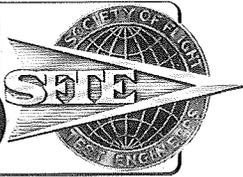


Flight Test NEWS



PUBLISHED BY: THE SOCIETY OF FLIGHT TEST ENGINEERS

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JANUARY, 1971

National Symposium Resounding Success

After many months of intense preparation by the Long Island Chapter the Second National Symposium of the Society was held at Kings Grant Motor Inn at Plainview, New York on October 5, 6, 7, 1970. Dealing with Computer Aided Flight Testing in the 1970's the technical sessions were attended by more than 115 people from 25 flight test oriented organizations from the United States, Canada and Great Britain. The annual business meeting at which the 1971 officer election results were announced was held on the evening of October 5 and a gala banquet attended by 180 members, guests, and wives on the evening of October 6. Representative Otis G. Pike was the guest speaker at the banquet.

Planning for the symposium was started by the Long Island Chapter in November 1969 when it became obvious that the computer and flight testing was a subject warranting discussion by the flight test community. As a result a theme was developed and a "Call for Papers" announcing the symposium mailed nationally in April 1970. Over 500 copies of the Call were circulated to a mailing list developed primarily from the Societies' records and personal contacts. The purpose of the symposium was announced to "exchange information and foster understanding of flight testing as it will be conducted in the 1970's; provide a forum for the presentation of ideas and accomplishments linking advanced testing and computing techniques; to discuss mutual problems of the flight test community in implementing technological advances and in applying new techniques". Response to the Call was overwhelming, numbering 44 papers from all parts of the United States and covering many aspects of the theme. After much debate by the technical committee 22 papers were selected for the program.

After formulation of the program and participants a final announcement was assembled and over 900 copies mailed internationally in August to an expanded mailing list. Now the waiting started.

The response of registrants was just as rewarding and indicative of the selection of a timely theme. Three weeks prior to the sessions sufficient registrants had applied to guarantee a success. They included representatives from the Federal Aviation Authority, the National Aeronautics and Space Administration, General Dynamics, Fairchild Hiller, British Aircraft Corp., Sikorsky, Boeing, and United Aircraft.

On Monday morning the Symposium was opened by an introduction from F.G. Edwards, Director, Flight Acceptance Dept., Grumman Aerospace who suggested a need to explore the extent of the need of computers in flight test. L.J. Cannonico, N.Y. District Manager, Control Data Corp. gave the keynote address which touched on the concept of man-machine interaction. The first session, Data System Concepts 1, was chaired by R. LeCann, Director of ATS Operations, Grumman Data Systems Corp. The session featured descriptions of an advanced data system for Army engineering flight test at Edwards AFB, Calif. and the Grumman Automated Telemetry System (ATS) in addition to papers on various special computer applications.

On Monday afternoon Data Systems Concepts 11 was chaired by J.L. Pearce, President, J.L. Pearce & Assoc., Inc. A paper that provoked much discussion was one which presented a case against computer-aided flight testing stating that crew evaluations could serve to determine mission suitability of aircraft at less cost than processing much data. Flight test operations management and man-machine interaction for a real time flight test data system were other subjects addressed.

Applications 1 was the theme on Tuesday morning chaired by R.A. Mazourek, Asst. Director, Flight Acceptance Dept., Grumman Aerospace. Computer aid in the areas of low altitude atmospheric turbulence, flight flutter testing of the F-14A, store separation analysis and airplane frequency response determination were subjects of discussion at this session.

On Tuesday afternoon the attendees received a break and were afforded an opportunity to see remote Eastern Long Island, the location of the Grumman Aerospace Corp. Calverton Flight Test Facility. On view were the Anechoic Chamber and IFF Facility, but of highest interest was the Automated Telemetry Station as application of the computer discussed in the technical sessions. The station, allowing real time calculation and display of aircraft engineering parameters, was demonstrated by the use of previously recorded data. All were favorably impressed with the demonstration.

