

## Chairman's Corner

**Steve Zobal**  
Chairman

It's again nomination time for our annual election! We promised you a review of our election process to assess areas for improvement. Shirley Brandt, Chairperson-Elect, led an ad hoc committee to evaluate the process and recommend improvements where appropriate. The committee found the process outlined in the Section Bylaws generally reflected a sound approach, requiring minimal "tinkering." The primary recommendation was to move several front-end steps up earlier to accommodate uncertainties in the mail system. Accordingly, the Council adopted the timeline summarized below at the January council meeting:

- The Council appoints a Nominating Committee no later than 15 January. A list of Nominating Committee members and a summary of the nomination process will be published in the next *Horizons*.
- The Nominating Committee prepares and submits to the Secretary a list of nominees which is mailed to the membership no later than 1 March.
- Nominations by petition must be postmarked no later than 15 March.
- The Chairman appoints a Tellers Committee to count ballots and informs the Secretary of its membership no later than 15 March.
- The Secretary prepares and mails ballots no later than 1 April. Deadline for receiving completed ballots from the membership is 5 May. The Secretary is responsible for delivering the ballots to the Tellers Committee.
- The Tellers Committee counts the valid votes no later than 12 May and notifies the Secretary and the Chairman of the election results.
- The new officers are introduced at the Honors and Awards Banquet in June and the list of elected officers is published in the June *Horizons*.

The Council approved the following Section members for this year's Nominating Committee: Shirley Brandt (chairman), Dick Bennett, Audrey Schwartz, Steve Zobal and Zafar Taqvi. Additionally, the Council agreed to add one or two non-Council Section members to the Committee. Please contact any of the above members if you are interested in participating in the nominating process or in being a candidate for any officer or councillor position.



Congratulations are in order for last year's Houston Section administration and you the members! Our Section garnered a first and a second place in two categories at the national level. More on this elsewhere in this issue. ☺



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*Horizons* is the monthly newsletter of the Houston Section of the American Institute of Aeronautics and Astronautics. It is created by members of the Houston Section and reproduced at the Houston offices of Lockheed Engineering and Sciences Company. Please address all correspondence to the Vice-Chairman of Operations, Audrey Schwartz, JSC/IA121, or to the Editor, Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

## Committee News

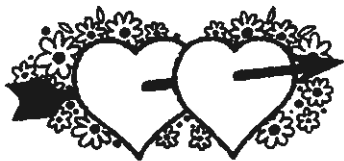
### Learning More About Mars

Vince Maleche  
Education/Professional Development Committee

On January 14, several AIAA members were treated to an outstanding lecture on the Mars Observer Mission by Dr. Nadine Barlow. This event was sponsored by the Education and Professional Development Committee.

The Mars Observer is the first in NASA's planned planetary observer series and will continue NASA's exploration of the red planet initiated in 1964 with the launch of Mariner 4. It was launched in September 1992 and is scheduled to reach Mars in August 1993. Once at Mars, the Mars Observer spacecraft will power its seven instruments to conduct studies of the Martian surface, interior, atmosphere, and magnetic field. The investigative mission will continue for one Martian year (687 Earth days) to allow examination of the planet through its four seasons.

Dr. Barlow not only provided an informative account of our current knowledge of Mars, but also an interesting description of how the Mars Observer will greatly increase our knowledge of Mars geoscience and meteorology. Dr. Barlow had an impressive number of slides of Mars, and everyone who attended came away with a much higher interest in this fascinating planet. ☺



Which weighs more, a pound of feathers or a pound of gold? (See page 5.)

### Automation & Robotics TC

Dr. Zafar Taqvi  
Automation & Robotics TC Chair

Our fourth noon seminar is scheduled for Wednesday, April 7, 11:30 AM-12:30 PM at the Gilruth Center, Room 206. Dr. Reginald B. Berka, Head of the Robotic Development Section, Automation & Robotics Division, JSC, will discuss Control of Hyper-Redundant Manipulators in the Space Environment.

