

## Chairman's Corner

**Shirley Brandt  
Chairman**

AS THE 1993-94 ADMINISTRATIVE YEAR for the AIAA Houston Section comes to a close, we can look back at a very busy and active year for the Section. This year also can be considered a year of transition for aerospace, somewhat similar to that of the early 1970s.

For the most part, this year was traditional. We had a very successful annual technical symposium, WAR symposium, and high quality dinner meeting programs. Many of the Section's technical committees sponsored lunch and learn programs. Several representatives from the Section judged at the Science Fair. The student scholarship was awarded to one of a number of applicants.

The year was different from others in that, due to aerospace downsizing, membership declined. For the past several years, membership had been growing. A new program, the Aerospace Job Workshop, was added to the Section agenda. The intent of the workshop was to provide to the displaced aerospace worker some additional resources to help with their job search. The content of the program was intended as a supplement to the programs provided by the Aerospace Job Resource Center.

Additional ways of providing for the members' needs are being considered by the Council. The new administration is very anxious to provide the members with whatever services are appropriate. Please inform them about the types of programs you need and want. I encourage all of you to support the new administration and volunteer your services.

On June 9, the Houston Section Executive Board hosted a successful reception for the members of our Section who serve on AIAA national technical committees and for our local international space

community. The reception, which was organized by Dr. Zafar Taqvi, International Space Activities Chairman, was held at the Lunar and Planetary Institute. The purpose of the reception was to acquaint the national TC members and the international space community with the activities of our local AIAA Section. We could learn a lot from each other, and their participation would be a great asset to our professional organization.

The attendance was light, but there were representatives from both the National TCs and the international space community. Our Section technical committees were also represented.

I appreciate the opportunity to have served all of you as Section Chairman, and I wish you a very good summer and luck with your goals, whatever they may be. H

## In This Issue...

Chairman's Corner .....	1
1994-95 Officers .....	2
New National Award .....	2
Also Noted .....	3
AIAA Calendar .....	5

*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. Opinions expressed herein, other than by elected officers, do not necessarily represent the position of the Houston Section nor of AIAA. Please address all correspondence to the Vice-Chairman, Operations, Mike Begley, LESC/ C87, fax 333-6908, or to the Editor, Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

## 1994-95 Officers

**George Nield**  
**Chairman-Elect**

THE FOLLOWING SECTION OFFICERS AND COUNCILORS have been elected for the 1994-95 section year.

Chairman:	Dr. George Nield/JSC
Chairman-Elect:	Don Probe/Lockheed
VC-Technical:	Kamlesh Lulla/JSC
VC-Operations:	Mike Begley/LESC
Secretary:	Merri Sanchez/JSC
Treasurer:	Franklin Chang-Diaz/JSC
Councillors:	Dick Bennett/MDC*
	Shirley Brandt*
	Dave Criswell/UHCL
	Carl Huss/retired
	Paul Judas/MDC*
	Lou Livingston/retired*
	Joe Loftus/JSC
	Jim Oberg/RSOC
	Emyré Robinson/Barrios*
	Audrey Schwartz/JSC*
	Marv White/LESC*
	Steve Zobal/MDC*

\* Carryover from last year

My thanks to Kathy Leary, Cal Seaman and Suzan Voss, who counted the ballots.

## New Award Announced

THE AIAA INVITES NOMINATIONS for the first Walter J. and Angeline H. Crichlow Trust Prize. The Prize is presented by AIAA every four years for excellence in aerospace materials, structural design, structural analysis, or structural dynamics. Nominations should include any one or more of the following: environment and loads definition, utilization of advanced materials and fabrication processes, innovative structural configuration, determination of structural integrity by analysis and test, advanced mathematics and/or computer programming of general and advanced usage, weight-reliability-life cycle considerations, or adaptive structures.

The 1995 Prize consists of a certificate of citation, a gold medal, and an honorarium of \$100,000. The recipient will be invited to receive the Prize at the 36th AIAA Structures, Structural Dynamics, and Materials Conference, April 10-14, 1995 in New Orleans, LA.

Individuals from all nations are eligible to receive the Prize. Nominations for 1995 must be received by October 1, 1994 to be eligible for the 1995 Prize.

For more information, please contact Merrie Scott at 202/646-7534.