The Wednesday morning session, chaired by G.M. Bye, Supervisor Powerplant Analysis Group, The Boeing Co., was Applications 11 touching on stability derivative extraction and airborne digital computer evaluation techniques. Also, a Panel Discussion, "Computer Aided Flight testing - How Far Do We Go?" moderated by R. LeCann and composed of session chairman was held in the morning.

The Symposium was closed on Wednesday afternoon by J. Paradis Technical Director, Naval Air Test Center with Applications 111. Discussed were several mathematical application techniques as well as an interactive computer technique for optimization of a photographic data acquisition system (demonstrated at the ATS tour).

It was the general consensus that this Symposium was a first rate professional affair which should go a long way in promoting the SFTE. An example of this success, besides the number of attendees and participants, was the interest shown in the technical papers as witnessed by their sales totaling about \$215 during the symposium and another \$200 subsequent to the sessions. It was agreed at the Business Meeting that a similar symposium should be put on at least once a year. Accordingly the Patuxent Chapter has announced its plan to host the 1971 symposium. Good luck Patuxent!

President's Message

With this first Newsletter since installation of the new SFTE officers, I would like to take this opportunity to thank each Society member for his support during the past year and a half in helping to firmly establish an organization that truly represents the flight test engineer.

At present, we have over 500 members from coast to coast and in Canada. This is an outstanding start for such a young organization attempting to grow in the company of such giants as AIAA, ASME, IEEE, and others. Such success, however, should not lull you into believing that SFTE is a large faceless entity that can afford to take or leave individual members. You, the individual member, are the Society's most valuable asset. The Society continues to need your ardent support on the chapter level as well as nationally.

In looking toward further expansion, there has been considerable interest expressed by several persons in the British flight testing profession in becoming affiliated with SFTE. Further, we are looking for formation of at least two new chapters in the U.S. this coming year. Continuing membership drives in existing chapters should bolster our ranks to help us to meet our goal of 50% growth by October, 1971.

Since our primary responsibility is to serve the individual member, I would like

to mention several of the projects planned for the coming year which are aimed at affording useful and tangible benefits of Society membership. Among these projects is the development and publication of a Flight Test Directory listing names, addresses and organization of flight test groups throughout the country to permit rapid access to persons outside of your own company. Also, we are planning to build up a firm library at a central location to be available to all chapters and members for local programs as well as for other speaking engagements by members. In longer range planning, we want to develop a Test Range Directory listing all known available facilities of use in flight testing of both rotary wing and fixed wing aircraft. We will continue support of the ongoing effort to write and publish a Flight Test Manual. In order to successfully prosecute these plans, we will need the assistance of each chapter plus individual members in localities without chapter affiliations.

The Society is not limited or committed to only these projects. We enthusiastically welcome and solicit ideas from every member that will help us to better serve and represent the flight test engineer.

The Society is in the unique position now of being unencumbered by long standing or traditional ways of operating.

This is one of the assets of a young organization. I intend to maintain this flexibility of operation but, in turn, require participation by all members in shaping the Society and steering its course in the coming year.

It is with enthusiasm that all of the new officers are looking forward to serving you.

Sincerely yours,
George E. Clark
President, SFTE

Long Island Chapter Announces Election Of New Officers

On December 1 the Long Island Chapter at their monthly dinner meeting announced the election of chapter officers for 1971. They are Charlie Scally - President, Bill Cutler - Vice President, John Boyajian - Secretary and Tony Micich - Treasurer.

Officers were installed and Dick Sprague, Manager of LEM Consulting Pilots at Grumman spoke on consulting pilot activities on the LEM and Shuttle programs, detailed LEM flight characteristics and the role of simulation in the programs. In addition a movie of the eventful Apollo 13 flight was presented.

1970 Election Results

Total Ballots Cast - 123

Approval of Election Procedure - 121 yes
2 no

President

Dr. George Clarke 119
Write-in 1

Vice-President

Warren Dodson 118

Secretary

Harry Down 118
Write-in 2

Treasurer

Paul Arieti 117
Write-in 1

Directors

Robert Edgerly 116
Art Pugliese 118
Write-in 1

Symposium Technical Papers

It is planned to circulate with the "Flight Test News" in future months selected copies of the symposium technical papers. It is hoped that this will satisfy the urgent need to provide the membership with up to date flight test technical literature. This is an interim measure in consideration of the Societies' current poor financial state prohibiting publication of the "Flight Test Engineer" at this time as well as the lack of technical article submittal by the general membership. Technical articles will be distributed with the Newsletter until such time as there are sufficient funds to publish the separate magazine in some form. However, contributors are severely needed. Contact your Chapter Publications Committee for details on submitting articles.

