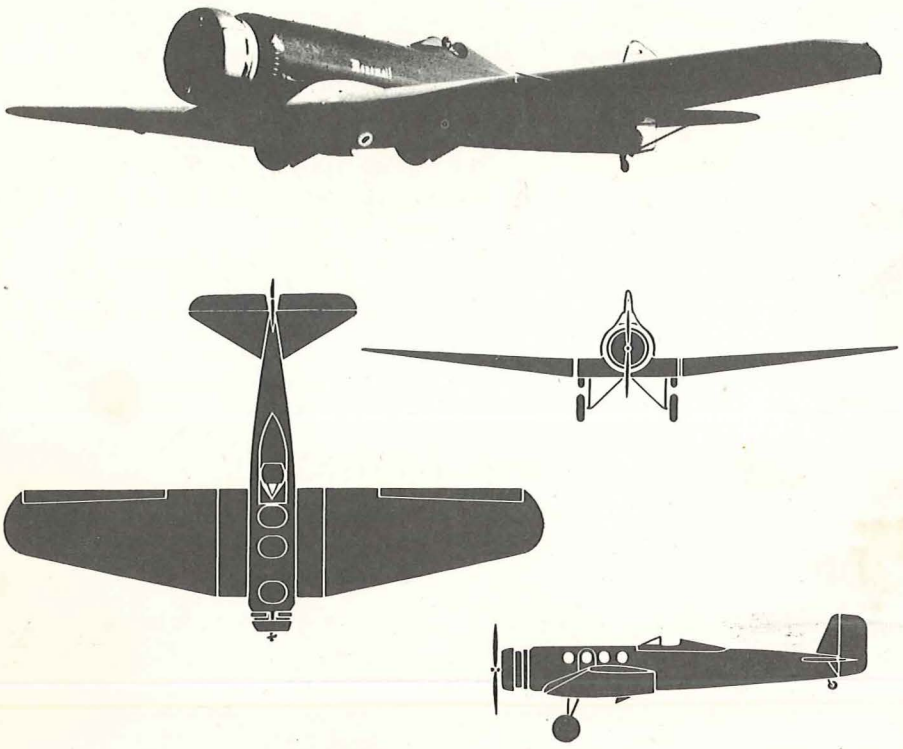
LAST MONTH'S MYSTERY AIRPLANE



THE MONOMAIL

One of the most revolutionary airplanes in commercial aviation history was the refined Monomail which first flew in May, 1930. Designed as a mail-cargo plane, it achieved major performance increases not by the addition of brute horsepower but by structural and aerodynamic refinement.

The traditional biplane design with drag-producing struts and wires was repiaced by a single smooth all-metal low wing of clean cantilever construction. The wheels retracted into the wing during flight and the drag of the air-cooled "Hornet" engine was reduced by enclosing it in a newly developed anti-drag cowling. The Monomail's pilot rode in an open cockpit behind the wing with cargo and mail in the forward section of the fuselage. The second plane featured a six-passenger cabin and large windows. Both were model 200s.

A major drawback to the Monomail design was that it was too advanced for the current state of the art in powerplant and propeller design. The efficient use of its full performance range required a low-pitch propeller for takeoff and climb and high pitch for cruising. By the time a controllable-pitch propeller was installed on the Monomail it was already on the verge of replacement by newer multi-engine designs, such as the Boeing 247 ten-passenger airliner, which it had inspired.

Specifications:

WING SPAN	59 feet, 1 inch (18 m)
LENGTH	41 feet, 10 inches (12,75 m)
WING AREA	535 square feet (49,70 m^2)
GROSS WEIGHT	8,000 pounds (3628 kg)
SPEED—TOP	158 miles per hour (252 km/h)
CRUISING	135 miles per hour (216 km/h)
RANGE	576 miles (920 km)
CEILING	14,700 feet (4480 m)
POWER	575 horsepower P&W Hornet B

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