

AIAA Horizons

Houston, Texas

January 1995

Chairman's Corner

George Nield, Chairman

Advances in computers and electronic communications are taking place at an incredible pace these days. The computational power of personal computers, and the kinds of information that are currently available to all those with a desk-top computer and a modem are truly remarkable. It seems that it is getting harder and harder to keep up with all of the latest happenings. Nevertheless, I feel that we all have an obligation to try to stay current on new developments that are having a major impact on our profession.

The leaders of the AIAA Houston Section have decided to make computers a key focus of our activities this year. So far, we have organized special seminars on the Internet and on computerized investing, with other activities planned for early next year. We have also undertaken several computer-related initiatives that we hope will be of benefit to our members.

First of all, we have arranged with AIAA Headquarters in Washington to mail us a computer disk each month containing information on our members. This means that for the first time, we will now have ready access to the names, addresses and phone numbers of all the members who live in our Section area. In the past, we have had to wade through zip-code-sorted mailing labels to double check whether someone was still a member of the Section. This should allow us to do a much better job of following up on address changes and other updates to make sure that they have been properly recorded. We will also have available such information as job title, company or organization, AIAA member grade, join date, and area of primary professional interest. We have successfully loaded this information into a computer database and now have the capability to do searches, sorts, and special reports for a variety of

purposes. For example, we can print out all the members who work for Lockheed, all the members who live in College Station, or all the members who have Guidance and Control as their primary professional interest. We hope that having this kind of information will allow us to plan our Section activities so that they will better meet the needs of our members.

Our second computer initiative had to do with electronic mail. We have put together a list of about 100 e-mail addresses for members who have provided them and plan to start sending out "AIAA News Flashes" about once a month, or whenever we have late-breaking news that might be of interest to our members. Previously, if we could out about a visiting scientist giving a presentation or an author or astronaut making an appearance after the newsletter had already gone to press, there was no way to get the word out. Now, we will be able to remind you about upcoming events and publicize activities that come up at the last minute. We recognize that not all of our members have access to electronic mail, so we don't plan to do away with more conventional means of communication like newsletters and meeting flyers. But this looks like a good way to provide a meaningful service to a significant number of our members, so we're going to give it a try. If you have an Internet e-mail address and would like to get on distribution for these notes, please send your request to Jim Oberg at jamesoberg@aol.com.

Our third computer initiative also relates to the Internet, specifically the World Wide Web. For those who might not be familiar with the World Wide Web, it can be thought of as a sophisticated linking of computer networks that allows a person to jump from one computer system on the Internet to another simply by pointing and clicking. By using widely available (freeware) programs such as Mosaic, one can easily access the NASA Strategic Plan, copies of press releases from NASA Headquarters, or the


(see CHAIRMAN, page 2)

CHAIRMAN (from page 1)

latest set of mass properties for Space Station Alpha. I am pleased to announce that the Houston Section now has its very own "Home Page" on the World Wide Web. As a result, people all over the world can now find out what's going on in the Houston Section. To get started, we have uploaded a list of officers, council members, and committee chairmen, along with their e-mail addresses; a schedule of upcoming events; and a list of all of the audio and video tapes that are available for checkout from our Section library. In the future, we hope to be able to include past copies of our monthly newsletter and other information of interest. The address for the Home Page is:

http://www.jsc.nasa.gov/AIAA/AIAA_Home.html

Our thanks to Chris Culbert for his help in getting us on-line!


I'm excited about these new programs and hope you are too. This Section is very fortunate to have a number of very enthusiastic people who are doing their best to provide interesting activities and services to the membership. If you have any questions, comments or ideas on how we can do things better, please give me a call at (713) 483-1364 or send an e-mail note to [gniell@jscprofs.nasa.gov](mailto:gniel@jscprofs.nasa.gov). I'd love to hear from you! 

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Section Adopts Mission Statement


George Nield, Chairman

After the completion of a process spanning several months, the Houston Section Council voted last month to adopt a mission statement to guide Section activities. The original idea was discussed at several Council meetings, and a preliminary version was prepared. It was then published in the November issue of *Horizons* and comments from members were solicited. After incorporating suggested changes, the statement was approved at the December Council meeting. The final version is printed on the back page of this newsletter. 

