

AIAA Horizons

Houston, Texas

October 1994

Chairman's Corner

Dr. George Nield
Chairman

I KNOW THAT MANY OF YOU have been exposed to the principles of Total Quality Management (TQM) in one form or another over the years. Perhaps you took some special classes, or you read about it in books or magazines; you may even have seen it implemented in your workplace. Several years ago NASA made an attempt to incorporate TQM into many of its activities, and one can still find numerous metrics being tracked, and a proliferation of "critical process teams" analyzing the things we do and the way we do them. One can argue about the relative merits of TQM (and many do!), but most people would probably agree that trying to apply the TQM philosophy to an organization can at the very least result in some interesting insights.

For me, there is one particular TQM concept that stands out as an especially valuable tool for helping an organization improve, and that is the emphasis on products and customers. Whether you are talking about a multi-billion-dollar defense contractor, a government agency, a private school, or a professional society, it is important for people to know what the output is supposed to be (What is the product?), and who the intended beneficiary is (Who is the customer?). Once there is agreement on these two items, it is possible to formulate a mission statement, which can articulate what the organization is trying to do; what its "reason for being" is. Developing an agreed-to mission statement can be a very beneficial step for an organization; it can eliminate confusion about roles, goals, and philosophies; and it can really focus the energies of a group on what things are really important.

At one of our Section Planning Meetings this summer, I asked our section officers and council members to help me try and identify the "products"

and "customers" for our local AIAA section. First we did some brainstorming, where we wrote down all of the activities that we could think of that the section sponsored or was involved in (our products). We also tried to describe who the main beneficiary was for each activity (the customers). (Obviously, we hope that section members will benefit from all of our activities, but in some cases, our "target audience" was broader than just section members.) Each person then "voted" for the activities that they thought were "most important". After we tallied up the votes, here's what we came up with:

<u>Activity</u>	<u>Customer</u>
1. Monthly Dinner Meetings	Technical Community/ Spouses
2. Annual Technical Symposium	Technical Community
3. Section Newsletter	Section Membership
4. Lunch & Learn Sessions	Technical Community
5. Student Paper Competition (Tie)	AIAA Student Members
5. Honors and Awards (Tie)	Technical Community (see CHAIRMAN, page 2)

Horizons is the monthly newsletter of the Houston Section of the American Institute of Aeronautics and Astronautics. It is created by members of the Houston Section and reproduced at the Houston offices of Lockheed Engineering and Sciences Company. Please address all correspondence to the Vice-Chairman, Operations, Mike Begley, LESC/C87, or to the Editor, Lou Livingston, 1911 Pepper Hill, Houston, TX.

CHAIRMAN (from page 1)

So based on this exercise anyway, these were the AIAA Houston Section activities that we considered to be "most important." We need to be careful that we don't take the results too seriously; after all, there were some serious flaws in our process: only a handful of people participated (and certainly not a random sample at that!), we didn't have very much time to spend establishing the ground rules or discussing the pros and cons of the various activities, and we restricted the voting to things that the section is already doing, rather than things we *should be doing*. But it's a start. Would you have voted the same way? What activities would you consider to be our "most important"?

Over the next few months, I'd like to see if we can get a consensus on these questions, and then try and put together a mission statement that would help us to focus our section activities. In order for us to be successful, I'm going to need your help. If you have any opinions on all of this, please give me a call at (713) 483-1364 and let me know what you think. If you have access to electronic mail, you can write me a note at gnield@jscprofs.nasa.gov. I'd love to hear from you!

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Committee News

TC World

Kamlesh Lulla
Vice-Chairman, Operations

WHAT'S NEW IN THE TECHNICAL COMMITTEE (TC) world? I would like to thank all the TC chairs who have agreed to serve the Section this year. Welcome aboard! We are still looking for a few volunteers to chair the TCs not listed below. Following is the list of TC chairs as of September 7, 1994:

- Automation and Robotics: Dr. Zafar Taqvi
- Communications and Tracking: Dr. Kumar Krishen
- Fluid Dynamics: Dr. Rakesh Bhargava
- Guidance, Navigation and Control: Dr. Jayant Ramakrishnan
- In-Space Imaging and Astronaut Observations: Dr. Kamlesh Lulla (acting)
- Life Sciences, Space Processing and Human Factors: Dr. Michael Stanford
- Materials, Structures and Dynamics: Gillian Parker

We are still waiting to hear from some other invitees. If you would like to assist in this activity, please call us. We want you to get involved!

