

# HORIZONS

March 1991

## From The Chairman

### AIAA National Elections

John M. Trebes  
Chairman

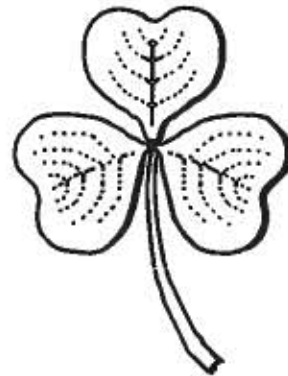
The annual AIAA National elections are a part of the democratic process which gives the membership the opportunity to select the officers and directors of the institute who will represent us for the next few years. Unfortunately, only a minority — fewer than 20% — of the members nationwide participate in the elections, and the number is shrinking. That means that each vote is all the more important. I urge each of you to take part.

Please read each candidate's background and election statement in the ballot booklet, then vote for the candidates you feel are best suited for the offices. Return postage is prepaid.

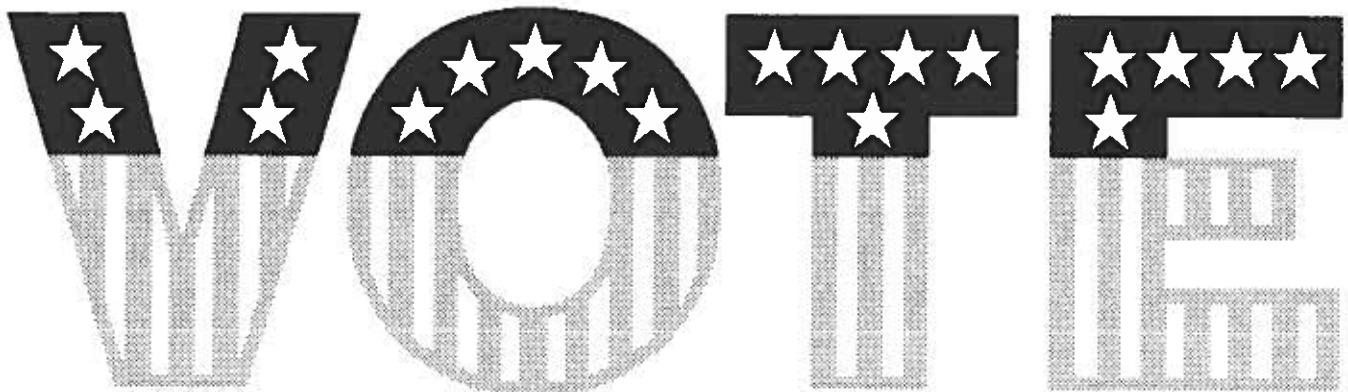
The national ballots were mailed in early February. You should have received yours by now. I hope that you have already voted by the time you read this. Note that, to be counted, your ballot must be *received* at AIAA Headquarters by April 2. If you haven't done so, please mark it up and mail it *now*.

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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 communications to Vice-Chairman of Operations, Charles Blacknall, telephone 480-9102.



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## Committee News

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### New TC Formed


Dr. Kamlesh Lulla, Chairman  
In-Space Imaging and Astronaut Observations TC

The Executive Council has approved the formation of a new Technical Committee, In-Space Imaging and Astronaut Observations.

The objective of the TC is to advance the imaging sciences and technology for applications to space flights and space based activities. Its primary focus will be on the integration of imaging systems with astronaut observations. Specific areas of interest include:

- Monitoring and analysis of spacecraft launch and landing activities.
- Monitoring spacecraft components.
- Documenting in-cabin life support science experiments.
- Observations of the Earth and earth processes using emerging imaging technologies.