Welcome, New Members!

George Nield, Chairman

Since the start of the Section year in June 1994, 23 new members have joined the Houston Section of the AIAA. They are: Stephen Baker, Andrew Benjamin, Alan Carle, Bonnie Cooper, Fred Davis, Manuel Diaz, Steve Fitzgerald, Masatada Furuhashi, Stanley Galanski, James Hall, Charles Halliman, Jim Hyde, Donald Kessler, Ronald Kahl, George Mitri, Dennis Pate, Carlos Sampaio, Scott Smith, Vijay Soodeen, Makoto Sugano, Virginia Torczon, Ian Walker, and John Whiteley.

We're pleased that you have decided to join us as members of the largest and oldest aerospace professional society. If you'd like to get more involved in Section activities, feel free to contact one of our officers, council members, or committee chairmen. Welcome aboard! 

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 Section officers, are those of the authors and do not necessarily represent a position of AIAA or of the Houston Section. Please address all correspondence to the Vice-Chairman, Operations, Mike Begley, LESC/C87, or to the Editor, Lou Livingston, 1911 Pepper Hill, Houston, TX.


Potential Seen for New TCs

**George Nield, Chairman
and Kam Lulla, Vice-Chairman, Technical**

Now that we have the capability to analyze the professional interest areas of our members (see this month's Chairman's Corner), it is interesting to take a look at which disciplines are most heavily represented. Here are the top twenty areas, as indicated by our members on their application or renewal forms:

<u>Interest Area</u>	<u>Interest Area</u>
Space Systems	94
Management	81
Space Operations & Support	70
Marine Systems & Technology	
62	
Space Transportation	47
Astrodynamics	44
Life Sciences & Systems	41
Guidance, Navigation & Control	34
Space Sciences & Astronomy	26
Software Systems	25
Air Transportation Systems	24
Structural Dynamics	23
Applied Aerodynamics	22
Computer Systems	21
Structures	20
Artificial Intelligence	20
Liquid Propulsion	19
Materials	15
Flight Simulation	15
Balloon Technology	15

We currently have local Technical Committees for some of these areas, but certainly not for all of them. Having a local TC allows members with common professional interests to get together to discuss on-going research, share information on programs of interest, and find out about the latest developments in the field. One of the most popular activities for our local TCs is informal "Lunch & Learn" sessions. If you would be willing to help organize a new TC for one of the above areas (or any other area), please

contact Kam Lulla, Vice-Chairman, Technical, at (713) 483-5159. We would be happy to provide you with a list of the names and phone numbers of potential committee members based on their primary professional interest area. 

Who's Who


George Nield, Chairman

Cohen Named Honorary Fellow


The AIAA has named Aaron Cohen of Texas A&M University as one of its 1995 Honorary Fellows. This is the highest accolade bestowed by AIAA and its Board of Directors. It is presented only to "exceptional individuals who embody the highest standards possible in the aeronautics and astronautics field." No more than three individuals are selected each year.

Cohen holds a B.S. in Mechanical Engineering from Texas A&M and an M.S. in Applied Mathematics from Stevens Institute of Technology. He is also the recipient of an Honorary Doctor of Engineering from Stevens and an Honorary Doctor of Humane Letters from the University of Houston-Clear Lake. Some of the key positions he has held during his distinguished career in aerospace are Manager of the Space Shuttle Orbiter Project, Director of Research and Engineering, and Director of the Johnson Space Center.

He is a long-time supporter of both AIAA and the Houston Section.

Congratulations, Aaron! 

Cox Selected as AIAA Fellow

Kenneth J. Cox has been selected as one of 33 AIAA Fellows for 1995. Selection is limited to "those who have not only distinguished themselves in the field of aerospace, but who show strong potential for leadership in the future." One Fellow is chosen for every 1,000 voting members of the Institute. 