Seen at the April 28 dinner meeting are, left to right, Program Chairman Dr. Zafar Taqvi; guest speaker Wayne S. Alexander, Vice-President of Southwestern Bell Telephone Co.; and Section Chairman Shirley Brandt.

Photo by Jim McLane

## *Also Noted*

### Return to the Moon by 1997?

Jed Login  
Automation and Robotics TC

THIS SEGMENT PROVIDES ADDITIONAL INFORMATION and responds to some questions about the lunar rover project presented in last month's brief article. The Field Robotics Center (FRC) at Carnegie Mellon University (CMU) is under contract from LunarCorp of Arlington, VA to develop the Apex Robot to traverse the lunar surface after a 1997 launch. LunarCorp is a private company currently publishing educational material on compact discs. They expect to generate income from customers who would control the robot from Earth for entertainment, education, and science.

The primary objective of the LunarTrack project is to motivate mass participation by providing a realistic experience of lunar exploration, and to perform lunar science. High quality video from the rover will provide panoramic views. Amateurs will have opportunities to take control and drive. One quarter of the mission will address science goals.

LunarCorp is looking to International Space Enterprises (ISE) of San Diego, CA for a one-way launch to the moon utilizing Russia's Proton booster. ISE began in 1992 and has Rockwell International and Lavochkin Association as partners in developing a lunar lander. Lavochkin Associates is a Russian company that has previously designed a few Russian moon rovers.

The FRC has already designed Dante 2 under a NASA contract to use robotic teleoperation for exploring the active Mount Spurr Volcano this summer in Alaska. The Dante robot is an octopod walker configured for scientific exploration of extreme terrain like earth volcanoes or craters on other planets. The FRC has also designed the Tessellator for ground operations like rewaterproofing tiles on the

space shuttle and was scheduled for acceptance test at Kennedy Space Center about this time.

As a part of the effort described in last month's *Horizons*, CMU students are reaching out to potential partners, associates, and technology centers for information on existing space hardened components and subsystems. This is also a generic request for other space-relevant components your organization knows of, uses or builds. Listed below is a set of components they are looking for.

The usable component set is severely restricted by the environment conditions for operation and survival. Since the current design has an enclosure for critical components, the environmental conditions are split into two categories:

- In-enclosure component conditions: radiation (104 rad/m<sup>2</sup>, shielded), temp (60C operation, -40C survival)
- Exposed component conditions: radiation (107 rad/m<sup>2</sup>, shielded), temp (140C operation, -180C survival), electrostatic dust (if unsealed)

Common conditions are: vacuum (10<sup>-9</sup> torr), launch shock and vibration.

Following is a list of identified vital components:

([I] = In-enclosure, [E] = Exposed, [U] = Exposed & unsealed)

- [U] Motors, actuators and gear trains for propulsion
- [U] Seals, bearings and linkages for mechanical transmission
- [E] Materials for enclosure, structure, drive axles and wheels
- [U] Solar arrays for power generation
- [I] Batteries and power regulation systems
- [E] Multilayer insulation/other insulating components
- [I] High specific heat materials for night heating
- [E] Radiators, heat pipes, louvers
- [E] Pan-tilt or gyro platforms for antenna pointing and stabilization

(Continued on page 4)

(Continued from page 3)

- [E] Parabolic dish antenna (0.5 to 0.9 m dia.) for Ku band
- [I] Transponders (Ku Band), 20 to 60 W output
- [I/E] Phased array antennas and pointing methods
- [I] Computing devices (chips, boards, [E] connectors)
- [I] Image compression chips and technology
- [E] High resolution CCD cameras
- [I] Inertial navigation units, star trackers
- [E] Sensors (proximity, contact, range, temperature, ...)