And in March, we will conduct our annual WAR '93 (Workshop on Automation and Robotics). It will be held on the same day as our Section dinner meeting, Wednesday, March 24. A very interesting technical program is being planned. Plan ahead! ☺

### Availability of Chinese Aerospace Journal News

Larry Friesen  
International Space Activities Committee

One of the results of our sister-section connection with China is that the Houston Section has been receiving copies of the *Journal of The Chinese Society of Astronautics*. Three to four issues are published per year, and the Section presently has issues from 1987 through 1990. Most articles are printed in Chinese, some in English. All articles have English abstracts, and there is an English table of contents at the back of each issue. If any Houston Section member wishes to borrow an issue, they are available at my cubicle at Lockheed Engineering and Sciences (LESC). I can be contacted at:

Mail code B12

Phone 333-6799

E-mail LOCK::FRIESEN ☺

## Translation and Interpretation Service Availability

Larry Friesen  
International Space Activities Committee

One of the activities of the International Space Activities Committee (ISAC) for this year is coordination, on a modest level, of translation and interpretation services being offered by certain individuals between certain languages and English. Current volunteers for this service include:

Chinese:	Tai Ling Lee	UOTB-16	483-1621
French:	Sonbol Sephaban		
German:	Jeff Bahr	MATSCO/Agena	488-9005
	Patricia Bahr	GE/Agena	483-0822
	Garland Bauch	GM13(3)	483-1309
	Larry Friesen (written material only)	LESC/B12	333-6799
	Wes Kelly	LESC/B12	333-6404
Hindi:	Mallik Putcha		282-7244/244-4421
	Zafar Taqvi	LESC/B80	333-6544
Hungarian:	Gloria Reilly	SP52-JEC	480-8357
Japanese:	Tomiko Neil	Unisys	480-9281
Persian:	Mahmoud Ahmadian	SP52-JEC	480-8357
Russian:	Boris Freydin		777-5886
	Wes Kelly	LESC/B12	333-6404
	Jim Oberg		282-4351
Spanish:	Gonzalo Montoya	MDAC/T606	280-1513

Persons desiring to make use of these services should contact the appropriate individual directly. If unable to contact one of them, contact Gloria Reilly at 480-8357. Individuals wishing to volunteer to provide translation or interpretation services should also contact Gloria Reilly. ☺

## Events

### Wednesday At The Movies

George Nield

Education/Professional Development Committee

Were you under the impression that we show only moldy old NASA training films at Wednesday Afternoon at the Movies? WRONG!!! As part of an experimental program, the Education and Professional Development Committee has purchased a few top-notch films from the Aviation Week video series. These films will be presented at our regular monthly showings, after which they will be available for checkout by AIAA members for a nominal fee. Films will be shown on site at the Johnson Space Center in

Building 1, Room 810, starting at 4:15 PM. Don't miss these great flicks!

Our next showing will be Wednesday, February 24, 1993, and will feature "Desert Storm: Thunder in the Gulf." This action-packed video is billed as the most stunning collection of wartime aerial footage ever assembled. It includes both air-to-air and air-to-ground scenes, with starring roles by Apache helicopters, F-15 Eagles, and the new F-117A stealth fighter.

Upcoming features:

February 24 - "Desert Storm: Thunder in the Gulf"  
March 31 - "SR-71 Blackbird: The Secret Vigil"

For questions, call George Nield at 483-1364. ☺

## Seminar Rescheduled

Due to conflict with the Presidential Inauguration, the special seminar on programs in the School of Natural and Applied Science at UH-Clear Lake has been rescheduled for Tuesday, February 23, 1993, 10:30 AM-12:30 PM. For reservations, contact Frankie Hap at 333-6064. A flier with details of the seminar is attached to this issue. ☉

## Also Noted

### Section Awards

**Dr. Zafar Taqvi**  
Chairman, 1991-92

I have just been advised by AIAA Headquarters that the Houston Section has been chosen the second place recipient of the 1991-92 Outstanding Section Award in the over 1000 member category. The section will receive an honorarium of \$200 for this award.

The Houston Section has also won the first place Membership Award in the very large category. Our section has won membership awards several times under the leadership of Jim Visentine, our longtime Membership Chairman.