The paper selected for this month's edition is "Man-Machine Interaction for a Real-Time Flight Test Data System" by Richard Savadsky, Grumman Aerospace Corp. This paper is submitted because of its timeliness relative to the Grumman Automated Telemetry Station discussed elsewhere in the Newsletter.

Annual Business Meeting

An enthusiastic discussion of society goals and policy was the highlight of The Annual Business Meeting held on 5 October. Following a viewing of the excellent colored film "Testing the 747", the President's report was presented by Bruce Inman. Noting that the October Symposium was the milestone event in a year that has seen membership approach the 500 mark, Bruce challenged the society to step up to specific goals, among them:

1. Publication of a flight test technical manual.
2. Publication of a quarterly technical journal titled "Flight Test Engineer".
3. Publication of a monthly newsletter.
4. Establishment of a flight test library service for films and technical data.
5. Publication of a flight test directory.
6. Formation of technical advisory committees.
7. Publication of a flight test engineering textbook.
8. Formation of student chapters.
9. Encourage the formation of foreign sections and organization of an international affiliation.
10. Additional seminars.

ANNUAL BUSINESS MEETING
Continued

At the conclusion of his report, Bruce opened the floor for discussion, the substance of which indicated an enthusiastic willingness to "Make the Commitments" and undertake specific action items to further the technical standing and financial posture of the Society. Including with the President's report were:

- a) Financial Reports showing revenues of \$15,811.94 and expenses of \$15,741.50, which with a Petty Cash fund of \$25.00 results in Total Assets of \$95.44 as of 30 September.
- b) Executive Committee Report - Summarized activities leading to formulation and acceptance of Constitution in May 1969, and National By-Laws in June 1969. A "Minimum By-Law Requirements List" was accepted on 4 June 1969. Constitution was revised on 20 June 1970 to allow National Election and Annual Business Meeting to be conducted on 5 Oct. 1970. Committee recommends it be maintained for the purpose of establishing philosophy, policy and procedures to govern the Society.
- c) Publications - Report summarized difficulties encountered in publishing the two issues of the journal. Primary problem was financial (over 50% of the Society expenses) due to poor responses for advertising and corporate support. Board of Directors has already recommended transferring responsibility for publication of the journal to another local chapter; The Publications Committee concurred.
- d) Membership - Reviewed participation establishing membership requirements, formulating constitution and bylaws, designing application forms and membership cards, establishing computer program for membership listing and approving the first 100 applications. Total membership as of 2 October 1970 is:

Chapter or Location	Membership See Classifications
Antelope Valley (1)	84
Long Island (2)	64
North Texas (3)	52
Patuxent River (4)	43
Los Angeles (5)	49
Wichita (6)	12
Seattle Area	124
Various Locations	29

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Los Angeles Chapter
Elects Officers

At the 21 Oct. dinner meeting of the Los Angeles Chapter at the Los Alamitos NAS Officers Club election of the following 1971 officers were announced; President - Duncan P. Walker, Vice President - James Murray, Secretary - Richard Roberts, and Treasurer - Henning Andersen. A summary of the national symposium was presented by Harold Weaver who attended. The principal speaker for the evening was Bert Lockwood who spoke on "Airport Operations and the Wide Body Jets".

Mr. Lockwood told of the noise problems associated with operation of present day jets out of airports centered in high populated areas and also the plans being implemented to reduce jet aircraft engine noise. He told of litigation against the airports and that courts seem to be favoring the plaintiffs, which in turn causes the airport and government authorities to place tighter restrictions on the airlines and aircraft manufacturers. He asked the attending members to be cognizant of the noise problem in the design and testing phases of new aircraft. Mr. Lockwood also discussed the reasons why a new airport is required for servicing Southern California and why a site in the Antelope Valley was selected. He said that L.A. International Airport would be saturated by 1975 (41 million passengers) and that facilities would have to be available to service 175 million passengers by 1985.