There is strong interest within the Houston Section in imaging sciences and technology, both optical and non-optical. This interest is evidenced by several recent events. The JSC division responsible for photographic and television processing has just been reorganized as the Image Sciences Division. The JSC Man Systems Division has an imaging lab with DTOs/DSOs to fly and test various imaging systems beginning with hand held camcorders. The Astronaut Office has also expressed interest in applying new and emerging imaging technologies for atmosphere and earth observations. The JSC photo/TV analysis team is applying imaging sciences in the engineering analysis of Shuttle launches and landings. I believe that both an urgent need and a strong interest in the In-Space Imaging and Astronaut Observations TC exist within the Houston Section.

Anyone desiring further information or interested in participating in this TC should contact Dr. Kamlesh Lulla, JSC/SN15, telephone 483-5159. 

### Public Policy Plans Outlined

Steve Clifford  
Chairman, Public Policy Committee  
Audrey Schwartz

The following is an outline of some of the activities that the Public Policy Committee is considering over the next year. Two areas, *Education* and *The Changing Environment*, have been identified as priority issues by AIAA National's Institute Development Committee. The remaining ideas were generated internally.

#### **Education**

In recent years there has been growing concern over the quality of math and science education in the United States. In response, a variety of programs has been developed to stimulate student interest. Among those the AIAA might choose to sponsor are:

**Mentor programs.** In this program, a volunteer meets regularly with one or two students (selected by their teachers) who have demonstrated an interest or ability in math and science. These visits help to answer academic questions, stimulate ideas, and provide continuing encouragement to keep a student's interest alive.

**Adopt-a-school programs.** Companies and organizations sometimes "adopt" one or more schools — giving talks to math and science classes, tutoring students, and helping with donations of computer and other scientific equipment.

**At-risk programs.** Perhaps the greatest need (and potential) for math and science education is among students who are considered "at risk" of dropping out of school. Currently, efforts are under way to develop curricula that expose these students to math and science at an early age, in the hope that by so doing they may be interested enough to remain in school. AIAA members could help such efforts by contributing ideas for curriculum development, and by volunteering for activities similar to those discussed in the Mentor and Adopt-a-school programs.

(continued on page 3)

In addition to these programs, the Houston Section may wish to coordinate its efforts with such organizations as Partners in Space, the League of Women Voters, and the American Association of University Women, all of whom have ongoing educational programs in the local area.

### ***The Changing Environment***

Sometime in the July/August or November/December timeframe, we propose to sponsor an evening panel discussion that would address the various environmental problems that face the planet, as well as the role that orbiting spacecraft may play in improving our understanding of the processes involved.

### ***U.S. Space Program***

***Panel Discussion on the Future of the U.S. Space Program: A Review of the Recommendations of the Augustine Commission and Synthesis Group (about June 1991).*** The recommendations of the Augustine Commission and the Synthesis Group are likely to shape the direction of the U.S. space program for decades to come. A panel discussion on the future of the space program that includes key individuals from NASA, industry and government is likely to be extremely popular. Potential panelists include Reps. Mike Andrews and Jack Brooks, Aaron Cohen, David Black, Joe Allen, Glynn Lunney, Bob Young, etc. A date around the time of Spaceweek would probably insure the greatest attendance and exposure.

***Speaker or Panel Discussion on Aerospace Technology and U.S. National Security (about September 1991).*** Events during the past several months have highlighted the importance of advanced aerospace technology to U.S. military strength and national security. We believe that a program on this topic would generate a high degree of public and professional interest. If organized by the Houston Chapter alone, this event might consist of a single invited speaker giving an evening talk that was open to the general public. However, if done in cooperation with other AIAA chapters (particularly Dallas-Ft. Worth), we might be able to expand the program to a panel discussion or one-day topical conference.


***Panel Discussion on U.S. Commercial Space Policy/Initiatives (about October/November 1991).*** There is certainly a great deal of interest about commercial space policy and business opportunities within the Clear Lake area. Although our ideas are still in the formative stage, a speaker or panel discussion on this topic should be popular. Potential speakers or panelists included Deke Slayton, Art Dula, Max Faget and a number of others.

### ***Other Activities***

In addition to the above, we believe there are several other ways to increase the visibility, influence and membership of the Houston Chapter.

