

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS
HOUSTON SECTION
NEWSLETTER

January 1982

IN THIS ISSUE

<ul style="list-style-type: none"> o Editorial 1 <ul style="list-style-type: none"> Foreshadow for 1982 1 Space Shuttle Papers 2 o Mini-Symposium 82 Underway 2 <ul style="list-style-type: none"> Max Faget to Be General Chairman 2 o Houston Chapter Members Honored.. 3 o Technical Corner 3 <ul style="list-style-type: none"> STS-2 Problem Traced to Separation Malfunction 3 o TSPE to Sponsor Seminar 4 o AAS Conference Set for Houston, October 1982 4 o More on Council Election 4 <ul style="list-style-type: none"> Duties and Positions Defined... 4 Questionnaire Attached 	<ul style="list-style-type: none"> o Committee Reports 6 <ul style="list-style-type: none"> New TC Chairmen Appointed 6 Roscoe Lee, Mechanics/ Control of Flight 6 Tom Mosier, Materials, Structures & Dynamics 6 North Texas to Hold Symposium. 6 VC-Technical Comment 7 Meeting-Ground Test & Simulation 7 Public Affairs 7 Speakers Group 7 Tour Group 8 Public Awareness 8 1982 Science & Engineering Fairs 8 New Members 8 o The Cruncher Tells All, Well... Most All 10 o Calendar of Events 12
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The Houston Section NEWSLETTER is published periodically at the Houston Offices of IBM by the Houston Section AIAA. Address all communications toCarolynn Conley, Associate Editor, NASA-JSC, Mail Code CH4, Houston, Texas 77058.

W. A. Stewart, Editor

o EDITORIAL

Foreshadow for 1982 - 1982 for the AIAA Houston Section looks like a great year.

The Technical Mini-Symposium on April 20, 1982, will include for the first time the STS flight results.

The 50th anniversary celebration on May 21 will feature the outstanding accomplishments of the Johnson Space Center team covering the Project Mercury through Space Shuttle Program events.

The AIAA student branch activities at the university and high school level are increasingly more active.

We have added an excellent group of new members. I encourage all to consider an officer, councilor, or committee position this year.

Space Shuttle Papers - Please send a copy of any paper given or published on STS flight results to Jack C. Heberlig, IBM/MC55. A section library is being established.

-Jack Heberlig
Chairman

o MINI-SYMPOSIUM 82 UNDERWAY

It is now only about 3 months from the April 20 date set for our annual Houston Section Technical Symposium. More significant schedule-wise, it is less than 2 months until all abstracts are due to be submitted (March 1); the official center-wide call for which is being readied for release by the mini-symposium general arrangements chairman, Norman Chaffee.

That means you would-be presenters had better sharpen up your pencils and "Get on the stick." If you don't, you run the risk of being out done by (would you believe) a young high school girl by the name of Lovely Krishen who has already submitted her abstract entitled "Plant Condition Remote Monitoring Techniques" (a study of house plant health detection using electromagnetic radiation sensing). She sees her experimental techniques possibly extending to grain health sensing from satellites.

Miss Krishen's entry serves as a good example of the wide variety of subject matter we will consider, even though our theme and prime emphasis this year is on Shuttle development flight results.

Last year we scheduled 57 presentations divided into 6 simultaneous technical sessions. This year we hope to double the number of papers, and further divide the sessions to 8 or 9 technical specialty areas. It is all up to you engineers and scientists out there. This is your event for your benefit. All the section officials do is set the stage for you.

Max Faget to be General Chairman - It has just been confirmed that Dr. Max Faget, recently retired Director of the JSC Engineering and Development Directorate, will be our general chairman for the Mini-Symposium. Max, in accepting the position, has already suggested we work on upgrading the quality of technical presentations this year. That being a worthy objective, the Section Management urges the supervision of all presenters to hold a minimum of two "dry runs" (especially for the younger engineers) to allow for possible content improvement as well as to promote more polish in delivery. Even though the Mini-Symposium is a less formal conference than a national symposium, we should maintain high standards of professionalism.

-C. V. Wolfers
VC-Technical
AIAA Houston Section

o HOUSTON CHAPTER MEMBERS HONORED

The following Houston members were awarded 25-year pins in recognition of their continued support of AIAA:

Mr. Grover Louis Alexander
Houston 77059

Mr. John Robert Owen
League City 77573

Mr. Howard L. Chevalier
College Station 77843

Mr. William H. Simmons
Houston 77001

Mr. Thomas Eugene Lewis
Friendswood 77546

Mr. Arved Teleki
Houston 77002

Mr. Humboldt C. Mandell, Jr.
Seabrook 77586

o TECHNICAL CORNER

STS-2 Problem Traced to Separation Malfunction - The fuel cell failure on the STS-2 was due to a malfunction of the water separation system. Located in the hydrogen pump are three aspirators: there to remove water that collects in undesirable places of the hydrogen circulation loop during the ground start and ascent portion of the mission.