- e) Ethics - Relatively inactive since adoption of Society Code of Ethics in Nov. 1968. Action restricted to handling of membership applications containing information of a personal nature, and to internal procedures regarding deposit and control of Society funds.
- f) Publicity - No Report.
- g) Nomination and Election - Summarized ballot preparation, distribution, collection and counting; validating election of new national officers and Directors. Committee recommended that the officer for Chairman of the Nominations and Election Committee be established soon since the Constitution requires a start at least five months prior to the election.

F-14A Flying Model

Two of Grumman's flight test engineers recently became frustrated reviewing theoretical data on the yet to be tested F-14A. Not wanting to wait for the first flight C. Baxter and A. Kulawy developed a "paper flying model design" of the aircraft. Grumman flight test engineers now can be seen "testing" the "paper version" of the aircraft prior to first flight.

To build your own F-14A model paste the three enclosed sections on light cardboard and follow directions. Good luck!

Representative Pike
Speaks At Banquet -
Sees Updated Air Arm
Vital To Defense,
Growth Of Technology

All was not business at the Second Annual Symposium, Monday evening to get "fortified" for the Business Meeting. Members unwound from the day's activities at a cocktail hour allowing many old flight test acquaintances to be renewed. Needless to say all were prepared for the business of the night.

However, the highlight of the Symposium was the gala cocktail hour and banquet held on Tuesday evening. Participants, attendees, local members and the local flight test community as well as many wives enjoyed the cocktail hour hosted by Grumman Data Systems and a fine meal. Total number in attendance was 180. Again more old friends were found. Dignitaries from local industry as Fairchild Hiller, Grumman Aerospace and Grumman Data Systems were represented at corporate tables. Mr. George Toumanouf, Director-Transportation Systems Div. AIL served as toastmaster and set everyone at ease with his wit and flight test related introducing remarks.

Bruce Inman spoke about his past year as president and introduced the newly elected president for 1971 George Clarke. George discussed plans, hopes and goals for the Society in 1971. George presented Bruce with a certificate from the membership in appreciation for his contributions to the Society as founder and first national president. The featured speaker for the evening was Representative Otis G. Pike, Long Island, a member of the House Armed Services Committee

Rep. Pike led off with some humorous introductory comments, then settled down to some serious observations on the state of the aerospace industry.

Continued page 4

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There was a surprise, for example, as Representative Pike said: "Long Island is getting its fair share of over-all defense spending." And he went on to say that New York State has advanced to second place in terms of dollars flowing in. Texas, which has been second, is now running third.

A staunch defender of air power and knowledgeable about the multiple uses of aircraft, partly because of his membership on the House Armed Services Committee, Pike made a brief but powerful pitch on the necessity for balance and the continual updating of the nation's air arm. On the question of balance, Pike pointed out that, historically, one particular phase

of national air defense has been over-accentuated, naturally to the detriment of the other; for example, there was a "massive retaliation" phase, a "strategic nuclear force" phase, and so on. To Pike, this distorts the picture of national needs.

On updating and building new aircraft, Pike believes that "we should make a commitment to design an aircraft every four years. That would keep us apace of technology and ahead of a threat by a potential enemy". This must be a firm pledge, he said, one that the public must be made aware of; and that means that people in the aircraft industry have a communications job to do.

injured on the ground, nor was there any property damage on the ground.

The flight had started at 10:08 a.m. Accompanied by three chase planes, the F-14 lifted off from the Calverton runway, climbed effortlessly into a dazzling blue sky, banked right, and turned southeast toward the flight test area over the Atlantic Ocean. On the ground, about 50 people, including Company officers and program and flight test personnel, watched the twin-jet fighter as it disappeared over the horizon.