My heartiest congratulations to all members for being a contributing part of a winning team. ☉

### Not Out Of The Woods Yet

**Bill Best**

Aaron Cohen in his December address to the AIAA mentioned that there would probably be another survival vote on Space Station Freedom. A recent Gallup poll indicates his concern is justified. The poll of 149 members of Congress showed that 32% wanted to cut space spending, while 52% wanted to keep spending the same. Only 7% wanted to raise spending, 9% were undecided, and 1% refused comment. ☉

## AIAA Calendar

The AIAA Calendar is intended to encompass all Houston Section events and significant dates. This includes Executive Council meetings, which are open to interested members, and *Horizons* deadlines. It will also include committee meetings, Lunch & Learns and similar events if *Horizons* hears about them in time for inclusion. Please send pertinent details either to Audrey Schwartz, JSC/IA121, or to Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

### February

#### 2 - Tuesday

Automation & Robotics TC.

"Control of an Underactuated 2-Link Manipulator," Dr.

Nazareth S. Bedrossian, Draper Laboratory.

JSC Gilruth Center, Rm. 206, 11:30 AM.

Information: Dr. Zafar Taqvi, 333-6544.

#### 18 - Thursday

Executive Council meeting.

MDSSC, 1300 Bay Area Blvd., Rm. A-119, 5:00-6:15.

#### 22 - Monday

Inputs due COB for March *Horizons*.

#### 23 - Tuesday

Education/Professional Devel. Committee seminar.

"Programs in the School of Natural and Applied Sciences at UH-CL."

JSC Gilruth Center, 10:30 AM-12:30 PM.

Reservations: Frankie Hap, 333-6064.

#### 24 - Wednesday

Wednesday Afternoon at the Movies.

"Desert Storm: Thunder in the Gulf."

JSC, Bldg. 1, Rm. 810, 4:15 PM.

#### 25 - Thursday

Monthly dinner meeting.

"Engines of Our Ingenuity," Dr. John Lienhard, University of Houston.

JSC Gilruth Center, 5:30/6:30/7:30.

(continued on page 5)

## AIAA Calendar (cont.)

### March

#### 18 - Thursday

Executive Council meeting.  
MDSSC, 1300 Bay Area Blvd., Rm. A-119, 5:00-6:15.

#### 24 - Wednesday

Monthly dinner meeting.  
Program TBD.  
JSC Gilruth Center, 5:30/6:30/7:30.

Workshop on Automation & Robotics (WAR '93).  
JSC Gilruth Center, 9:00 AM-2:30 PM.  
No charge (except for lunch); reservations required.  
Information: Mary Stewart, 483-1724.

#### 29 - Monday

Inputs due COB for April *Horizons*.

#### 31 - Wednesday

Wednesday Afternoon at the Movies.  
"SR-71 Blackbird: The Secret Vigil."  
JSC, Bldg. 1, Rm. 810, 4:15 PM.

### April

#### 7 - Wednesday

Automation & Robotics TC.  
"Control of Hyper-Redundant Manipulators in Space  
Environment," Dr. Reginald Berka, JSC.  
JSC Gilruth Center, room 206, 11:30 AM.  
Information: Dr. Zafar Taqvi, 333-6544.

#### 22 - Thursday

Executive Council meeting.  
MDSSC, 1300 Bay Area Blvd., Rm. A-119, 5:00-6:15.

#### 26 - Monday

Inputs due COB for May *Horizons*.

#### 29 - Thursday

Monthly dinner meeting.  
Program TBD.  
JSC Gilruth Center, 5:30/6:30/7:30.

### May

#### 20 - Thursday

Executive Council meeting.  
MDSSC, 1300 Bay Area Blvd., Rm. A-119, 5:00-6:15.

#### 24 - Monday

Inputs due COB for June *Horizons*.

#### 27 - Thursday

Monthly dinner meeting.  
Program TBD.  
JSC Gilruth Center, 5:30/6:30/7:30.

### June

#### 17 - Thursday

Executive Council meeting.  
MDSSC, 1300 Bay Area Blvd., Rm. A-119, 5:00-6:15.