They would like to establish contact and dialog with interested people and organizations. Current versions of the project statement and design documents are available on request. Information received will be used in the current design and passed on to the design team which will take the design and prototyping process to conclusion. Requested information includes:

- Person/company name, designation, organization, interests and specialties
- Location, time zone, accessibility, times available
- Telephone, e-mail, mail address, fax number

Component information requested includes:

- Component class, generic purpose
- Description of component functionality
- Design information for integration into the rover
- Mass
- Dimensions
- Power consumption (various conditions)
- Nature of space qualification
- Operating temperature range
- Survival temperature range
- Sensitivity to dust if applicable
- Rad hardening
- Vibration rating
- Mean time between failure (MTBF) if evaluated
- Operating life span in time
- Operating life span in operation (e.g., no. of motor turns)

- Previous space usage record of component and vendor, product line
- Cost
- Lead time for acquisition
- Sensitivity and licensing requirements
- Product information brochure, spec sheets, catalog(s) in which listed

Address for sending or requesting information:

E-mail: [lalit@ri.cmu.edu](mailto:lalit@ri.cmu.edu)

Mail: Lunar Rover Technical Outreach

c/o Red Whittaker


Field Robotics Center,

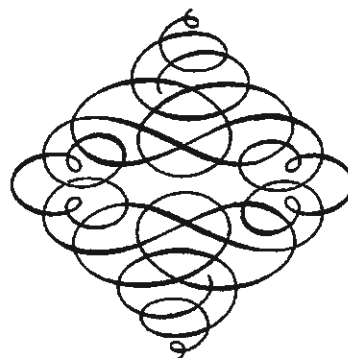
Carnegie Mellon University,

Pittsburgh, PA 15213-3890

Fax: (412) 682-1793

Phone: (412) 268-6556

If any readers would like to contact me locally for more information, my number is (713) 286-5831 and my E-mail address is [csci21a2@cl.uh.edu](mailto:csci21a2@cl.uh.edu). 



## Aha!

Lou Livingston  
Editor

There was a time when we thought that the earth was the center of the universe. After Galileo, Copernicus *et alii*, we thought we knew better. But...

The standard acceleration of gravity,  $g_0 = 9.80665 \text{ m/s}^2$ , is a function of the earth's size and mass. Now, it happens that  $g_0 = 1.03227 \text{ light years/year}^2$ . That is, the speed of light would be reached in just under a year if an acceleration of  $g_0$  could be maintained in one direction.

Thus, there is a close relation between the earth's size, mass and orbital period and the speed of light, the most fundamental of all physical constants. Surely, this is clear evidence that the earth *is* the center of the universe after all. Since the equivalence isn't exact, perhaps it only means that the earth is *nearly* at the center of the universe.

For such reflections, of course, one must set aside the notion that the universe doesn't really *have* a center. If you can take this seriously in the first place, that shouldn't be difficult. H

---

## 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 to Mike Begley, Vice-Chairman, Operations, LES/C87, fax 333-6908, or to Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

## August

22 - Monday

*Horizons* inputs for September due COB.

25 - Thursday

Monthly dinner meeting (tentative).

Program TBD.

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

## September

12 - Monday

*Horizons* inputs for October due COB.

22 - Thursday

Monthly dinner meeting.

Program TBD.

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

## October

11 - Tuesday

*Horizons* inputs for November due COB.

18 - Tuesday

Monthly dinner meeting.

Program TBD.

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

## November

7 - Monday

*Horizons* inputs for December due COB.

15 - Tuesday

Monthly dinner meeting.

Program TBD.

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

## December

8 - Thursday

Monthly dinner meeting.

Program TBD.

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

19 - Monday

*Horizons* inputs for January due COB. H

## OUTSTANDING SECTION AWARD

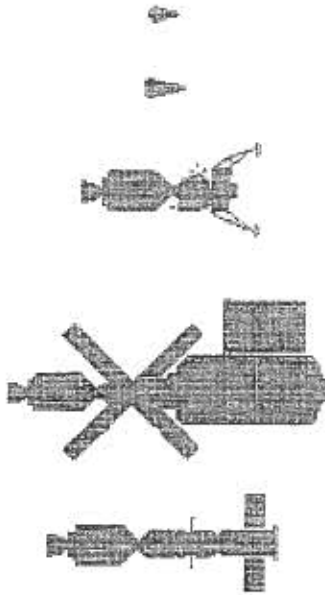


1975-1976  
1976-1977  
1979-1980  
1980-1981  
1981-1982  
1983-1984  
1986-1987  
1988-1989

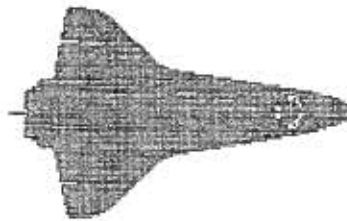
## SECTION SPECIAL EVENT AWARD



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**

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

July 6, 1994

Dear AIAA Member,

We need your help! In order for the Houston Section to be successful, we need to make sure that we are being responsive to the needs of our members. We also need to make sure that we have communicated with you about all of our on-going activities and offered you a chance to get involved in areas that interest you.