For the first 20 minutes or so, Miller, who was piloting the plane, and Smyth, Grumman Chief Test Pilot who was monitoring instrumentation equipment, flew the F-14 with wheels down, while testing the craft's stability and control in various flight maneuvers. Then they retracted the gear and accelerated slowly from 133 knots to 180.

The first hint of possible trouble came about 25 minutes into the flight. It was then that Bill Miller reported a loss of pressure in a prime hydraulic system (a chase plane also reported fluid streaming from the craft) and that they were returning to Calverton. At the time of the initial failure, the F-14 was about 30 miles southeast of the field, about 4-5 miles over the water, flying at 14,000 feet.

Back-up system

The F-14 has two prime hydraulic systems working in tandem—if one fails the other automatically takes over the entire workload in actuating controls, etc., necessary for operating the plane in flight.

Although there was evident concern among those awaiting the returning plane, everything seemed under control in the air, with both Miller and Smyth reporting progress of the flight in unhurried, precise terms.

Miller delayed lowering his landing gear until the plane had descended to about 2,500 feet and was about four miles out and in sight of the runway. When he announced over the radio that he had blown the gear down with pneumatic pressure—"Nose wheel down and locked, both main landing gears down and locked"—there was a concerted shout of relief from the ground.

That mood changed quickly. Just a few minutes from touchdown, Miller reported that the aircraft had lost its flight control system (the other prime hydraulic system) and in a desperate effort to save the test plane, Miller switched to



Planes and dollars. Rep. Otis Pike (R) emphasized the nation's defense need to develop a new aircraft-type 'every four years.' Chatting with Pike here are (L to R) Pete Viemeister, President of Grumman Data Systems, Gerald Bye of Boeing, George Clarke, and Bruce Inman.

Miller, Smyth safe after F-14 crashes returning from test flight

Special report
Grumman
Plane News

CALVERTON, N. Y., DEC. 30, 1970. . . . No. 1 F-14 crashed and burned in a wooded area about one mile south of the runway here this morning returning from its second test flight. Both pilots on the flight, Bill Miller and Bob Smyth, ejected safely from the aircraft and are in fine condition. There were no people

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GRUMMAN AEROSPACE CORPORATION