***AIAA Speakers Bureau.*** There are literally hundreds of schools and organizations within the Houston area that are looking for speakers to fill their weekly or monthly programs. Although JSC has an excellent speakers program, the community demand for speakers on space-related issues far exceeds the supply. Possible topics include a historical overview of the manned space program, current plans for Space Station Freedom, the National Aerospace Plane and the Space Exploration Initiative.

***Coalition Building.*** By strengthening our ties with the individual members of the Clear Lake Council of Technical Societies, other state chapters of AIAA (particularly the Dallas-Ft. Worth and Austin-San Antonio areas), and other organizations throughout the state with similar interests, we could well see a significant improvement in our ability to organize topical programs, increase membership and obtain media coverage of issues important to the AIAA. Audrey Schwartz has expressed a particular interest in developing these contacts.

***Local press releases.*** When the AIAA issues a national position paper on a topic that we believe would be of interest to the local community, we plan to prepare a summary of that paper and issue it as a press release to the local media. In the release, we would like to include the name and telephone number of a local AIAA member who could serve as a spokesman for the Institute on that particular issue. 

## Also Noted

### Around Region IV

John M. Trebes  
Chairman

The following address from industry appeared in *The Roadrunner*, the newsletter of the Albuquerque Section. I was immediately reminded of *The Moon is a Harsh Mistress* by Robert Heinlein.

### Spotlight on Industry

Gary Polansky  
Corporate Liaison

Our featured company for the "Spotlight on Industry" presentation and display at the January 24th meeting will be Sandia National Laboratories. The SOI speaker will be Dr. Ronald Lipinski with the High-Current Linear Accelerator Research Division of the Pulsed Power Applications Department at Sandia. The following synopsis provides some introductory information regarding the topic and content of Dr. Lipinski's talk:

### Electromagnetic Coilgun Earth-to-Orbit Launcher

Most of the mass that will be delivered into Low Earth Orbit (LEO) for Lunar and Martian expeditions is rocket fuel. An electromagnetic coilgun Earth-to-Orbit (ETO) launcher is a concept being developed at Sandia National Laboratories, Albuquerque, which hopes to provide an inexpensive means for launching fuel into low earth orbit. The accompanying figure shows a diagram of the ETO concept. A 4 ton launch package is pushed by an electromagnetic wave up a 2 km long tube to an exit velocity of 6 km/sec. An aeroshell protects the payload as it passes through the atmosphere, after which a small rocket circularizes the orbit while the aeroshell falls back into the atmosphere. The 500 kg payload of fuel approaches the space station, where a robotic tug docks with it and refuels OMVs, OTVs, and Lunar Landers. By launching fuel this way, the Shuttle and rockets are freed up to deliver larger and more delicate payloads.

The technology for this launcher is near term. Sandia has successfully launched a 5 kg projectile at 335 m/sec in a 6-stage launcher. They have built a detailed computer code that agrees with experimental data within  $\pm 10\%$  over four orders of magnitude in launch energy. This code predicts the successful operation of a full-scale ETO launcher. The aeroshell technology is a moderate extrapolation of the demonstrated data base. Acceleration-hardened rockets (both solid and liquid fueled) and navigation units already have been developed for other programs. The wear on the barrel is very small because the package is pushed inductively with no electrical contacts. The launcher is expected to cost a few billion dollars, which is comparable to a major launch facility for rockets. The incremental cost per launch is estimated to be less than \$1 million, which is less than \$900 per pound of fuel delivered to LEO.

### Science Fair Judges Needed

David P. Dannemiller  
Chairman, Student Affairs Committee

The Houston Section will again be a Special Awarding Agency at the 32nd Science Engineering Fair of Houston. We will give awards to the best aerospace related projects in the Senior, Ninth, and Junior Divisions. Judges are needed on Friday, March 22, for one or both of the judging sessions: 1:30 to 5:00 PM and 6:30 to 10:00 PM. Please call David Dannemiller at 282-4848 to volunteer or for more information.