Michael Begley, our new Vice Chairman - Operations, has put together the attached Membership Survey to solicit your ideas on what kinds of things we should be doing as a Section, and to identify any areas in which you might be interested in participating. This is your chance to have an impact on what direction we are headed and where we ought to be putting our emphasis. Please take a minute to look it over and give us some feedback. If you have any additional comments, please include them with the survey or give me a call at (713) 483-1364. If you prefer, you can also contact me via electronic mail. My internet ID is [gniel@jscprofs.nasa.gov](mailto:gniel@jscprofs.nasa.gov).

I'm looking forward to hearing from you. We are planning an exciting year of AIAA activities and hope we can count on your support!

A handwritten signature in black ink, appearing to read 'G. Nield'. The signature is written in a cursive, flowing style.

Dr. George C. Nield  
Chairman

# Houston Area Space Week Activities

## July 15

Good Morning America TV show, starring John Denver, Gene Cernan performing "Moon Ride"	Space Center Houston 6 am to 8 am	Gwen Griffin, 244-2105
Special Appearance by John Denver for SCH guests and live news coverage	Space Center Houston 5 pm to 6 pm	Gwen Griffin, 244-2105
Antique Car Show, Lunar Rendezvous Festival (LRF)	John F. Ward Elementary	Diana Dornak, 332-1541
YMCA Olymics (LRF)	Bay Area YMCA	Diana Dornak, 332-1541

## July 16

Children's Television Workshop Sesame Street Live Performance and Ghostwriter performance	Space Center Houston	Gwen Griffin, 244-2105
Spaceweek Launch Gala	Space Center Houston	Spaceweek International Association (SIA)333- 3627
Space Art Exhibit	Space Center Houston	SIA, 333-3627
Concert and Art Show (LRF)		Diana Dornak, 332-1541
Loral Space Run	JSC	Diana Dornak, 332-1541
"The Legacy Lives On" Aerospace Exhibit, Spaceweek & Challenger Center - Spin-offs, historic memorabilia, films, hardware, displays from NASA, Russian space program, museums	Astrohall	Mike Flory, 261-6340
Educational Symposium featuring student science projects, lectures and educational products for students, teachers, parents, educators and the general public	Challenger Center	567-8325

## July 17

Book signing by Andrew Chalkin, <u>A Man on the Moon</u>	Space Center Houston	Gwen Griffin, 244-2105
Unveiling of a new piece of Apollo 11 memorabilia during event with special performance by MAX-Q	Hard Rock Cafe	Gwen Griffin, 244-2105
"The Legacy Lives On" Aerospace Exhibit, Spaceweek & Challenger Center	Astrohall	Mike Flory, 261-6340
Educational Symposium featuring student science projects, lectures and educational products for students, teachers, parents, educators and the general public	Challenger Center	567-8325



## Houston Area Spaceweek Activities

### July 18

"Captain Pete" poster signing and special presentation by Apollo 12 astronaut Pete Conrad with his new comic book "Moon Shot"	Space Center Houston	Gwen Griffin, 244-2105
Golf Tournament (LRF)	South Shore Harbor Country Club	Diana Dornak, 332-1541
"The Legacy Lives On" Math and Science Symposium	Astrohall	Mike Flory, 261-6340
Noontime Lecture Series - Technology Transfer and Commercialization at JSC, Sponsored by the Galveston Bay Section of the IEEE	JSC Building 2 Teague Auditorium Noon to 1 pm	Cliff Mason, 335-6897

### July 19

Apollo 11 Flight Director Panel with Gerry Griffin, Gene Kranz, and Glynn Lunney	Space Center Houston	Gwen Griffin, 244-2105
"The Legacy Lives On" Math and Science Symposium	Astrohall	Mike Flory, 261-6340
Noontime Lecture Series - When a Comet Hits a Planet, Shoemaker/Levy-9 at Jupiter, Paul Schenk, Ph.D. Sponsored by the Galveston Bay Section of the IEEE	JSC Building 2 Teague Auditorium Noon to 1 pm	Cliff Mason, 335-6897