#### 24 - Thursday

Monthly dinner meeting.  
Annual Honors and Awards Banquet.  
JSC Gilruth Center, 5:30/6:30/7:30.



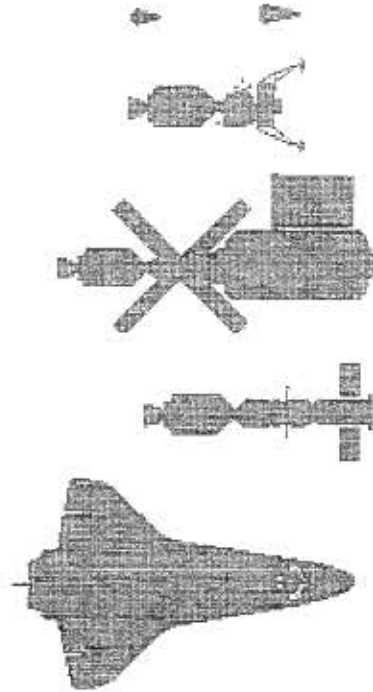
(from page 2)

No, they're *not* the same. A pound (16 avoirdupois ounces = 7000 grains) of feathers weighs more than a pound (12 troy ounces = 5760 grains) of gold.

## OUTSTANDING SECTION AWARD



1975-1976  
1976-1977  
1979-1980  
1980-1981  
1981-1982  
1983-1984  
1986-1987  
1988-1989



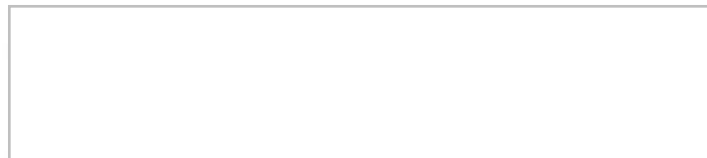
## SECTION SPECIAL EVENT AWARD



1971-1972  
1972-1973  
1979-1980  
1981-1982  
1983-1984  
1985-1986  
1988-1989

**AIAA Houston Section  
P.O.Box 57524  
Webster, TX 77598**

**Non-Profit Organization  
U.S. POSTAGE PAID  
Webster, Texas  
Permit Number 1**





# American Institute of Aeronautics and Astronautics

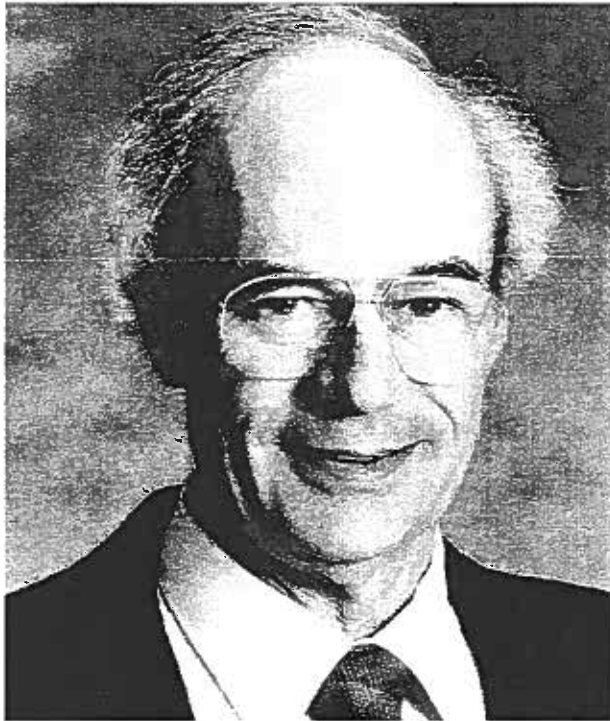
STEVE ZOBAL  
CHAIRMAN 1992-93

HOUSTON SECTION P.O. BOX 57524 WEBSTER, TEXAS 77598

**Thursday, February 25, 1993**

## THE ENGINES OF OUR INGENUITY

**DR. JOHN LIENHARD**  
M.D. Anderson Professor of  
Mechanical Engineering & History  
University of Houston  
& KUHF-FM Commentator



### PRESENTER

Dr. Lienhard received his PhD in 1961 from the University of California at Berkeley and has been a professor at U. of Houston since 1980. Prior to 1980 he was Professor of Mechanical Engineering at the University of Kentucky for 13 years and Associate Professor at Washington State University for 6 years. He has received many honors and awards including the 1990 U. of Houston Engineering Alumni Distinguished Engineering Faculty Member Award and the 1991 Esther Farfel Award given to the university's outstanding faculty member. Dr. Lienhard has published four books; about 280 articles, reports, and recordings; and 777 episodes of "The Engines of Our Ingenuity" todate.