Retreat for TC Chairs

I am planning to organize a short "retreat" for all the TC chairs so we can get together and plan our activities for the rest of the year. I am working with the Center for Advanced Space Studies (CASS) to use their facilities. I will contact each one of the committee chairs and get your schedules so that we can come up with a date and time in early October for this retreat. One of the main items to be discussed will be the structure of our Annual Technical Symposium.

(see TC WORLD, page 3)

TC WORLD (from page 2)

New TC Being Formed

Mr. Charles Teixeira has agreed to form a Space Transportation TC. This committee will mirror the National TC on the subject. Mr. Teixeira is a member of the National TC and will chair the local TC.

Lunch & Learns

The In-Space Imaging and Astronaut Observations TC held its first Land L seminar on July 20, 1994. Dr. James Aber, Professor of Earth Science and Remote Sensing at Emporia State University, Kansas, gave an excellent presentation on Landsat image applications for sites in Poland and Iceland. There were about fifteen participants. We encouraged them to explore other Houston Section activities.

Dr. Jayant Ramakrishnan is organizing his first seminar for the Guidance, Navigation and Control TC very soon, Stay tuned. **H**

Internet Intro

Jayant Ramakrishnan
Education/Career Enhancement Chairman

THE HOUSTON SECTION Education and Career Enhancement Committee is proud to offer an introduction to the Internet to all its members. The idea of the information superhighway has caught everyone's attention and we believe that it is in our interest to keep up with these new trends. NASA Headquarters and JSC maintain home pages on MOSAIC. ISSA mass properties and news bulletins are available for downloading from these sites.

Jay Williams of Neosoft, a Houston-based Internet services provider has kindly consented to provide this FREE seminar. The thrust of this presentation is to acquaint AIAA members with the power of tools such as MOSAIC, GOPHER, Usenet News, E-mail, FETCH and World Wide Web (WWW) to name a few. The seminar is tentatively scheduled for Tuesday, November 8. For more information, e-mail Naz Bedrossian at naz@mickey-csdl.jsc.nasa.gov or call 333-2127. **H**

Apollo 11 Redux

James E. Oberg

THE RECENT BLIZZARD of Apollo 11 anniversary programs was a fine tribute to that historical achievement of the American space program. At the same time, some of them also displayed the sloppy distortions and revisionist dramatizations that have come to characterize much of television journalism.

Since spaceflight has always been an esoteric subject with a relatively short "history" and usually only superficial news coverage, misrepresentations are particularly common, even if by accident. Catching them and complaining about them is harder. But an effort must be made both to discourage future historical errors and to encourage programs that take the time to get things right.

There's no need to exaggerate the inevitable innocent bloopers that any human effort is prone to. On July 20, CNN identified animation of a moon-walking astronaut as depicting Apollo 11 when in fact his spacesuit had red leg stripes not introduced until Apollo 13. An announcer on a PBS show read "Apollo 11" as "Apollo II" and pronounced it "Apollo Two." That's life.

Such gaffes even struck the White House during the July 20 ceremony honoring the Apollo 11 astronauts. In an otherwise respectable speech, President Clinton related in his folksy style how "on the third day" Neil Armstrong and Buzz Aldrin's Eagle lunar module descended toward a dangerous boulder field and Mr. Armstrong had to take control. But Since July 16, 1969, was the first day of the flight, the landing on July 20 actually occurred on the fifth day. Well OK, Mr. Clinton wasn't too far off.

It's the serious distortions of space history that characterized many of the anniversary documentaries that should give us pause. They included the following:

To compress events, Mr. Armstrong's comments about making "One small step" have often been matched with video of him dripping down from the lunar module ladder. Actually, he landed on one of (see APOLLO, page 4)

APOLLO (from page 3)

the vehicle's footpads, made several technical comments, jumped back up on the ladder to make sure he could, and only after that did he make the "small step" onto the moon. The rearranged video completely misrepresents what he meant by "one small step." For similar time compression, the dozens of words spoken immediately after landing by the crew are edited out, so that viewers get the false impression that "Tranquillity Base here, the Eagle has landed" were the *first* words from the moon.