F-14A

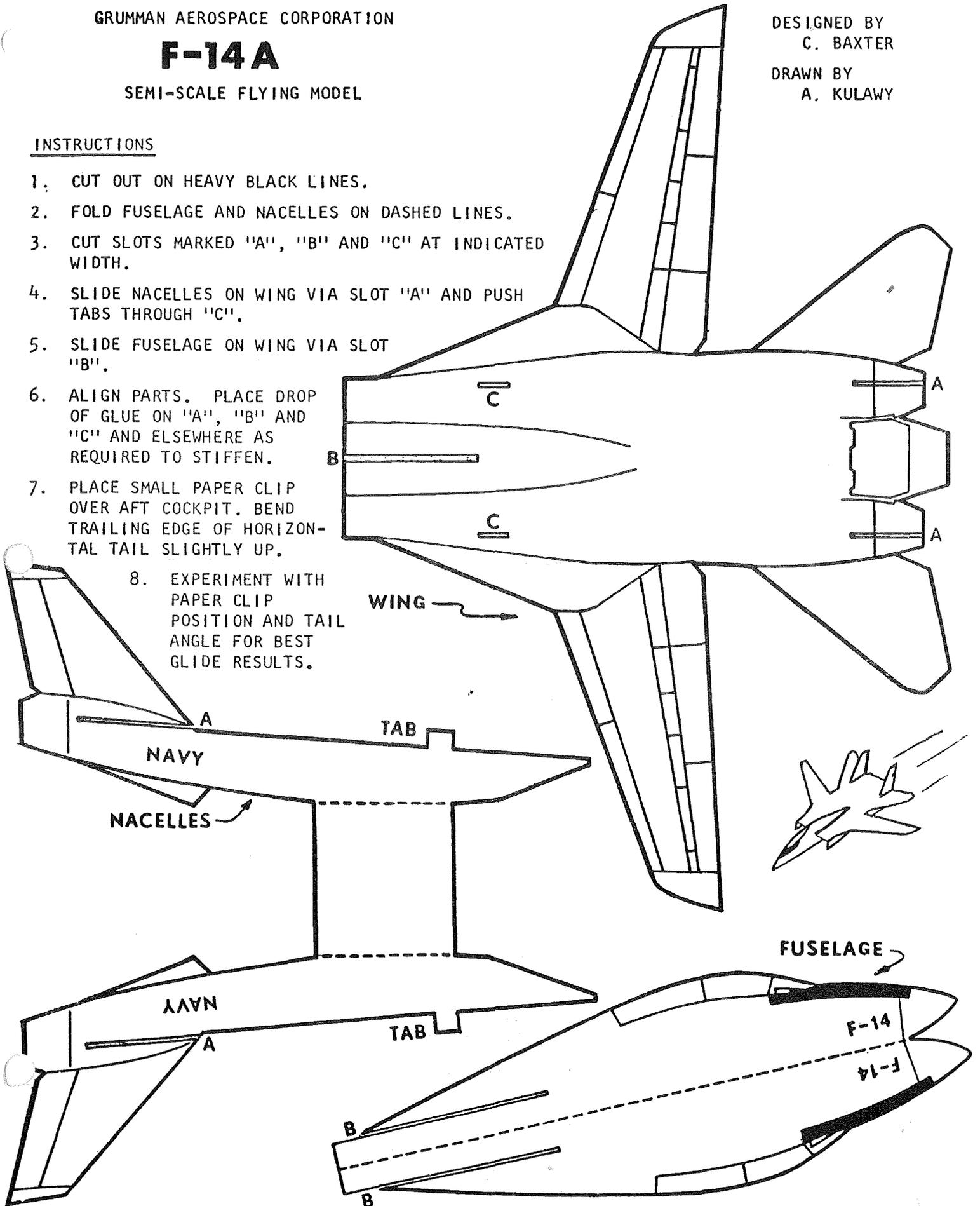
SEMI-SCALE FLYING MODEL

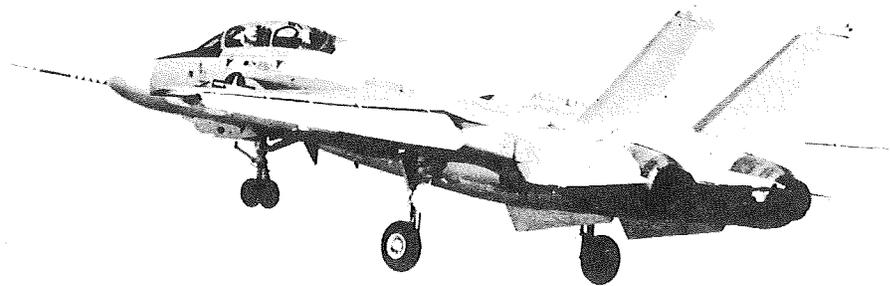
DESIGNED BY
C. BAXTER

DRAWN BY
A. KULAWY

INSTRUCTIONS

1. CUT OUT ON HEAVY BLACK LINES.
2. FOLD FUSELAGE AND NACELLES ON DASHED LINES.
3. CUT SLOTS MARKED "A", "B" AND "C" AT INDICATED WIDTH.
4. SLIDE NACELLES ON WING VIA SLOT "A" AND PUSH TABS THROUGH "C".
5. SLIDE FUSELAGE ON WING VIA SLOT "B".
6. ALIGN PARTS. PLACE DROP OF GLUE ON "A", "B" AND "C" AND ELSEWHERE AS REQUIRED TO STIFFEN.
7. PLACE SMALL PAPER CLIP OVER AFT COCKPIT. BEND TRAILING EDGE OF HORIZONTAL TAIL SLIGHTLY UP.
8. EXPERIMENT WITH PAPER CLIP POSITION AND TAIL ANGLE FOR BEST GLIDE RESULTS.





(Photos by Presentations Services)

Liftoff shows No. 1 F-14 on second test flight that ended in crash just short of runway on return to Calverton airfield.