During the fuel cell failure investigation, it was found that the hydrogen pump was not operating properly due to blockage of the pump impeller rim aspirator. This blockage caused water to backflow to the impeller rim. The water on the impeller then continued through the H2 discharge port and entered the power section.

This excess water lowered the recirculating H2 flow, which ultimately led to the flooding of several cells, and as a result, reduced their voltage to very low or negative values. The fuel cell thus was unable to carry its portion of the electrical load. Subsequently, the fuel cell was removed from the buss, shut down, and a safing procedure was initiated.

The Shuttle utilizes three fuel cells to supply electrical power. Each cell consists of an accessory section and a power section. The accessory section contains all the dynamic and instrumentation components necessary for the operation of the fuel cell.

The power section contains two sub-stacks of 32 cells each connected in series. The two sub-stacks are then connected in parallel.

Hydrogen and oxygen are combined in the cells, producing electricity, and with water in this instance as a by-product. Water is removed from the fuel cell by a hydrogen circulation loop of which the hydrogen pump-water separator assembly is a main component. After extraction, the water is piped to storage tanks which supply the environmental control and life support systems with water.

-Lynn Murgia
EP-5, (483-6128)

o TEXAS SOCIETY OF PROFESSIONAL ENGINEERS (TSPE) TO SPONSOR SEMINAR

The Bayou Chapter of the Texas Society of Professional Engineers will once again sponsor a seminar on the procedures to become a registered professional engineer in Texas. The presentation will be held in the JSC Building 2 Auditorium on February 18, 1982, from 12 noon to 1:00 p.m. Admission is free and all interested are encouraged to attend. The guest speaker will be announced at a later date.

This seminar is being held in conjunction with National Engineers Week.

-Robert L. Winkler

o AAS CONFERENCE SET FOR HOUSTON, OCTOBER 1982

The American Astronomical Society will hold its national conference in Houston, October 25, 1982. The Houston Section AIAA will be helping to cosponsor this event.

The first organizational meeting was held on December 17 with representatives from several large companies and organizations in the Houston area. Items coming from this meeting are as follows:

o Al Naumann of Lockheed will be the General Chairman of the Conference Planning Committee.

o The Technical Program Structure is being arranged such that each company might sponsor a technical session.

o The Arrangements Committee will be headed by Harry Claggett of Northrup; the Publicity Committee, headed by Lamar Bowles, Rockwell; and the External Relations Committee, headed by Charles Purple, Boeing.

o The Theme and Place for the conference is still under consideration, but the Astro Village Complex seemed to be the most likely candidate.

The next meeting for the AAS Conference Working Group is tentatively set for the second week of March. I will keep the membership apprised of the progress and significant developments.

-Sharon Barnes
Chairman-Elect

o MORE ON COUNCIL ELECTION

Duties and Positions Defined - Section Officers are named, and duties defined by the By-Laws of the Section. The pertinent portions of the By-Laws are reprinted here for the use of members.

Article IV
Officers

1. The Officers of this Section shall consist of a Chairman, a Chairman-Elect, a Vice Chairman-Operations, a Vice Chairman-Technical, a Secretary, and a Treasurer, all of whom shall be elected as prescribed in Article VI, for terms of one year and shall continue in office until their successors qualify and take office. The officers shall take office in May. The office of the Chairman shall be filled by automatic succession of the Chairman-Elect.
2. The Chairman shall be the chief Executive Officer of the Section. He shall be a member of the Council and of all committees, except the Nominating Committee. He shall preside at all meetings and functions of the Council and of the Section and represent the Section in dealing with outside agencies, making all appointments except the Nominating Committee and transacting all business of the Section as directed by it or by its Council, and in accordance with these.
3. The Chairman-Elect shall assist the Chairman in performing his duties as requested by the Chairman. He shall attend Executive Council and/or committee meetings to monitor and become familiar with the functions of the Section officers and the Section Committees. He shall coordinate with all officers, counselors, and committee chairmen to prepare plans for the orderly transition for his term of office during the following year. He shall make an annual report in May to the Executive Secretary of the American Institute of Aeronautics and Astronautics, the Vice President-Section Affairs, and the Regional Director.
4. The Vice Chairman, Operations, shall oversee the Operations Committees and insure their smooth and efficient operations. He shall also be responsible for the overall operation of the Executive Council and monthly meetings.
5. The Vice Chairman, Technical, shall oversee the Technical Committee to insure their smooth and efficient operations. He shall also be responsible for the organization and operation of the annual Mini-Symposium.
6. The Secretary shall be a member of the Council. He shall maintain minutes of the meetings of the Section and shall be custodian of all its records not specially assigned to others. He shall conduct the correspondence of the Section and the Council and send out all notices of the meetings and shall keep a full and correct list of the membership and the addresses of the members. He shall submit a copy of the minutes of all meetings of the Section to the Executive Secretary of the American Institute of Aeronautics and Astronautics, Inc., the Vice President-Section Affairs and the Regional Director.
7. The Treasurer shall be a member of the Council and shall have charge of the funds of the Section and shall make all required financial reports and such expenditures as may be authorized by the Section or by the Council or by the Bylaws of the American Institute of Aeronautics and Astronautics, Inc.