One of the worst offenders among the anniversary shows, Turner Broadcasting System's "Moon Shot," used a recently released Russian film clip of burning men running from a launching pad fire to illustrate a 1969 Soviet moon-rocket explosion, with a narrator's reminder of the dangers of spaceflight. The horrible footage was actually from a military missile mishap in 1960 that killed 165 men, but had nothing to do with the Russian space exploration program. The "Moon Shot" producers were told this by the film's Canadian supplier, yet evidently decided to misrepresent the event for dramatic effect, even though nobody was killed in the actual 1969 explosion supposedly depicted in the sequence.

To stress the "ordinary humanity" of excited space workers, one of the Apollo 11 films, the Oscar-nominated 1990 "For All Mankind," showed Mission Control erupting in cheering, flag-waving and cigar-lighting right after the Apollo 11 landing. The historical truth is that the controllers stuck to their jobs, and the film clip that was used really shows them celebrating four days later, after the successful splashdown of the crew and the end of their official responsibility.

Also for the sake of visual impact and dramatic effect, film has often been misrepresented. Viewers were told they were seeing authentic footage when they weren't. Both in "For All Mankind" "Moon Shot," a striking view of the reentry plasma trail behind a descending Gemini capsule was presented as the rocket plume of an Apollo capsule heading for the moon. The film invoked a marvelous image of speed across Earth's surface, but Apollo 11's Saturn

booster actually left no trail, and in fact there was no view in that direction from the spacecraft.

"Moon Shot" was guilty again when it used views of a Gemini splashdown to represent a Mercury splashdown. The difference is that Mercury capsules landed vertically beneath a single parachute while Gemini capsules were slung horizontally from two separate lines.

To emphasize the dangers of early manned space shots, "Moon Shot" included sequences of rocket explosions. Most of the explosions were identifiable as Jupiter and Thor rockets, which had no connection at all with the Mercury program. But here they were presented as unsuccessful Mercury tests.

To show the 1967 fire inside the Apollo 1 spacecraft, "Moon Shot" used film from a Gemini mission looking outside at the flames of reentry. Astronauts Gus Grissom, Ed White and Roger Chaffee died in the original tragedy, and accurate photojournalism was murdered in the recent documentary.


Clearly programs such as "Moon Shot" and "For All Mankind" were most interested in providing entertainment, not recounting historical events. Accuracy was repeatedly sacrificed. This fast-and-loose approach certainly is acceptable when the film is entertainment, not documentary, such as the delightful Hollywood version of "The Right Stuff," in which all pretense of respecting the eponymous book's historical accuracy was subordinated to clear-cut visual stereotypes and amusing oversimplifications. But when programs pose as "true history" and are presented as documentaries, a higher standard of authenticity should be required.

Fortunately a few of the Apollo 11 documentaries met that higher standard—and managed to be entertaining as well. The Discovery Channel's "One Giant Leap," for instance, was strikingly true to history—it used flight film to illustrate its story line, rather than vice versa. Where authentic video was not available, experts were shown describing the events. The impression of solid authenticity was well-deserved. H

Who's Who

Chang-Diaz Named to Tether Flight

FRANKLIN CHANG-DIAZ, currently serving as Houston Section Treasurer, was recently named as the payload commander for the upcoming reflight of the Tethered Satellite System. As payload commander for STS-76, he will be involved in the early planning for that mission, currently scheduled for February 1996 on the Space Shuttle Columbia. Also on the manifest for that flight will be the United States Microgravity Payload-3.

Chang-Diaz was born in San Jose, Costa Rica. He holds a B.S. degree in mechanical engineering from the University of Connecticut and a Ph.D. in applied plasma physics from the Massachusetts Institute of Technology. 



Astronaut Franklin Chang-Diaz, mission specialist, on the middeck of Space Shuttle Atlantis during the STS-46 mission.