Continued from page 4 Col. 3

the Combat Survival System that allowed him to operate certain flight controls. (Normally, this option is used only at higher altitudes to permit a pilot to fly away from a trouble spot, say an enemy combat zone, to a safer area where he might eject.)

'Can't hold it'

But it was too late. The F-14, only a few hundred feet above the trees in its final approach to the runway, dipped lower and lower. Miller was fighting to hold the plane in the air but it began to porpoise, nose up, nose down. Finally, Miller informed Smyth, "Nope, I can't hold it—eject!" It was 10:45.

As flight crews, Company officers, and various members of the F-14 team watched, the F-14 disappeared into the trees, exploded, and sent a giant fireball rising into the morning sky. Disbelief turned to grief.

Through the black smoke, however, first one, then two mushrooming parachutes were spotted from the field but the fear persisted: Was it possible for two men to eject practically at tree-top level, in close proximity to the crash site, and survive?

When the rescue team reported some minutes later that both pilots were safe and unharmed, there was a loud cheer

of unrestrained relief. Bitter disappointment had been sweetened by the safe return of Bill Miller and Bob Smyth.

In a debriefing session shortly after their return to the test flight facility here, Miller and Smyth described their flight at some length. The only apparent evidence of their narrow escape was a small Band-Aid on Miller's hand.

One veteran pilot who was on the scene during the entire event noted that "I've never seen guys so cool after such a harrowing experience." And his estimation seemed to hit the mark. Smyth, who piloted the F-14 on its maiden flight December 21, remarked that "I just sat obediently" until Miller decided they had to eject.

Smyth's troubles weren't completely over. He started to come down into the fireball, but "the thermal action from the fire carried me up and away to a safe distance—but my chute got singed." Miller's only concern, reports a crash-rescue man who met him walking away from the crash scene, was for Smyth's safety. He hadn't seen Smyth's parachute mushroom and was worried about his flight mate.

Ejection system successful

Both were saved by the F-14 seat ejection system. The seat-ejection system had been proved out successfully

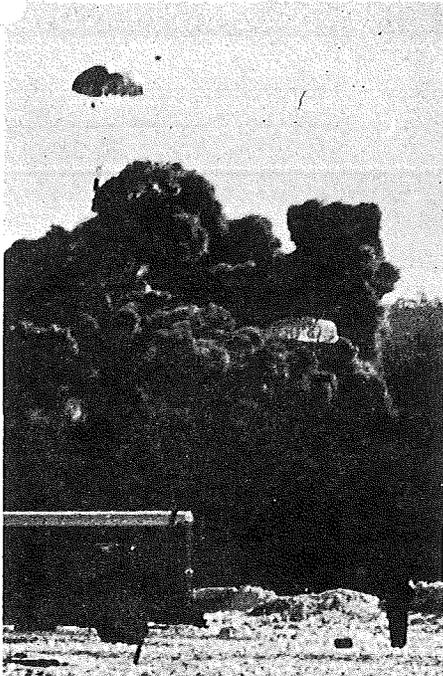
earlier this month at China Lake Naval Weapons Center by an F-14 Crew Escape and Ejection Systems test team. Using instrumented dummies in an F-14 cockpit mockup mounted on a rocket-propelled sled, they chalked up a whole series of ejection conditions, from zero altitude/zero velocity to 600 knots.

The system, first demonstrated at Calverton in August, is the first that Grumman has used with a canopy lock severance system, and the first with zero/zero capability. The canopy and Martin-Baker seats are ejected, in sequence, so as not to collide; an underseat rocket gives additional boost, and a parachute system slows the fall to earth.

A full report on the F-14 accident will not be officially released until the Navy convenes its accident board which will investigate and try to determine the exact cause of the crash.

Some results significant to the F-14 Program reported after the flight were:

- The No. 2 F-14, scheduled for completion early next year, is instrumented to obtain low-speed technical data that will be needed to meet program requirements. The loss should not unduly delay the program although some changes to instrumentation may be required to collect the data which would have been developed by No. 1 F-14.



Two chutes, one nearly lost in smoke billowing from the crash, mushroomed seconds after Bill Miller and Bob Smyth ejected from the stricken F-14.



pilots Bob Smyth (L) and Bill Miller during debriefing following flight.