Spotlight Speaker  
**Claude A. Graves**  
President  
National Council of  
Systems Engineering  
(NCOSE)

### DINNER MEETING

SOCIAL: 5:30  
DINNER: 6:30  
PROGRAM: 7:30

### MENU: ROAST BEEF

AIAA HOUSTON SECTION MEETINGS  
ARE HELD AT THE JOHNSON SPACE CENTER  
ROBERT R. GILRUTH RECREATION CENTER

MEMBERS & SPOUSES \$10.00  
NONMEMBERS \$11.00  
STUDENTS/YOUNG MEMBERS \$9.00

Frankie Hap  
333-6064  
Lockheed

Ardell Broussard  
283-4214  
McDonnell Douglas

Kim Wunsch  
483-1350  
RSOC

Sarah Leggio  
282-3160  
Bendix

CALL ONE OF THE ABOVE FOR RESERVATIONS.

DEADLINE IS MONDAY, FEBRUARY 22, AT 12:00 NOON.

ANY CANCELLATIONS ARE REQUIRED PRIOR TO DEADLINE. NO-SHOWS WILL BE BILLED.

ALL ARE WELCOME.

DINNER RESERVATIONS ARE NOT REQUIRED FOR ATTENDING THE PROGRAM ONLY.



**American Institute of Aeronautics and Astronautics**

HOUSTON SECTION P.O. BOX 57524 WEBSTER, TEXAS 77598

# **AIAA-HOUSTON SECTION**

**18th ANNUAL TECHNICAL SYMPOSIUM**

**CO-HOSTED BY**

**THE UNIVERSITY OF HOUSTON-CLEAR LAKE HIGH TECHNOLOGIES LABORATORY**

***THEME: 'MAN IN SPACE-MAINTAINING THE MOMENTUM***

**MAY 20, 1993**

**AT THE**

**UNIVERSITY OF HOUSTON - CLEAR LAKE**

## **CALL FOR ABSTRACTS**

**DUE: MARCH 15, 1993**

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### **GUIDELINES FOR ABSTRACTS AND PRESENTATIONS**

1. Subject of your choice on space activities. Suggested topics include: Communications Systems, Computer and Software Systems, Energy Systems, Simulation, Materials, Structures, Dynamics, Space Systems, Guidance, Navigation and Control, Life Sciences, Management, International Space Activities, Flight Mechanics, Space History, Human Support, Fluid Dynamics, Earth Observation, On-Orbit Operations, and Thermal Physics
2. The abstract should be 250 words or less. (Abstracts must be typed double spaced. Floppy discs are strongly encouraged; see attached example for format.)
3. Presentations should be 10 to 15 minutes. VU-graphs or 35 mm slides are preferred.
4. Formal publication is not required. However, please have handouts available at your presentation.
5. Include with your abstract:
  - Completed NASA Form FF427
  - All information on attached example
6. Submit abstracts or inquiries to:

**Dick Bennett, AIAA Vice-Chairperson, Technical  
MDC / 314CA  
16055 Space Center Blvd., Houston, TX 77062  
(713) 283-1956**

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## **EXAMPLE**

### **ARC-JET TESTING TO EVALUATE THE EFFECTS OF CONTINGENCY TRAJECTORIES ON THE ORBITER THERMAL PROTECTION SYSTEM**

**T. G. Pendergast  
I. Norman  
D. C. Chao  
J. D. Milhoan\*  
D. M. Curry\***

**Rockwell International  
\*NASA/Johnson Space Center**

A study to extend the orbiter contingency transoceanic abort landing (TAL) ranging capability to avoid a ditch/bailout is in progress. Some contingency entry trajectories that require lower angles of attack will cause high aeroheating rates on the shuttle thermal protection system (TPS).