Events

Virtual Reality Workshop

Zafar Taqvi
Automation & Robotics Chairman

A TOPICAL WORKSHOP on Virtual Reality will be held on November 30-December 2, 1994, at the JSC Gilruth Center. It is an international workshop with most of the presentations from Japan, Italy, the United Kingdom and Australia. There will be three state-of-the-art tutorials on "Software Tools in VR," "Display Technology," and "Art of Sensing" on the first day. The tutorials will be followed by two days of presentations on displays, rendering, sensory feedback, tracking sensors and applications.

The event is organized by the Robotics Measurement Technical Committee of IMEKO, a Budapest-based Federation of Instrument Societies, and the Clear Lake Council of Technical Societies. The workshop is hosted by the JSC Automation and Robotics Division. The IEEE Galveston Bay Section is a cosponsor of the event. The Houston Section Automation and Robotics Technical Committee is expected to participate as a cosponsor.

For further information on the workshop, contact Mary Stewart at mail code ER, call 483-1724, or e-mail to ismcr@micker.jsc.nasa.gov. 

From Our Sister Section in China

Secretary General of SAS Retires

Jim McLane

Sister Section Coordinator, China

MR. SONG YUNG PING, Secretary General of our Sister Section, the Shanghai Astronautical Society (SAS), has stepped down from that position upon reaching mandatory retirement age. Mr. Song was appointed Secretary General shortly before the establishment of the Sister Section relationship with Houston Section AIAA in 1987 and has been one of that activity's strongest proponents. Earlier, he served as Deputy Director, Space Travel Industry Department, Shanghai Xin Wei Electronic Equipment Plant. Mr. Song made many AIAA friends during his visit to Houston in November 1989, and amongst our Technical Delegations visiting Shanghai in '88 & '92. We all wish him well in retirement. Mr. Xia Rongxiang has been named to fill the vacancy created by Mr. Song's departure. ♣

Another Successful Launch of Long March 2D

Professor Wang Yue

Director, Shanghai Academy of Spaceflight
Technology

On July 3, 1994, Long March 2D blasted off the launch pad, soaring towards the blue sky and putting a Chinese recoverable satellite into a predetermined orbit from Jiu Quan Satellite Launch Center. This was the second perfect flight of Long March 2D,

scored after its perfect maiden flight on August 9, 1992, when a recoverable satellite was successfully launched and recovered 15 days after. On July 18, the satellite came back safely in a predetermined area from space.

Long March 2D is a two stage liquid propellant launch vehicle evolved from the first and second stages of Long March 4B by the Shanghai Academy of Spaceflight Technology. With a conventional propellant combination of N_2O_4 /UDMH, it is 38 m high and 3.35 m in diameter. The liftoff thrust is 2962 kN while the liftoff mass is 230 t. It features a good heritage, high payload capability, high guidance accuracy, low development cost and high reliability. The main performance characteristics of LM-2D are shown in Table 1.

Table 1.

Parameter	1st Stage	2nd Stage	
		Main	Vernier
Liftoff Mass, t	231.378	40.624	
Structure Mass, t	9.865	3.222	
Total Length, m	38.311	13.414	
Diameter, m	3.35	3.35	
Thrust, kN	2961.6	719.8	46.1
Specific Impulse, m/s	2550	2822	2762
Operating Time, s	152.523	114.537	150.615

The telemetry data have shown that the orbit insertion accuracy is very high, demonstrating the high quality of the launch vehicle, especially its guidance system. In Table 2 are shown the orbit parameters and their deviations. ♣

Table 2.

Orbit Parameters	Theoretical Value	Observed Value	Allowed Deviation	Observed Deviation
Semimajor Axis, km	6637.768	6638.884	—	1.076
Eccentricity	0.013798	0.013602	—	-0.000187
Inclination, °	63.00005	62.9763	±0.2	-0.02375
Argument of Perigee, °	140.467	137.666	±5	-2.801
Orbit Period, s	5382.004	5383.31328	±6	1.30928
Perigee Altitude, km	175.0015	176.582	±5	1.5805

1995 Houston Section Technical Delegation to China

Jim McLane
Sister Section Coordinator, China

DETAILED PLANNING for a Houston Section technical delegation to visit China in late April or early May 1995 is on hold pending expressions of interest from a sufficient number of prospective participants (see the September 1994 issue of *Horizons*, page 9).