25-Year Members



Dr. George Nield, Section Chairman, presents certificates and pins to Mac Parks, Program Chairman, and Lou Livingston, Newsletter Editor, to commemorate 25 years of membership in AIAA. H

Employment Assistance News

Michael Begley, Vice-Chairman, Operations

Aerospace Job Resource Center To Close

The local Aerospace Jobs Resource Center on Bay Area Blvd. is closing on December 31. Another center at 1621 Pine St., Suite A, in Dickinson will continue to offer similar services, but not specifically for aerospace workers. Their number is 337-5164. H

IEEE Workshop

On Saturday, January 21, the IEEE will host a Career Transitions Workshop at the University of Houston-Clear Lake Bayou Building in Room 1435. Call Don Cravey at 483-0148 by January 6 to pre-register or for more information. The cost is \$5 for IEEE members and \$10 for others. The workshop is from 9:00 AM to 4:00 PM. Lunch is included. H

AIAA Joins With Job Banks USA

As part of its employment assistance program, the AIAA has entered into an associate partnership with Job Banks USA, a comprehensive employment service with a national employment database. This database holds career records of people in virtually every profession. Organizations use this database to recruit employees for the full range of job openings.

The AIAA partnership allows AIAA members to take advantage of the Job Banks services for \$43.65 for a full year, a 40% discount. For an additional \$50, you can select the Career Advancement Series Plus to receive benefits from the Career Advancement Service and a customized top-quality résumé highlighting your skills and experience.

Job Bank members receive the following benefits:

- Conversion of up to two complete résumés into personalized electronic career records maintained in the Job Banks database for one year.
- A toll-free number to make database changes and updates any time during the year.
- Unlimited referrals to Job Bank USA clients, with a guarantee that your résumé will not be released to employers without prior approval.
- Quarterly newsletters with job search techniques.
- The Career Resources Catalog, with special discounts on publications, services, and other resources for effective career management.

For more information, call 1-800-296-1USA and mention your AIAA affiliation. H



On-Line Job Listings

There are many job resources available on-line, both through Internet access and via bulletin board services reachable via modem. The Internet's Usenet news groups misc.jobs and tx.jobs list thousands of jobs, mostly targeting computer programming positions. Hundreds of new postings are added daily.

Harold Lemon of Union City, CA has assembled a list of on-line jobs listings. It can be obtained by calling Online Opportunities BBS at 610-873-7170 or sending e-mail to hotlist@jobnet.com

A sample of the listings provided follows:

BBS Name/Location

Comments

Number

Max. Baud Rate

SBA-Online

800-697-4636

9600

Small Business Administration BBS. Loaded with information. No fee required.

AVADS-BBS (DoI)

800-368-3321

9600

U.S. Dept. of Interior Job Announcements. The Automated Vacancy Announcement Information Center provides information on job vacancies from ten bureaus at the Dept. of Interior. No fee required. Also accessible via FedWorld BBS Gateway (DD132).

Career Link, Inc.

Phoenix, AZ

800-453-3350 (voice)

2400

Job bank of USA and overseas jobs. Fee required. Updated weekly. Must call for user id, password, and 800 number for accessing BBS.

D.I.C.E. National Network

Sunnyvale, CA

408-737-9339

9600

Newark, NJ

201-242-4166

9600

Des Moines, IA

515-280-3423

14400

Chicago, IL

708-782-0960

9600

Dallas, TX

214-782-0960

9600

Excellent for nationwide contract and permanent jobs. Job postings from 80+ agencies. Several new features. Updated several times daily. No fee required.

OPM Atlanta

Atlanta, GA

404-730-2370

2400

Federal Job Info Center Atlanta operated by OPM has online job search facility and downloadable files for all regions. Very nice! No fee required.

JOBBS

Roswell, GA

404-992-8937

240

Operated by Alpha Systems, Inc. contains job listings in all areas and all positions. Also has listings of recruiting firms and companies. No fee required.

There's no Soy Ooze in "Soyuz"

**James Oberg
Councillor**

In the delightful film "Young Frankenstein," Marty Feldman ("Igor") insists to Gene Wilder ("Dr. Frankenstein") that his name be pronounced the way he wants, to sound like "Eye-Gore." But anyone who knows their Tolstoy realizes that real Russians pronounce it "Ee-Gore." And in the final analysis, the people who own the names should determine how they are pronounced.

So it's a good sign that Americans working the U.S./Russian space deal have gradually been getting their Russian pronunciations right. People rarely say "MURR" for Mir ("Meer") any more, although they still tend to capitalize it all ("MIR") as if it were an acronym and not simply a proper noun.