This presentation will describe the low angle of attack entry trajectories being considered and the major problems incurred on the orbiter TPS. The surface entry environment that results from these trajectories may cause some mass loss of the carbon heat shield. A technical literature survey indicates the mass loss rate and surface recession depend on the surface temperature, pressure, enthalpy, chemical reactivity of the gaseous boundary layer, the flow geometry and the chemical reactivity of the carbon heat shield.

A program at the JSC Arc-Jet facility has been planned to investigate, by testing, carbon mass loss and performance of reinforced carbon-carbon (RCC) using RCC coated (TEOS/TYPE A) and uncoated test specimens. This presentation will discuss the status of testing and test philosophy.

**Presenter: T. G. Pendergast  
Phone Number: 483-XXXX  
Mail Code**

**EXAMPLE**

AUTOMATION AND ROBOTICS TECHNICAL COMMITTEE  
OF  
AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS  
HOUSTON SECTION  
AND  
AUTOMATION AND ROBOTICS DIVISION, NASA/JSC  
PRESENT

# WAR '93

A ONE DAY WORKSHOP ON AUTOMATION AND ROBOTICS  
GILRUTH RECREATION CENTER, NASA/JSC  
Wednesday, MARCH 24th, 1993, 9:00 AM-2:30 PM

**THEME: INTELLIGENT, DEXTEROUS ROBOTICS**

## PRESENTERS

**Dr. Peter Bonasso**  
**MITRE Corp.**

**Dr. Marcel Schoppers**  
**Robotics Research Harvesting**

**Jim Lowrie**  
**Martin Marrietta**

**Dr. Steve Jacobson**  
**SARCOS, Inc., Utah**  
**(Tentatively)**

**The workshop will consist of four serial sessions including the luncheon session.**

**EXCEPT FOR THE LUNCHEON, THE WORKSHOP IS FREE.**  
**REGISTRATION IS MANDATORY.**  
**SEATS ARE LIMITED, FIRST-COME-FIRST**

**Cosponsored by:**

**ISA Clear Lake Aerospace and Automation Subsection (CAAS-formative)**  
**IEEE Galveston Bay Section, Robotics and Aerospace Chapter (GBS/RAC-formative)**

**Further details will be forthcoming**

**For details contact:**

**Mary Stewart/ER3, call at 483-1724 or FAX enquiry at 483-7580**

AIAA HOUSTON SECTION  
EDUCATION AND PROFESSIONAL DEVELOPMENT COMMITTEE  
AND  
IEEE GALVESTON BAY SECTION EDUCATION COMMITTEE  
JOINTLY PRESENT

A SPECIAL SEMINAR ON  
"PROGRAMS IN THE SCHOOL OF  
NATURAL AND APPLIED  
SCIENCES AT UH-CLEAR LAKE"

*An opportunity to learn about research and advanced studies in aerospace natural and applied sciences*

TUESDAY, FEBRUARY 23, 1993, 10:30 AM- 12:30 PM  
GILRUTH CENTER

PRESENTATIONS

10:30 AM Aerospace and Natural and Applied Sciences:

A Growing Partnership

COMPUTER ENGINEERING  
SOFTWARE ENGINEERING  
ROBOTICS ENGINEERING  
CONTROL ENGINEERING  
and related areas

PRESENTERS:

Dr. Jim Lester, Dean  
School of Natural and Applied Science, UH-Clear Lake  
Dr. Rod Bown, Chair  
Computer and Information Sciences Department  
Dr. Sadegh Davari, Associate professor  
Computer and Information Sciences Department  
Dr. Glen Houston, Associate professor  
Computer and Information Sciences Department  
Dr. Tom Harman, Associate Professor  
Computer and Information Sciences Department  
Dr. Mike Mezzino, Chair  
Mathematics Department

12:20 PM Discussions and Adjournment

**There is NO CHARGE for the seminar but  
reservation is needed**

*Coffee and donuts will be served*  
For reservations, call Frankie Hap at 333-6064