### Newsletter Award

Lou Livingston  
Editor

The Houston Section has been notified that *Horizons* has tied for third place for the 1990 AIAA newsletter award (large section category). It's nice to be noticed, although I might have hoped for a higher placement. However, when you look at some of the competition, third place isn't bad. We'll try to do better next year.

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## On The Horizon

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### Technical Symposium Planning In Work

Alan Shinkman  
Vice-Chairman, Technical

Planning for the 16th Annual Technical Symposium is proceeding very well.

Dr. Maurice (Moe) Miller, Vice President and Engineering & Science Program Manager for Lockheed Engineering and Sciences Company, has graciously agreed to be the Honorary Chairman of this year's symposium.

The date for the symposium is May 16, 1991, and the location is the University of Houston-Clear Lake. The theme will be "Challenges of the 90s." A call for abstracts has been issued, with abstracts due March 22. ●

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### The Members Speak Out

Lou Livingston  
Editor

As you may have noticed, flyers for the February and March monthly meetings were mailed separately and not included in *Horizons*. This was done on a trial basis to avoid some of the problems we have had in the past with meeting schedules vs. newsletter schedules. You have already learned (presumably) that the March meeting will take the form of a reception at 5:00 PM, March 14, at the Gilruth Center following the Workshop on Automation and Robotics (WAR).

Separate flyer mailings are, of course, more expensive than combining the flyer with *Horizons*, and a decision to continue or abandon this procedure will be largely governed by financial considerations. However, the Executive Council would be happy to hear any opinions the membership might care to express on this subject.

You may, as usual, forward comments direct to me at 16546 Ivy Grove, Houston, TX 77058, or you can send them by office mail to any officer or councillor. If you attended a monthly meeting this year, you have a wallet card with their names and addresses. If you didn't, come to the next meeting and get one. ●



**National ballots must be *received* at AIAA Headquarters by April 2 to be counted.**

## Technical Activities Calendar

Bill Best  
CLCTS Representative

### March

#### 4 - Monday

NASA Area Macintosh Users (Group) "NAMU": "Excel 3.0", Tom Turner, Microsoft.  
RSOC Cafeteria, 600 Gemini, 7:00 PM.  
Information: Sharyn Best, 488-6522.

#### 6 - Wednesday

JSC Astronomy Seminar: open discussion.  
JSC Bldg. 31, Rm. 129, noon-1:00 PM.  
Information: Al Jackson, 333-7679.

#### 8 - Friday

LPI Seminar Series: "From (Sir R.I.) Murchison to the Moon: Dispute in the Planetary Sciences", Graham Ryder, LPI.  
LPI, 3303 NASA Rd. 1, Berkner Room, 3:30 PM.  
Information: Dr. Deborah Dominique, 486-1474.

#### 12 - Tuesday

Clear Lake Council of Technical Societies monthly meeting.  
Lockheed Plaza 3, 1150 Gemini, 11:45 AM.  
Information: Andy Lindberg, 483-1474.

#### 13 - Wednesday

JSC Astronomy Seminar: program TBD.  
JSC Bldg. 31, Rm. 129, noon-1:00 PM.  
Information: Al Jackson, 333-7679.

#### 14 - Thursday

AIAA Automation & Robotics TC and Systems Development & Simulation Division, JSC: "Workshop on Automation and Robotics (WAR) '91". Free workshop - automation and robotics applications.  
JSC Gilruth Center, 8:00 AM-5:00 PM (luncheon \$6).  
Reception 5:00 PM.  
Registration: Mary Stewart, 483-1724 (by COB March 7).

#### 18 - Monday through 22 - Friday

22nd Lunar and Planetary Sciences Conference.  
JSC Gilruth Center.  
Information: Dr. Deborah Dominique, 486-2167.

#### 19 - Tuesday

AIAA Computer & Software Systems TC: "Artificial Intelligence with HyperCard," Stephen Desrosiers, McDonnell Douglas.  
Franco's, 1101 NASA Rd. 1, 11:45 AM.  
Information: Karen Lee-Taylor, 283-1961.