### July 20

"I Need My Space" Day, sponsored by Rockwell International. Give-Aways of shirts, buttons, hats, more.	Space Center Houston	Gwen Griffin, 244-2105
"The Legacy Lives On" Astros vs. Astronauts Baseball Game! Retired astronauts versus former Astros players, prior to regular Astros game.	Astrodome	Mike Flory, 261-6340
Noontime Lecture Series - Return to the Moon, Humans to Mars, John Connolly. Sponsored by the Galveston Bay Section of the IEEE	JSC Building 2 Teague Auditorium Noon to 1 pm	Cliff Mason, 335-6897
Proclamation on the Apollo 11 anniversary presented by Governor Ann Richards to NASA Administrator Dan Goldin	Space Center Houston	Gwen Griffin, 244-2105
Live Uplink/Downlink by the STS-65 crew for guests of Space Center Houston	Space Center Houston	Gwen Griffin, 244-2105
Unveiling of a new Silver Anniversary Man on the Moon postage stamp by the U.S. Postal Service	Space Center Houston	Gwen Griffin, 244-2105
"The Legacy Lives On" Black Tie Gala, emceed by CBS news anchor Dan Rather. Dinner, dancing, awards, film, and entertainment to celebrate the lunar landing.	Astrohall	Mike Flory, 261-6340

## Houston Area Spaceweek Activities

### July 21

Mission to Planet Earth briefing by NASA officials	Space Center Houston	Gwen Griffin, 244-2105
Noontime Lecture Series - Spacecraft Development in the Next 25 Years, Harry Erwin. Sponsored by the Galveston Bay Section of the IEEE	JSC Building 2 Teague Auditorium Noon to 1 pm	Cliff Mason, 335-6897

### July 22

Casino Night	Nassau Bay Hilton	Mike Flory, 261-6340
Noontime Lecture Series - Clementine Explores the Moon, Paul Spudas, Ph.D. Sponsored by the Galveston Bay Section of the IEEE	JSC Building 2 Teague Auditorium Noon to 1 pm	Cliff Mason, 335-6897

### July 23

Model Rocket Launch Demonstration	JSC	James Hartsfield, 483-4934
NARAM National Model Rocket Championships	JSC	Terry White, 587-0226

### July 24

Splashdown Party: Tickertape Celebration, Daytime fireworks, and Model Rocket Launches	Space Center Houston	Gwen Griffin, 244-2105
NARAM National Model Rocket Championships	JSC	Terry White, 587-0226
Family Fun Fair	Clear Lake Park Landolt Pavilion (LRF)	Diana Dornak, 332-1541
Sunrise Service	Clear Lake Park Landolt Pavilion	Diana Dornak, 332-1541

### July 25

NARAM National Model Rocket Championships	JSC	Terry White, 587-0226
---	-----	--------------------------

### July 26

Fashion Show	Westin Galleria (LRF)	Diana Dornak, 332-1541
NARAM National Model Rocket Championships	JSC	Terry White, 587-0226

### July 27

NARAM National Model Rocket Championships	JSC	Terry White, 587-0226
---	-----	--------------------------

### July 28

NARAM National Model Rocket Championships	JSC	Terry White, 587-0226
---	-----	--------------------------

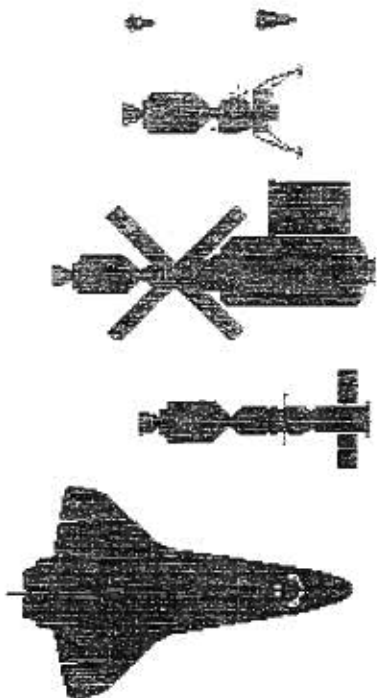
### July 30

Coronation Ball	South Shore Harbor Convention Center	Diana Dornak, 332-1541
-----------------	---	---------------------------

## 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**