And many Russian space names are fairly straightforward, with a common sense American-eared "first guess" being fairly close. That works fine for names such as Progress, or Raduga, or Zenit, or Kvant, Kristall, Priroda, and Spektr—even though the stressed syllable doesn't always come out quite right.

But "Soyuz" is a problem. The "y" is deceptive. In the standard orthography for transliteration from Cyrillic into Latin letters, the "yu" stands for a single Russian letter, so it can't be split. This makes the syllables So-Yuz, not Soy-Uz.

There's a lot of leeway in pronouncing each syllable. "So" with a long "o" seems straightforward, but since the spoken stress is on the second syllable, Russians tend to slur the unstressed "o" into a neutral "ah." "Yuz" has a long "u," as in "ooze," not a short "u," as in Buzz. Also in spoken usage, voiced final consonants tend to become unvoiced (the "z" shifts to more like an "s"), but this isn't too important.

Try: for "Soyuz," say "sah-YOOZ," or if you're even more ambitious, "sah-YOOSS." But please, drop the "Soy" Sauce, and don't make Soyuz rhyme with Coy Fuzz.

This troublesome "y" always used to confuse Jules Bergman, the ABC-TV space reporter.

Whenever he talked about the Soviet launch site at Tyuratam, he made it four syllables: TIE-YOUR-A-TAM. It was supposed to be T'YOU-Rah-TAM, only three syllables. And since the Soviets deceptively called it "Baikonur" decades ago, people have gotten used to using the false name anyway.

Why does it matter? Proper pronunciation of other people's names is always a sign of respect and it will be appreciated. It's worth the effort.

Another example: generations of English-speakers pronounce Vladimir and Boris with stress on the first syllable. The Russians stress them on the second syllable. It may not seem like a big difference but try shifting stress on some American multi-syllabic first name and see how it grates on our ears.

Even though Sergey Krikalev is a very diplomatic and easy-going man, and has probably gotten used to Americans mispronouncing his name, try getting it more authentic. His name ends in a variant of "e" that sometimes has an umlaut over it and is pronounced "yoh" or "yaw," and is always the stressed syllable. So it's not KREE-kall-ev, it's closer to krikal-YOFF (remember how voiced consonants become unvoiced at the ends of words). The same goes for STS-71 passenger Anatoliy Solovev (sah-lav-YOFF), Moscow MCC ("TsUP" with a long "u") deputy Vladimir Solovev (vla-DEEM-er sah-lav-YOFF), Soviet space program founder Sergey Korolev (kah-rah-YOFF), and even ex-premier Nikita Khrushchev (khroosch-YOFF).

"Energia" has a hard "g," to rhyme with Karmann Ghia. And they've changed the initials from "NPO" to "RKK" when they "privatized" in mid-1994. Meanwhile, that e-umlaut letter also appears in the middle syllable of RSC Energia's director, Yuri Semenov (so the proper pronunciation is "Simm-YAWN-off"), and also with chief RKK-E interpreter Boris (ba-REESS) Artemov (art-YAW-moff).

"Buran" has a flat "a," as in "don," not a wide whiney "a" as in "ran" or "Anne." The "u" is long ("boor"), not short ("burr"). And stress the second

(see Soyuz, page 7)

Sovuz (from page 6)


syllable. As the ancient Romans said, "De mortuis nil nisi bonum" (look it up).

Don't confuse "Kazakh" and "Kazak"—the first is the ethnic Turkic inhabitants of Kazakhstan, and the second is the Russian word for "Cossack", ethnic Slavs who were famed horsemen. Kazakhs now own Baikonur, so treat them nicely.

From old "Space Race" history, there's the "Voskhod," often mispronounced (and sometimes even misspelled) as VOSH-KOD. Stress the second syllable and say it "vahss-KH'OTE," to rhyme with "Vostok" (vahss-TOKE). And going WAY back, the "u" in "sputnik" is long, as in "spook," not short, as in "sputter."

The rocket and the communications satellite called "Molniya" are pronounced "MOLE-nee-ya," not "mole-NY-a" with a long "i" in a stressed second syllable.