#### 20 - Wednesday

IEEE/ISA/CLCTS videoconference: "Uses of Artificial Intelligence in Manufacturing."  
JSC Gilruth Center, 10:00-2:00 PM.  
Members \$60, non-members \$70.  
Information: Andy Lindberg, 483-1474.

Houston Space Business Roundtable Monthly Luncheon: "How Space Related R&D Has Advanced Medicine," Dr. A. LaBlanc.  
Marriott Astrodome, 2100 S. Braeswood, 11:30/12:00 noon.  
Information: Beth Land, 480-2817.

JSC Astronomy Seminar: "Update on the Mir Space Station," Jim Oberg, RSOC.  
JSC Bldg. 31, Rm. 129, noon-1:00 PM.  
Information: Al Jackson, 333-7679.

#### 21 - Thursday

JAIPCC '91 (Joint Applications in Instrument, Process and Computer Control Symposium).  
UH-CL, 9:00 AM-4:00 PM. Registration starts 7:30 AM. Advance registration \$15, \$20 otherwise, students free.  
Information: Sandy Griffen, 283-5892.

Clear Lake SigAda business meeting.  
Location TBD, 11:45 AM.  
Information: Paul Kennedy, 282-6262.

#### ISA Tabletop Show.

Nessler Center, 5th Ave. & 21st St., Texas City, 4:00-8:00 PM. Refreshments served; admission free.  
Information: Bill Weber, 333-6785.

**March (cont.)**

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**22 - Friday****DEADLINE FOR ABSTRACTS FOR AIAA  
16TH ANNUAL TECHNICAL SYMPOSIUM.**

Armed Forces Communications and Electronics Association monthly luncheon (public is welcome).  
Program and location TBD.

Information: Veronica Mullins, 283-7342.

**27 - Wednesday through 30 - Saturday**

National Science Teachers Association 39th Convention: Special Space Science Day - Friday - The Planetary Society.

George R. Brown Convention Center.

Registration: Shelletta Robertson, (202) 328-5800.

**27 - Wednesday**

JSC Astronomy Seminar: program TBD.

JSC Bldg. 31, Rm. 129, noon-1:00 PM.

Information: Al Jackson, 333-7679.

**28 - Thursday**

Society for Computer Simulation (SCS) monthly meeting: "Space Station Training", Harry St. John, NASA.

Lockheed Plaza 3, 1150 Gemini, 11:45-12:45.

Information: Wade Webster, 244-4306.

**April**

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**1 - Monday**

NASA Area Macintosh Users (Group) "NAMU": "Voice Navigator" Articulate Systems (Voice Recognition - VR).

RSOC Cafeteria, 600 Gemini, 7:00 PM.

Information: Sharyn Best, 488-6522.

**25 - Thursday**

AIAA Houston Section monthly dinner meeting.

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

Information: Shirley Brandt, 929-7183.

**May**

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**16 - Thursday**

AIAA 16th Annual Technical Symposium.

UH-CL.

Information: Alan Shinkman, 333-7508.

Please send additions, corrections and comments to:

Bill Best/R12A-130

Rockwell Shuttle Operations Co.

600 Gemini Ave.

Houston, TX 77058

Telephone 283-0261

# AIAA HOUSTON HORIZONS

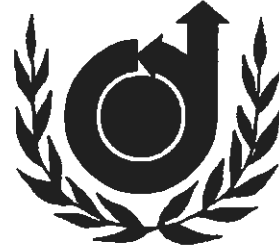
## OUTSTANDING SECTION AWARD



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

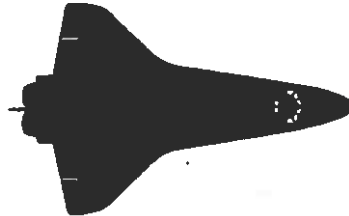


## SECTION SPECIAL EVENT AWARD



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

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