Article V
Council

The Council shall consist of not less than four elected Members, and the Chairman, Chairman-Elect, Vice Chairman-Operations, Vice Chairman-Technical, Secretary, Treasurer, and the Chairman of the previous year. The Council shall have general supervision of the work of the Section. The Council Members shall take office in May for terms of two years and shall continue in office until their successors qualify and take office. Council Members shall be limited to two consecutive two-year terms. One council position shall be set aside for a member who is thirty-five years of age or less.

The foregoing designated Officer and Executive Council positions are elective in 1982. Inputs from the membership concerning these positions are requested. Those interested in becoming candidates are asked to complete the attached questionnaire and return it to me. The return address is printed on the back of the questionnaire.

-Sharon Barnes
Chairman Elect

o COMMITTEE REPORTS

New Technical Committee Chairmen Appointed

Mr. Roscoe Lee, Chairman TC, Mechanics/Control of Flight - Mr. Lee of TRW has recently been appointed Chairman of our Mechanics/Control of Flight Technical Committee by Houston Section Chairman, Jack Heberlig. Roscoe takes over from Ken Robinson of IBM whose regular work commitments have made it impossible for him to actively lead committee activities. The section management will appreciate your encouragement and cooperation with Mr. Lee as he tackles the challenging task of regrouping and revitalizing this committee mid-way in the AIAA fiscal year.

Mr. Thomas L. Moser, Chairman TC, Materials, Structures and Dynamics - Mr. Moser, Deputy Manager-Orbiter Project Office, has accepted the chairmanship of the AIAA Houston Section Technical Committee on Materials, Structures, and Dynamics. Tom is well known to the technical community in these disciplines, and takes over from Dave Greenshields of the Structures and Mechanics Division Office. We have high expectations that Tom's enthusiasm will get this committee moving again despite the heavy demands on his time in his new project office assignment. Your support and cooperation will be much appreciated by Mr. Moser and the Houston Section Management as well.

North Texas to Hold Symposium - The AIAA Section at U.T. Arlington (a sister section of ours in Region IV) will hold their one day counter part of the Houston Mini-Symposium Saturday, February 20, on the UTA campus. This, their 10th annual local conference, will encompass topics in Aero-Fluid

FEBRUARY

Monday	Tuesday	Wednesday	Thursday	Friday
1 -Inputs Due for March Newsletter Contact:Carolynn Conley/CH4	2	3	4	5
8	9 - TC Mechanics/Ctrl of Flight 1200-100 p.m./JSC Cafeteria Contact: Roscoe Lee 333-3133	10 - TC Space Systems 1130-100 p.m./JSC Cafeteria "NASA Experiments" Norm Allen/LEMSCO Walter Lueke JSC/ES	11 - *Council Meeting* 730-900 a.m. JSC Cafeteria - TC Gnd Testing & Simulation - 1200-100 p.m. Bldg 13, Rm 108 "TPS Struc Problems & Corrective Measure"	12 <i>GILRUTH 4:30 Beer Bust</i>
15	16 - **DINNER MEETING** <i>Panel Discussion</i>	17	18	19 SATURDAY-FEBRUARY 20 UT Arlington AIAA Mini-Symposium Luncheon Speaker: A. Scott Crossfield "X-15 Research Program" Free to Public UTA Campus Contact:Robert Withera (817) 732-4811 X5621
22	23	24	25	

Young members

MARCH

Monday	Tuesday	Wednesday	Thursday	Friday
1 -Mini-Symposium Abstracts Due Contact: Norm Chaffee 483-3995	2	3	4	5

