

AIAA Horizons

Houston, Texas

September 1995

Chairman's Corner

Don Probe
Chairman

The 1995-96 Houston Section is off to a running start, having already supported the National Technical Association's annual conference at the Westin Oaks Galleria Hotel on July 20, 1995 (see story on page 5), and jointly held a dinner meeting with the Space Operations and Support National Technical Committee on July 20 (see page 6).

On June 5, I attended the 1995 Section Leaders' Briefing in Albuquerque, New Mexico, and had an opportunity to meet AIAA regional officers and national staff members as well as other section chairmen in Region IV to learn how AIAA works. Presentations and information handouts from the staff made my responsibilities as an officer clearer and will increase my effectiveness as an officer. I also gained knowledge of resources that will help in the operation of our Houston Section.

Back in Houston, the task of selecting and recruiting a committed group of committee leaders and section members to facilitate the various activities the section would like to offer to the membership was started. Results to date have been very gratifying, but a few key positions remain unfilled. In the technical area, the History/Heritage and the Life Sciences, Space Processing and Human Factors chairman positions have not been filled. In the operations area, we will have a vacancy in the Publications Committee when our present chairman moves. This is a very important position that we need to fill immediately.

The September dinner meeting will be held on the 21st and will be a joint meeting with the American Astronomical Society. The panel discussion will be held in the Silver Moon Cafe in Space Center Houston. A flyer for the meeting is enclosed with this newsletter. The Section is also sponsoring an

Operability Workshop with NASA/JSC to be held on September 13-14 at the Center for Advanced Space Studies (CASS). Other plans for additional dinner meetings, educational events, and interesting activities are under way.

Council meetings are planned to be held on the Thursday before the dinner meeting from 5:00 to 6:15 PM at the CASS. The Center is located at 3600 Bay Area Blvd. at the corner of Middlebrook Drive. The meetings are held in the Hess Conference Room on the ground floor. Since the building is locked at 5:00 PM every evening, the room's location makes it easy for those arriving after 5:00 to knock on the window for access.

The Houston Section has been extremely fortunate to have Lou Livingston as our *Horizons* editor for the past six years. Lou is presently retired and will be leaving Houston in the very near future. The Section is looking for a new editor. The identification of a replacement will have to be quick in order to take advantage of overlap time to become familiar with the *Horizons* editing and publications process. ■

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New Section Officers

Following are Houston Section officers and committee chairmen for the 1995/96 section year. We hope to have a complete list in wallet card format, with addresses, e-mail, etc., by next month.

Chairman:

Don Probe 333-6278

Chairman-Elect:

Clay Shadeck 280-2701

Vice-Chairman, Operations:

Merri Sanchez 483-4470

Vice-Chairman, Technical:

Charles Teixeira 483-4647

Secretary:

Jeff Sugano

Treasurer:

Rudy Balciunas

Councillors:

Liz Baines

Larry Bell

Shirley Brandt 486-3941

Dave Criswell 486-5019

Jill Fabricant

Carl Huss 488-6310

Gotthard Janson

Lou Livingston 480-2086

Joe Loftus

George Nield 483-1364

Jim Oberg 337-2838

Ellen Ochoa

Steve Scheer

Mike Stanford 409/772-8017

Operations Committees:**Education/Professional Development:**

Suzan Voss

Honors & Awards:

Jim Stramler

Membership:

Gotthard Janson

Pre-College Outreach:

Susan Cisneros Vascoe

Programs:

Steve Scheer

Public Policy:

Shirley Brandt 486-3941

Publications:

Lou Livingston 480-2086

Publicity:

Jayant Ramakrishnan 333-4419

Scholarship:

Leon Swartz 282-8136

Student Activities:

Michael Barret

Young Members:

J. Kraft

Technical Committees:**Aerospace Maintenance:**

Frances E. Mount 483-3723

Artificial Intelligence:

Robert Savely 483-8105

Automation & Robotics:

Zafar Taqvi 244-8662

Communications & Tracking:

Kumar Krishen 483-0695

Computer-Aided Design:

John Knesek 333-6129

Fluid Dynamics:

Rakesh Bhargava 983-9371

Guidance, Navigation & Flight Control:

Jayant Ramakrishnan 333-4419

History/Heritage:

(vacant)

In-Space Imaging & Observation:

Kam Lulla 483-5033

International Space Activities:

Zafar Taqvi 244-8662

Life Sciences, Processing & Human Factors:

(vacant)

Materials, Structures & Dynamics:

Steve King 333-6646

Space Operations & Support:

Thomas E. Diegelman 244-7255

Space Transportation:

Charles Teixeira 483-4647

Systems Engineering:

(vacant)

Government-Sponsored Resource Ready to Help Entrepreneurs and the Community

Jeff Robinson

Wouldn't it be great if people could take one of the many technologies created by NASA and transform it into a product or service that could be sold on the commercial market? Even better, wouldn't it be nice if there were an organization dedicated to assisting such small businesses and entrepreneurs? Believe it or not, there is. It is called the Johnson Technology Commercialization Center (JTCC), a government-sponsored small-business incubator, and it is located less than a block away from NASA. The main focus of this non-profit organization is to assist in the commercialization of products and services based on NASA technology in order to create jobs and enhance the community, and its services are free to the public. Many people do not realize that such a valuable business resource exists, but the JTCC stands ready to assist anyone wishing to start a business based on a NASA technology.

Founded in 1993 and funded by NASA, the Johnson Technology Commercialization Center offers such services as:

- Assistance in licensing NASA technology
- Market research support
- Economic feasibility analysis
- Business planning support
- Capital sourcing support
- Growth management assistance

In addition, the center offers financial assistance in the form of reduced rent office space, shared reception area, and shared office equipment (copier, fax, etc.) for those who would like to start a new venture, but don't have a wealth of resources with which to do so. The center operates under the direction of Dr. Jill D. Fabricant, an accomplished scientist, inventor, and entrepreneur, and is staffed with experienced marketing, management, and finance consultants. The center is thus equipped to take a prospective entrepreneur through the entire start-up process for a new business.

In addition, the JTCC is dedicated to serving the community by offering free seminars and special events that provide information on various entrepreneurial topics. The next free seminar will feature Hank Davis of NASA and is scheduled for Wednesday, September 13, 3:00 to 5:00 PM. The topic of this seminar is the "The New Program for Technology Transfer and Commercialization at NASA and the Major Changes Taking Place." Admission is free, but seating is limited, so they ask that attendees RSVP by calling 335-1250. **H**



Editor Wanted

Lou Livingston
Editor

In October, *Horizons* will need a new editor. At that time, I will be moving out of state and will no longer be able to continue this satisfying and enjoyable task.

Contrary to the impression that I have carefully fostered, the job is neither as difficult nor as time-consuming as it appears. You will find yourself in the midst of things. There is room for all the creativity you can bring to the job; however, if creativity is not your long suit, you can get by without it (*I certainly have*).

But the best part of this job, to my mind, is that *Horizons* is virtually the only contact the Section has with *all* of its members. Not everyone sees the notices on the bulletin boards and, as a rule, only five or six percent attend the monthly dinner meetings.

If you would like an opportunity to do the Houston Section a significant service, please give me a call at 480-2086. I will be happy to pass along the experience, layouts, graphics, etc. that I have accumulated over the past several years. Time is short, however, so call by the first week in October. **H**

Professional Networking (Membership) More Important Than Ever

**Dr. Jill D. Fabricant
Councillor**

No one doubts that the aerospace industry is undergoing enormous change. Nationwide, aerospace employment has dropped by more than 35% since 1989. This national downturn has been felt locally through numerous layoffs. Many of us know colleagues who have been out of work for a year or more.

One of the domino effects of local layoffs is, unfortunately, a drop of memberships in professional organizations. The Houston Section of AIAA is no exception. The irony is that, in these times of industry flux, keeping in touch with former co-workers is more important than ever to keep abreast of the many changes and new trends in the industry. One may be temporarily unemployed, but one remains an aerospace professional.


Industry analysts report that there are aerospace jobs out there. Locally, the employment trend seems to be moving away from the aerospace giants to the smaller SDBs and to newer companies that seem to have mushroomed overnight. One of the best ways to learn about employment trends and new contracts is by networking with the aerospace professionals of the AIAA. Your membership could be more valuable now than ever before.

But AIAA membership is more than networking for employment opportunities. Membership also gives you insight to other industry trends—local, statewide, and national—that can improve your value as an aerospace professional.

As President of the new Houston Space Business Roundtable, I know the importance of networking within and outside the aerospace industry. The Space Business Roundtable is a non-profit organization re-created to provide a conduit for the aerospace industry to interact with the business community. From this exchange will result the increased commercialization of space-developed technology and further education of business, civic and academia leaders in their understanding of our unique industry.