The Russians call their cosmonaut training town Zvyozdny Gorodok, or "Starry Town." Back in ASTP days it came to be called "Star City," a somewhat too overblown term for its municipal and celestial status, but the misnomer has stuck. It can be referred to simply as "Zvyozdny" (pronounced "Z'V'YOZ-nee"), or "ZG"—or you probably can go with the common, unambiguous usage and stick with Star City, since it's so widespread there's probably no stamping it out. And please, also, there's no second "r" in Gagarin (no more Gargarin, please!).

Again, why bother to try to get these little things right? Getting them right marks you as somebody who takes the trouble to understand other people and other cultures, and it places you among the real "cognoscenti" (pronounced, of course, "cone-yah-SHEN-tee") of Russia and its space program. Getting it wrong suggests the opposite, I would humbly suggest. Take your choice. 

Correction

The wallet card in the December issue had a few typographical errors. Please discard that card and use the one in this issue. We apologize for any confusion this may have caused.

Events


November Dinner Meeting

Lou Livingston
Editor

About 40 people showed up November 15 for a most interesting and informative talk by James R. French, AIAA Distinguished Lecturer, on Low-Cost Space Transportation. Mr. French touched briefly on low-cost concepts such as the "big dumb booster;" high production rates of a single booster, clustered if necessary; and the shuttle, which started as a low-cost booster but didn't turn out that way.

He then turned to his principal topic, the DC-X program. Operations were emphasized throughout as the central problem; in fact, the DC-X program was consciously intended to demonstrate operations, not to achieve a high mass fraction. The goal was a small crew and a rapid turnaround. A seven-day turnaround was actually demonstrated.

The DC-X is a vertical takeoff, vertical landing vehicle using four modified RL-10 engines. It lands on four pads. The vehicle is largely autonomous, but abort modes are controlled from the ground control center which is contained in a single trailer.

Five flights demonstrated nearly all of the program objectives before the vehicle suffered minor damage. Repairs are in progress, and the initial flight tests are expected to be completed in February 1995. The vehicle will then be turned over to Marshall Space Flight Center for a second series of tests. 

James French, AIAA Distinguished Lecturer, speaking at the November dinner meeting. He gave a very interesting presentation on low-cost space transportation and showed a video of one of the test flights of the DC-X.



Cranium Cruncher

Lou Livingston, Editor

November Cruncher

No solutions to the November Cruncher had been received when the December issue had to go to press. Since then, but within the deadline, we have solutions by Naz Bedrossian of Draper-Houston and James Walker of the Southwest Research Institute. Naz Bedrossian won the coin toss and the free dinner.

December Cruncher

Both the area and the volume of a certain sphere are four-digit integers times π . What is the radius of the sphere?

Solution

If r is the radius, both $4r^2$ and $4r^3/3$ are four-digit numbers. Then

$$250 \leq r^2 < 2500$$

and


$$750 \leq r^3 < 7500$$

so that r is between 16 and 19. Since 18 is the only integer in this range whose cube is divisible by 3, the radius is 18.

Correct solutions were received from Frank Baia-monte, Norm Chaffee, Sandip Dutta, Robert Fogt-man, and Christopher Varner. A random pick from this list awards the free dinner to Norm Chaffee.

January Cruncher


The year 1961 has the curious property of reading the same upside down. Starting with the year 1 A.D., how many times has this been true, and when will it be true again? Roman numerals don't count.

Send your answers to Mike Begley, LESC/C87, or e-mail to louliv@aol.com by January 26. A random selection from the correct solutions wins a free dinner at a Houston Section meeting. 

NASA Facility Tour a Success; Second Planned

Michael Begley, Vice-Chairman, Operations

Eleven people attended a November lunch and learn tour of the Systems Engineering Simulator, hosted by NASA Section member Andy Sylvester. Andy provided a tour through the computer facilities, Shuttle cockpits, MMU trainer, and the Space Station cupola. Wake Shield rendezvous graphics were displayed in the Shuttle aft cockpit. He also gave us an overview of the lab, its history, and a discussion of what potential lab customers need to do to use this facility.

On January 18, a lunch and learn tour of the Weightless Environment Training Facility will be offered. Please call Michael Begley at 333-6996 for more information, and to RSVP. Attendance will be limited to 12 people, and NASA badges will be required. 