PATTY at 211

NOMINATION QUESTIONNAIRE

INTERESTED POSITION AIAA GRADE YEARS MEMBER QUALIFICATIONS/BACKGROUND

CHAIRMAN-ELECT

VICE-CHAIRMAN
OPERATIONS

VICE-CHAIRMAN
TECHNICAL

SECRETARY

TREASURER

COUNCILLOR
(2-YEAR TERM)
(3 TO BE ELECTED)

Place
Stamp
Here

Sharon Barnes
AIAA Chairman Elect
NASA Johnson Space Center/CH6
Houston, Texas 77058

Mechanics, Avionics, Propulsion, Structures and Materials, V/STOL Technology, Composites Technology and others. Mr. Robert Wetherall, who chairs their organizing committee, has invited Houston section AIAA members to attend; and has advised of a ticketed luncheon featuring A. Scott Crossfield, who will talk on America's earliest flights into near space during the X-15 Research Program. There is no charge to AIAA members or non-members for attending the eight simultaneous technical sessions planned. We received insufficient lead time to respond to the call for papers, which requires abstract submittal by January 8, 1982. For further information, call Mr. Wetherall (General Dynamics) at (817) 732-4811, extension 5621.

VC-Technical Comment - This is the first intraregional invitation for participation in local technical conferences I have seen. It suggests that, with the relatively modest travel time and expense involved, we may be able to broaden our technical exchange considerably within potentially affordable limits of Houston section members. We will ask north Texas to publicize our 1982 Mini-Symposium in like manner, and see if we can get some cross-fertilization going. Please let me know of your impressions and experiences if any of you manage to attend their program.

Meeting - Ground Test and Simulation - The next meeting of the Ground Test and Simulation Technical Committee will be held on Thursday, February 11, 1982, at 12 noon in Building 13, Room 108. At this meeting, Mr. Walter J. Lueke of the JSC/Structures and Mechanics Division will present the results of the TPS Burnt Filler Bar anomaly investigation/resolution effort. In support of this effort a very comprehensive test program was developed and conducted in the JSC 10 Mv ARMSEF in an attempt to understand and simulate the STS-1 Burnt Filler Bar anomaly, as well as to verify fixes implemented.

At the meeting we will also discuss the Technical Committee support to the Houston Section Mini-Symposium, and possible formats for future Technical Committee meetings and functions.

Membership in the T.C. is not a requirement for attendance, and all interested in the subject, and/or the objectives of the T.C. are urged to attend. For further information call Stanley Faber, extension 4661 or 482-7877.

-Charles Wolfers
Vice Chairman, Technical

Public Affairs - Members of the Public Affairs Committee have two major projects facing them in the near term in addition to the normal activities. The first project is the solidification of the Houston Section - Speakers Group. The second is the support of the AIAA displays and careers booth at the 1982 Science and Engineering Fair.

Speakers Group - The Speakers Group has met several times and is in the process of formulating a brochure to be used as a handout to interested organizations. The brochure will contain a brief background of the AIAA, a list of presentation subjects and a tear-off sheet to be sent in to request a speaker. Elmer Fridia of Rockwell can be contacted for more information (483-5362).

Tour Group - The Tour Group has had a busy fall with many student groups and others being shown many of the facilities at the Johnson Space Center. Butch Kirby of Hamilton Standard heads this group and can be contacted at 483-3796 for information on touring JSC.

Public Awareness - The Public Awareness Group has been very busy. This group supported the STS-2 mission with editors for the air-to-ground tape transcripts, arranged for the STS-1 movie, "Space Shuttle - A Remarkable Machine," shown prior to the November dinner meeting and has been making major inputs to the SPACEWEEK '82 planning activities. In addition, this group will be supporting the 1982 Science and Engineering Fairs at the Astro Hall (March 18-24 for the Regional and May 10-15 for the 33rd International Fairs). Ernie Hillje can be contacted for the Science Fair displays and Career booth (483-2783) and David Bell for Science Fair judging (333-2340). For information on the Spaceweek National activities contact Dennis Stowe at 333-8246, Troy Welch at 488-5514 or Ernie Hillje at 483-2783.