Left: Paul Arieti, Dottie Helmond and Lee Martinez process registrations at the start of the symposium.



Right: Representative Pike makes point during his talk.

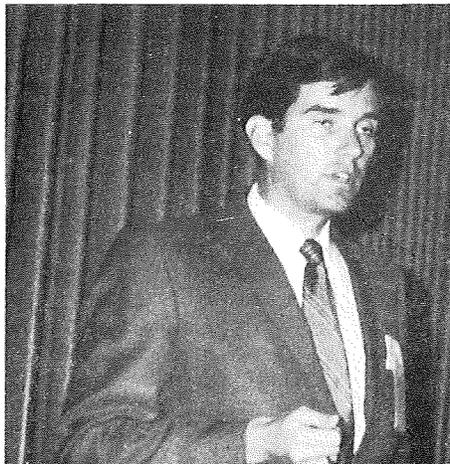
- The general handling characteristics were checked to confirm that the design substantially meets its overall qualitative requirements.

- The failure that induced the difficulty was not in the primary structure or propulsion system.

- A re-evaluation of auxiliary systems will set new safety standards and criteria applicable to the whole F-14 series and possibly for other aircraft as well.

- Since the F-14 Program is ahead of schedule, it is expected that any program delays will be minimal.

Following the accident, President Lew Evans said: "We've got a great airplane here, and although we've had a setback today, as far as I'm concerned, nothing will slow the program."



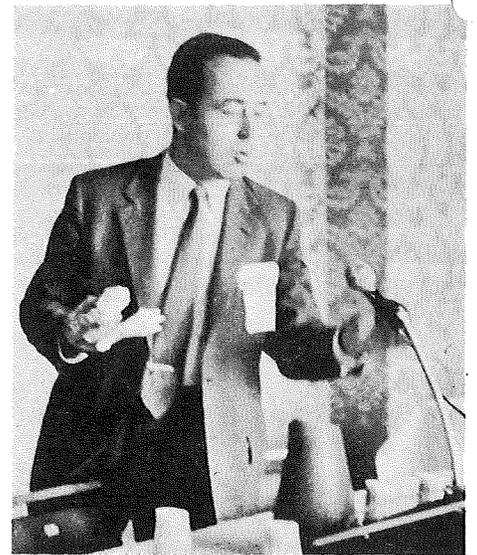
Left: New National President Dr. Geo. Clark addresses the guests at the symposium banquet.



Right: Symposium Honorary Chairman, Frank Edwards makes the symposium introductory speech.



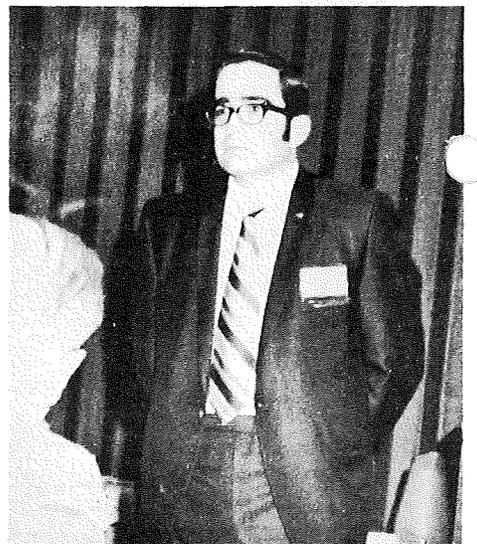
Left: Symposium General Chairman, Frank Higgins standing, checks on the progress of registration as Paul Arieti, Lee Martinez and Paul Waisanen sign up attendees.



Right: Activities Chairman Art Pugliese checks the PA System prior to a symposium session.



Left: Long Island Section President, Dick Kenefick chats with Anthony Neve from the British Aircraft Corporation.



Right: Bruce Inman, the outgoing SFTE National President listens to a suggestion from the floor during the National Business Meeting.



Right: Fellow Panel Members, John Paradis, Dick Mazourek, Ray LeCann and Gerald Bye listens as Jim Pearce makes a point.