Members who are interested should contact Jim McLane at (713) 488-0312 or Internet FWGD81A@PRODIGY.COM. ♣

Cranium Cruncher

Lou Livingston
Editor

A HOLE IS DRILLED completely through the center of a solid sphere such that the depth of the hole is 1". What is the volume of the remaining material?

Send your solutions to Mike Begley, LESC/C87, before Monday, November 7. A random pick from the correct answers wins a free AIAA dinner. See the November issue for the solution and the winner. ♣

Pasadena ISD Science Fair Initiative

If you would like to help out with the Pasadena ISD Science Fair, we are repeating the registration form for mentors and judges. As can be seen from the schedule in the September *Horizons*, time is short for getting this activity under way. Please sign up with Zafar Taqvi as soon as possible. ♣

Registration Form for Mentors and Judges (return to Zafar Taqvi, LESC/C80)

Name _____

Employer _____

Address _____

Telephone _____ Fax _____ E-mail _____

Subjects for MENTORING (note preferences 1, 2, 3, etc.)

- ___ Chemistry
- ___ Computers
- ___ Earth/Space Sciences
- ___ Engineering
- ___ Mathematics
- ___ Physics

- ___ Behavior/Social Sciences
- ___ Biochemistry/Microbiology
- ___ Botany
- ___ Environmental Science
- ___ Medicine/Health
- ___ Zoology

Subjects for JUDGING (note preferences 1, 2, 3, etc.)

- ___ Chemistry
- ___ Computers
- ___ Earth/Space Sciences
- ___ Engineering
- ___ Mathematics
- ___ Physics

- ___ Behavior/Social Sciences
- ___ Biochemistry/Microbiology
- ___ Botany
- ___ Environmental Science
- ___ Medicine/Health
- ___ Zoology

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.

October

5 - Wednesday

IEEE videoconference.
"ISO 9000: A Critical Review of 1994 Revisions."
Gilruth Center.

11 - Tuesday

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

Horizons inputs for November due COB.

18 - Tuesday

Monthly dinner meeting.
"Report from Star City, Russia," Bonnie Dunbar.
Gilruth Center, 5:30/6:30/7:30.

19 - Wednesday

IEEE videoconference.
"Maximizing Productivity: Information Integration for User Productivity."

20 - Thursday

Education/Career Enhancement Comm. seminar.
"Computerized Investing," Charles Schwab & Co.
Center for Advanced Space Studies Lecture Hall,
3600 Bay Area Blvd., 6:45 PM.

November

7 - Monday

Horizons inputs for December due COB.

8 - Tuesday

Education/Career Enhancement Seminar.
"Internet Seminar," Naz Bedrossian, Neosoft.
7:00 PM, Center for Advanced Space Studies.

9 - Wednesday

IEEE videoconference.
"Mechatronics."

10 - Thursday

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

15 - Tuesday

Monthly dinner meeting.
"Low-Cost Space Transportation," J. R. French.
Gilruth Center, 5:30/6:30/7:30.

30 - Wednesday

IEEE videoconference.
"Maximizing Productivity: Multimedia."
Gilruth Center.

30-Dec. 2 - Wednesday-Friday

JSC/IEEE/AIAA workshop.
"Virtual Reality."
Gilruth Center.

December

1 - Thursday

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

7 - Wednesday

IEEE videoconference.
"Maximizing Productivity: Redesigning the Engineer & Designing for Maintainability."
Gilruth Center.

8 - Thursday

Monthly dinner meeting.
Director's Reception.
Gilruth Center, 5:30/6:30/7:30.

CALENDAR (from page 8)

December (cont.)

19 - Monday

Horizons inputs for January due COB.

January

19 - Thursday

Executive Council meeting.

5:00 PM, Center for Advanced Space Studies.

23 - Monday

Horizons inputs for February due COB.