- Ernie Hillje
Chairman, Public Affairs

New Members

Michael D. Acocella
Houston 77058

Donald M Corcoran
Houston 77058

R. Norman Alexander
MDTSCO
Houston 77058

Barbara R. Counts
Houston 77005

Stephen G. Bales
Houston 77062

Donnell A. Davis
Ford Aerospace/4A
Houston 77058

Dennis R. Becker
College Station 77840

Diane De Caix
Houston 77058

Donna Blackshear
Houston 77020

Marian L. Edson
Houston 77059

Blaine Weston Brown
Houston 77062

Harvey C. Flinn, Jr.
Houston 77058

Dewey Timothy Brown
Houston 77058

Larry Jay Friesen
MDTSCO
Houston 77058

James Vernon Carvajal
Houston 77062

Jay L. Gallaway
Dickinson 77539

Thomas V. Chambers
Eagle Engineering
Houston 77058

Rube Goldberg
Houston 77062

Dr. Wilson C. Chin
Schlumberger
Sugarland 77478

William M. Gustin
Houston 77062

New Members (Continued)

Jonathan Hall
Houston 77058

Daryl Thomas Hester
Houston 77058

Faize Jamil
Webster 77598

Mark S. Malone
Houston 77042

Jerry W. Mapp
Houston 77058

R. Keith McClung
Houston 77058

M. L. McNeely
Houston 77062

Mr. Robert Dyas Neil
Webster 77598

Isaac W. Moore
League City 77573

Michelle B. Moore
Friendswood 77546

Michael E. Montz
Houston 77058

J. Bradley Neece
Houston 77058

Robert H. Nuss
Dickinson 77539

Aaron B. Olson
Seabrook 77580

Stephen G. Paddock
Friendswood 77546

R. O. Piland
Seabrook 77586

Darwin H. Poritz
Houston 77058

David M. Pruett
Houston 77058

Ray Randolph
Houston 77058

Emyre B. Robinson
Barrios Tech Inc
Houston 77058

Philip Edwin Robinson
Houston 77062

Lee Ruetz
Houston 77058

Mohammad J. Saiioi
Pearland 77581

Marx D. Schmelz
Lockheed/EMSCO/B14
Houston 77058

Henry E. Schneider
Houston 77062

Quin D. Shepperd
Houston 77058

John T. Taylor
Houston 77062

James A. Thompson
MDTSCO
Houston 77058

James D. Van Hoften
Friendswood 77546

Terri L. Waite
Webster 77548

Richard J. Williams
Houston 77058

Jerry A. Yglesias
Barrios Tech
Houston 77058

o THE CRUNCHER TELLS ALL, WELL...MOST ALL

Well, since I rattled your chains over your inability to solve November's "Cruncher" (the minimum unique distances between the seven towns), I received a bunch of correct answers of 25 miles! The winner of the two dinners for being first with the answer is:

Dr. Magdy M. Wahbah - MDTSCO

Congratulations Dr. Wahbah -- Hope you are hungry!

Other correct solutions were received from:

Bob Pannett - MDTSCO
 Ken Hohllaib - Boeing
 Don Hervey - Brown and Root
 Jose Spencer - CSC
 Phil Muhm - MDTSCO
 Doug Morris - JSC
 Larry Friesen - MDTSCO
 Cliff Bean - JSC

There are several sets of numbers whose sum is 25 and which provide unique distances between all permutations of the seven towns. Among the correct sets are: (1, 3, 6, 8, 5, 2); (4, 5, 6, 7, 1, 2); and (1, 6, 4, 9, 3, 2). There are also several other solution sets.

The December puzzle, involving manipulation of four 4's to produce different integers wasn't too tough, but it resulted in quite a variety of correct answers. The winner is:

Donald G. Hervey - Brown and Root

Don gets the free dinner for this one. Other solutions were received from:

Dr. Magdy M. Wahbah - MDTSCO
 Harold Smith - Singer Link
 Bob Pannett - MDTSCO
 Stan Faber - JSC

Although there are many ingenious ways to arrange four 4's to solve the problem, here is one set of solutions:

$$13 = (44/4) + 4$$

$$19 = 4! - 4 - (4/4)$$

$$33 = ((4 - .4)/.4) + 4!$$

$$85 = ((4! + .4)/.4) + 4!$$

And now here is your January puzzle. "When the Sultan died, he left 3465 gold pieces to be divided equally among his children. Each wife had the same number of children and this number was 8 less than the number of wives per harem, which in turn was 4 more than the number of harems and 4 less than the number of gold pieces each child received. How many children did the Sultan have?"

Send your solution to Norman Chaffee, NASA-JSC, Mail Code EP, Houston, Texas 77058. First correct answer wins a free AIAA dinner.



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.....
HOUSTON SECTION

newsletter

UPCOMING AIAA HOUSTON SECTION MEETING

DATE

January 19

"SPACE LAW"

S. Neil Hosenball
NASA General Counsel

April 20

MINI-SYMPOSIUM

STS Flight Results
Presentations
Joseph G. Gavin, Jr.
AIAA President
Dinner Speaker



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