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, LESC/C87, or to Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

January

19 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

23 - Monday

Horizons inputs for February due COB.

(see CALENDAR, page 9)

CALENDAR (from page 8)

26 - Thursday

Monthly dinner meeting.

Program TBD.

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

February

16 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

21 - Tuesday

Horizons inputs for March due COB.

23 - Thursday

Monthly dinner meeting.

Program TBD.

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

TBD

Space Logistics Symposium.

March

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.

27 - Monday

Horizons inputs for April due COB.

TBD

Student Paper Competition.

April

3-6 - Monday-Thursday

Life Sciences & Space Medicine Symposium.

20 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.



24 - Monday

Horizons inputs for May due COB.

27 - Thursday

Monthly dinner meeting.

Program TBD.

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

May

18 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

22 - Monday

Horizons inputs for June due COB.

25 - Thursday

Monthly dinner meeting.

Program TBD.

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

TBD

Annual Technical Symposium.

June

15 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

22 - Thursday

Monthly dinner meeting.

Honors and Awards Banquet.

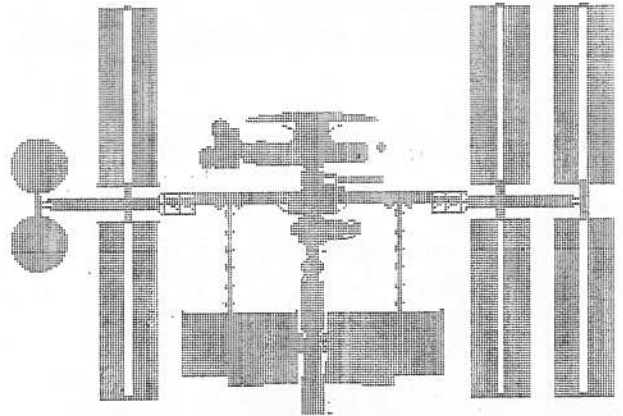
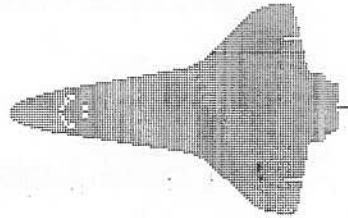
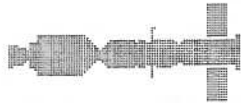
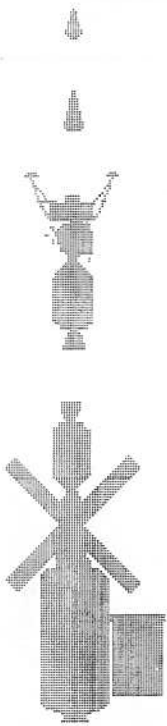
Gilruth Center, 5:30/6:30/7:30.



Horizons

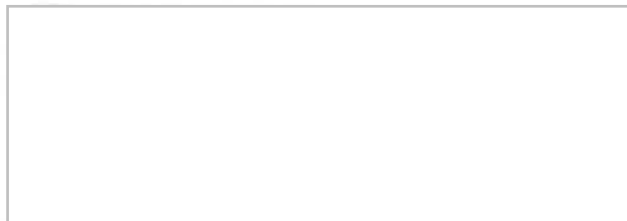
The mission of the Houston Section of the AIAA is to promote the advancement of the aerospace profession, with special emphasis on the following tasks:

- To provide the membership with opportunities for continuing education, professional growth, and recognition for their accomplishments.
- To stimulate the exchange of information within the scientific and technical community.
- To provide support and encouragement for students in learning mathematics, science, and engineering.
- To assist the general public in understanding the benefits of aerospace systems and technology.