I am inviting all Houston Section members and their guests to attend the next Houston Space Business Roundtable luncheon on Tuesday, September 19, at 11:30 at the Nassau Bay Hilton. Featured speaker will be Dr. Hum Mandell of the newly revised and funded Texas Aerospace Commission. It will be interesting to learn what plans the state has for its aerospace industry and how those plans will impact Houston aerospace professionals.

Please call Phyllis Thompson at 333-2209 to make your reservations. Cost of the lunch is \$12 for members and \$15 for non-members.

I also encourage you to renew your AIAA membership and to invite a colleague—former AIAA member or new—to join. It is, after all, a dynamic and uncertain time for our industry. We are all in this together. 

Section Roster

Bill Best

Your section recently distributed a Section Roster. If you have not received your copy, please notify a section officer and we will make sure that you obtain one.

Events

July Dinner Meeting

Roy W. Meinke

On Thursday, July 27, attendees at our monthly dinner meeting had the privilege of hearing Dr. Janice Voss, Mission Specialist, give a presentation on her second space flight, STS-63. The crew included James Wetherbee, mission commander; Eileen Collins, pilot; and mission specialists C. Michael Foale, Bernard Harris, Jr., and Cosmonaut Vladimir Titov. Dr. Voss keyed her speech off a video recording using film from the ground, the Orbiter, and the Russian Mir Space Station.

The primary mission objective was to perform a rendezvous and flyaround of the Mir. This was the last planned V-bar rendezvous approach to the Mir. A leaking RCS thruster problem had to be resolved prior to making the approach. Mir dynamic responses to Orbiter thruster action was only evident in the solar panels and an insulation blanket. Approach to within ten meters was much slower than the Mir crew anticipated. All went extremely well in both the approach and flyaround. Window viewing space was tight, as all crew members wanted to witness this close encounter.



Guest speaker
Astronaut Janice
Voss at the July
dinner meeting.

One of the most startling events during this mission was a Bang! within the Spacehab that coincided with the first thermal transient passing from shadow into sunlight. It was the sole occurrence and had no deleterious effects on the experiments or structure, but it did garner the crew's attention. **H**



Houston Section Chairman Don Probe, left; Richard Harris, Chairman of the Space Operations and Support National Technical Committee, center; and Immediate Past Chairman George Nield.

Houston Section at National Technical Association Conference

The National Technical Association held its 67th Annual Conference at the Galleria in Houston, Texas, July 20-22, 1995. The theme of the conference was "Global Information, Space, and Education." The AIAA Houston Section was represented by Don Probe, Chairman, and by three of its Coun-
cillors: Dr. David Criswell, Dr. Jill Fabricant, and Dr. Clayton Shadeck. Mr. Probe chaired the conference.

Dr. Criswell spoke on the benefits of a Lunar Solar Power System for supplying most of the earth's power requirements. He highlighted the rapidly increasing need for power on earth, the competitive cost of a system based on the moon to collect solar energy and transmit this power to earth by means of a microwave system.

Dr. Fabricant presented information on the aids available for the commercialization of NASA technology and the Johnson Technology Commercialization Center incubator that has been established to assist start-up companies. The focus of this NASA-sponsored organization is to assist in the commercialization of products and services based on NASA-developed technology.

Dr. Shadeck showed and commented on a 1986 video about the accomplishments of the Russian space program. The video was Russian-made and promoted the benefits to earth and to U. S.-Russian cooperation of their human space flight activities. Their first space station element, the Mir, was launched in 1986. Dr. Shadeck found it interesting that the video's computer-generated models of the Russian space station were remarkably like the actual station in orbit today, indicating that they had not departed from their original conceptual design. Also remarkable was the fact that the Russians had two space stations in orbit in 1986 (a Salyut and the Mir) and maintained both of them with a single crew which shuttled back and forth in a Soyuz capsule.

This conference was an excellent opportunity for members of the AIAA to share ideas about their respective fields of expertise. There were many questions from the audience and the presentations were well received. H

Cranium Cruncher

Lou Livingston
Editor

April Cruncher

An additional solution to the April Cruncher (the twelve-coin problem) was submitted by Prof. William E. Warren of Texas A&M. It was misrouted and did not turn up until after the June *Horizons* had gone to press. Our apologies to Prof. Warren.

June Cruncher

Let

$x^{x^{x^{\cdot^{\cdot^{\cdot}}}}} = c$
 (i.e., an infinite “stack” of x to the x^{th} = c).

For what range of x does the limit c exist?

Solution

As Mike Lounge (contributor of this Cruncher) notes, the “Aha!” for the problem is seeing that, since it is an infinite stack, one can write

$$x^c = C, \text{ or } x = C^{1/c}$$

To find the upper limit of x , determine the maximum value of x as a function of c . This occurs where

$$d(c^{1/c})/dc = 0$$

This is the same value of c at which

$$d(\ln(c^{1/c}))/dc = 0$$

$$\ln(c^{1/c}) = \ln(c)/c$$

$$d [\ln(c)/c]/dc = \{c[d \ln(c)/dc] - \ln(c)\} / c^2$$

and

$$d[\ln(c)]/dc = 1/c$$

lead to

(see CRUNCHER, page 7)

CRUNCHER (from page 6)

$$d[\ln(c^{1/c})]/dc = [1 - \ln(c)]/c^2$$

which, evaluated at zero, gives

$$\ln(c_{\max}) = 1$$

or

$$c_{\max} = e$$

The corresponding value of x is

$$x_{\max} = e^{1/e} = 1.444667861...$$

No correct solutions were received by the August 15 deadline.

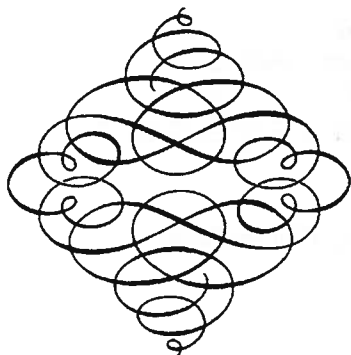
September Cruncher

Every month each of the six provinces of the kingdom of Sardonica paid taxes in proportion to its population. The payments were made in sacks of 16-ounce gold nuggets.

One month the finance minister reported to the king that one province was paying in 15-ounce nuggets, but was unable to identify the guilty province.

Furious, the king told the minister: "Tomorrow morning you shall place no more than 16 of the nuggets from the various sacks on the royal scale. If you cannot identify the guilty province when you learn the weight of these nuggets, you will be executed on the spot."

How can the minister save his life? Send your solutions by September 20 to Lou Livingston, 1911 Pepper Hill Way, Houston, TX 77058; e-mail to louliv@aol.com; or via office mail to Don Probe, LMES/B14.



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 Don Probe, LMES/B14, or e-mail to Jeff Sugano, SUGANO_JEFF@A1@ASD.

September

7 - Thursday

Executive Council meeting,
Center for Advanced Space Studies, 5 PM.

13 - Wednesday

Seminar, "New Program for Licensing NASA Technology," Hank Davis.
Johnson Technology Commercialization Center,
2200 Space Park Dr.
Reservations: 335-1250.

13-14 - Wednesday-Thursday

JSC/AIAA Operability Workshop.
"Bridging Commercial, Military, and Space Technologies."
Center for Advanced Space Studies, 8:00 AM.

18 - Monday

Input deadline for October *Horizons*.

19 - Tuesday

Space Business Roundtable.
"Current Commercial Initiative of the Texas Aerospace Commission;" Dr. Hum Mandell.
Nassau Bay Hilton, 11:30 AM.

21 - Thursday

- AIAA/AAS Monthly dinner meeting.
- Panel discussion celebrating the 100th American manned space flight.
- Space Center Houston - Silver Moon Cafe, 5:30/6:30/7:30.

(see CALENDAR, page 8)

CALENDAR (from page 7)

October

16 - Monday

Horizons inputs for November due COB.

19 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

26 - Thursday

Monthly dinner meeting.

Program TBD.

30-Nov. 3 - Monday-Friday

AIAA/NASA/Aerospace Corp.

International Conference on Integrated

Micro/Nanotechnology for Space Applications.

South Shore Harbour Resort and Conference Center.

November

9 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

13 - Monday

Horizons inputs for December due COB.

16 - Thursday

Monthly dinner meeting.

Program TBD.

30 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

December

7 - Thursday

Monthly dinner meeting.

Director's Reception.

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

18 - Monday

Horizons inputs for January due COB.

January 1996

18 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

22 - Monday

Horizons inputs for February due COB.

25 - Thursday

Monthly dinner meeting.

Program TBD.

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

February

15 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

22 - Thursday

Monthly dinner meeting.

Program TBD.

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

26 - Monday

Horizons inputs for March due COB.

March

21 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

25 - Monday

Horizons inputs for April due COB.

28 - Thursday

Monthly dinner meeting.

Program TBD.

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

TBD

Student Paper Competition.