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

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GEORGE NIELD
CHAIRMAN 1994-95

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

DINNER AT THE FLIGHT MUSEUM



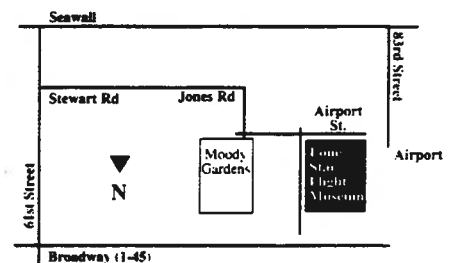
Friday, January 27, 1995
2002 Terminal Dr.
Galveston, Texas

Social & Museum Viewing: 6:00
Dinner: 7:00
Guided Tours: 8:00

MENU

Beef & Chicken Fajitas
(Catered by Ninfa's)
Dinner Cost - \$15.00

Join AIAA at the Meeting and Obtain
Free Dinner Certificate



FRAN JAMISON
333-6277
LOCKHEED

TANYA BRYANT
483-1175
NASA

SARAH LEGGIO
282-3160
ALLIEDSIGNAL

CALL ONE OF THE ABOVE FOR RESERVATIONS
DEADLINE IS WEDNESDAY, JANUARY 25, AT 12:00 NOON.

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

FAMILY, FRIENDS, & STUDENTS ARE INVITED

DINNER RESERVATIONS ARE NOT REQUIRED FOR ATTENDING THE 8:00 GUIDED TOURS



American Institute of Aeronautics and Astronautics

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

AIAA Guidance, Navigation & Control Committee

Presents a

Lunch & Learn Seminar

Description of the Mir RCS Automaneuver Logic

Rob Hall

The Charles Stark Draper Laboratory

With recent joint efforts between the Americans and the Russians in the Space Shuttle and Space Station programs, information has been received concerning the nature of the control system algorithms utilized on the Russian Mir space station. An item of particular interest is the manner in which the Mir accomplishes rotational maneuvers on-orbit with its Reaction Control System (RCS) thrusters. It is necessary to understand the maneuver algorithm in order to predict Mir angular excursions in the presence of orbiter plume disturbances during orbiter/Mir separation.

A presentation is given describing the Mir RCS rotational maneuver algorithm. Unlike the Euler axis rotation utilized on the orbiter, the Mir algorithm is a fuel optimal trajectory based on the assumption of an axisymmetric body. The Mir maneuver trajectory is shown both graphically and mathematically, with a discussion also included concerning an approximate solution to the Russian non-linear maneuver equations.

DATE: Wednesday, February 1, 1995

PLACE: Gilruth Center (Room 206)

TIME: 11:45 A.M.

For More Information, Please Contact

Dr. Naz Bedrossian 333-2127

Dr. Jayant Ramakrishnan 333-4419



American Institute of Aeronautics and Astronautics

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

**AIAA Guidance, Navigation & Control Committee
and
NASA JSC Navigation Control & Aeronautics Division**

are proud to present

**MATLAB Real Time Workshop & Selected Toolboxes
Seminar**

(1 Day Presentation and Demos)

by

The Mathworks Inc.

on

Thursday, March 30, 1995 at LPI Lecture Hall

9:00 A.M - 4:00 P.M.

All are Invited!!!

For more Information, please call

**Dr. John Sunkel 483-8591
Dr. Naz Bedrossian 333-2127**



American Institute of Aeronautics and Astronautics

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AIAA Education & Career Enhancement Committee

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A two part Seminar on INTERNET

(i) How the Internet Works & the Tools used to Navigate it

by

Robert D. Beal, Draper Labs

(ii) DOING BUSINESS ON THE INTERNET

by

**Dr. Clifford R. Kurtzman
President and CEO
The Tenagra Corporation**

**on Wednesday, February 15
at the LPI Lecture Hall at 6:45 P.M.**

For More Information, Please Call

**Dr. Jayant Ramakrishnan, 333-4419
Dr. Naz Bedrossian, 333-2127**



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The AIAA is pleased to present

A Tour of the Weightless Environment Training Facility

Wednesday, January 18, 11:30 am

**AIAA members and non-members are invited,
but NASA badges are required.**

Meet at the East entrance of NASA Building 29.

**Attendance is limited to 12 people.
Call Michael Begley, 333-6996, to confirm your reservation.**



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- ▼ Space Life Sciences Contributions to Education
- ▼ EVA Technology Applied to Personal Protective systems


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**Wallet Reference Card Update
1994-95**

The attached wallet card contains updated names, addresses, and phone and fax numbers for Houston Section officers, councillors and committee chairmen. Please save for future reference.

First cut along the outside lines. Then fold at the ticks on the side of the card, starting at the bottom.