CALENDAR (from page 8)

April

18 - Thursday

Executive Council meeting.
5:00 PM, Center for Advanced Space Studies.

22 - Monday

Horizons inputs for May due COB.

25 - Thursday

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

May

16 - Thursday

Executive Council meeting.
5:00 PM, Center for Advanced Space Studies.

23 - Thursday

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

28 - Tuesday

Horizons inputs for June due COB.

TBD

Annual Technical Symposium.

June

20 - Thursday

Executive Council meeting.
5:00 PM, Center for Advanced Space Studies.

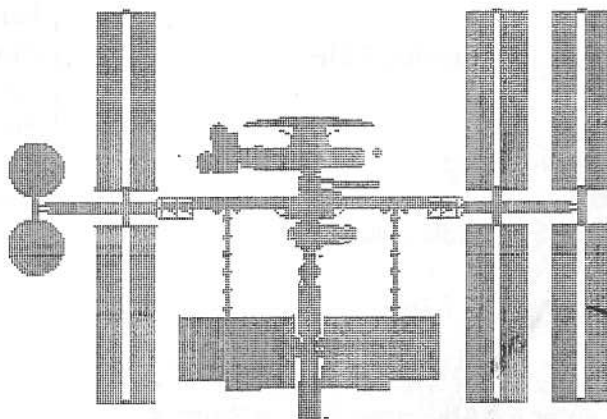
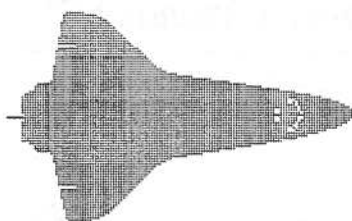
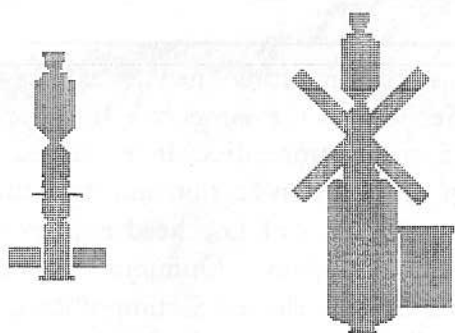
27 - Thursday

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

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Horizons



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DON PROBE
CHAIRMAN 1995-96

American Institute of Aeronautics and Astronautics

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

And The American Astronautical Society Annual Meeting

Thursday, September 21, 1995

CELEBRATION OF 100 US MANNED SPACEFLIGHTS

Introductory Remarks By:
Dr. ARNAULD NICOGOSSIAN
President AAS

PANEL DISCUSSION

Robert F. Thompson - Moderator
PANELISTS INCLUDE:
DAN BRANDENSTEIN
JOE KERWIN
VANCE BRAND

DINNER MEETING

SOCIAL: 6:00
DINNER: 6:30
PROGRAM: 7:15

Silver Moon Cafe / Space Center Houston

BUFFET: BEEF, CHICKEN, & SHRIMP

AIAA & AAS MEMBERS & SPOUSES	\$12.00
NONMEMBERS	\$15.00
AIAA STUDENTS/YOUNG MEMBERS	\$ 6.00
AIAA UNEMPLOYED MEMBERS	\$ 6.00

EMYRY ROBINSON
280-9119

TANYA BRYANT
483-1175
NASA

SARAH LEGGIO FOLLETT
282-3160
ALLIEDSIGNAL

CALL ONE OF THE ABOVE FOR RESERVATIONS.

NOTE: RESERVATION DEADLINE IS MONDAY, SEPTEMBER 18, AT NOON.
ANY CANCELLATIONS ARE REQUIRED PRIOR TO DEADLINE. NO-SHOWS WILL BE BILLED.



American Institute of Aeronautics and Astronautics
HOUSTON SECTION P.O. BOX 57524 WEBSTER, TEXAS 77598

THE
SPACE TRANSPORTATION TECHNICAL COMMITTEE
LUNCH & LEARN SESSION
ON
MULTI - PURPOSE BOOSTER OPTIONS

by
DAVID CRISWELL
DIRECTOR, INSTITUTE FOR SPACE SYSTEMS OPERATIONS, U. of H.

SEPTEMBER 13, 1995
JSC/BLDG. 17, ROOM 2037
11:30 TO 12:30

~BRING YOUR BROWN BAG~

FOR FURTHER INFORMATION CONTACT C. TEIXEIRA/EA63/X34647

AIAA Houston Section Organization - 1995/96