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

OUTSTANDING SECTION AWARD

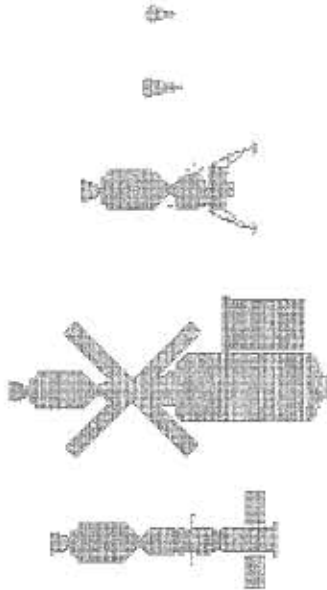


- 1975-1976
- 1976-1977
- 1979-1980
- 1980-1981
- 1981-1982
- 1983-1984
- 1986-1987
- 1988-1989

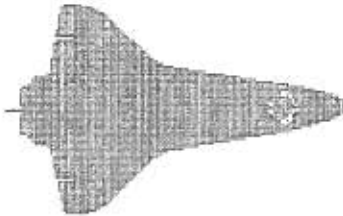
SECTION SPECIAL EVENT AWARD



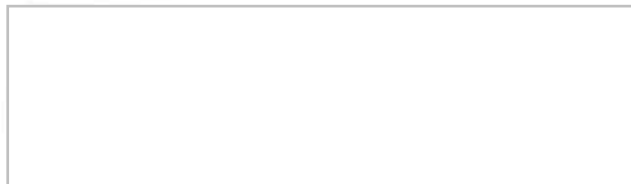
- 1971-1972
- 1972-1973
- 1979-1980
- 1981-1982
- 1983-1984
- 1985-1986
- 1988-1989



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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

Tuesday, October 18, 1994

REPORT FROM STAR CITY

**Dr. BONNIE J. DUNBAR
NASA Astronaut**



PRESENTER

Dr. Bonnie J. Dunbar is serving as the backup crew member for a 3-month flight on the Russian space station Mir in 1995. She began her training in Star City, Russia, in February 1994. She has also been assigned as a mission specialist on the seven-member crew for Space Shuttle mission STS-71, which will perform the first Shuttle docking with the Mir and exchange several crew members. Dr. Dunbar holds Bachelor of Science and Master of Science degrees in ceramic engineering from the University of Washington and a doctorate in biomedical engineering from the University of Houston. She is a veteran of three space flights and has logged more than 761 hours in space. She is also the recipient of numerous awards, including the Rockwell International Engineer of the Year, the NASA Exceptional Service Medal, and the AAES National Engineering Award.

DINNER MEETING

**SOCIAL: 5:30
DINNER: 6:15
PROGRAM: 7:00**

MENU: CAJUN CHICKEN

MEMBERS & SPOUSES	\$ 9.00
NONMEMBERS	\$10.00
STUDENTS/YOUNG MEMBERS	\$ 5.00
UNEMPLOYED MEMBERS	\$ 5.00

**ROBERT R. GILRUTH RECREATION CENTER
JOHNSON SPACE CENTER**

**FRAN JAMISON
333-6277
LOCKHEED**

**ARDELL BROUSSARD
283-1040
McDONNELL DOUGLAS**

**MARY ANN BIVONA
483-1350
RSOC**

**SARAH LEGGIO
282-3160
ALLIEDSIGNAL**

CALL ONE OF THE ABOVE FOR RESERVATIONS.

**NOTE: RESERVATION DEADLINE IS THURSDAY, OCTOBER 13, AT NOON.
ANY CANCELLATIONS ARE REQUIRED PRIOR TO DEADLINE. NO-SHOWS WILL BE BILLED.**

ALL ARE WELCOME

DINNER RESERVATIONS ARE NOT REQUIRED FOR ATTENDING THE PROGRAM ONLY.



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

Guidance, Navigation and Flight Control

Technical Committee Sponsors Lunch and Learn Meeting

Topic: Man Made Orbital Debris

Speaker: Dr. Larry Friesen
Houston Community College
Houston, TX

Thursday, October 6th
11:45-12:30 PM
LESC LP1 2450 NASA Road One
Room 12C

ABSTRACT

Why is orbital debris a concern? Its speed and kinetic energy, and the fact that we are making so much it. The hazard is not now, but will grow over time unless preventive measures are taken.

What are sources? What are sinks? What happens (in orbital mechanics terms) when an object breaks up? Distribution of projectile directions as seen by low-inclination Space Station.

What preventive measures can be taken?

FOR MORE INFORMATION CALL:

Dr. David Zimmerman (713) 743-4520
Mr. Sandeep Chojar (713) 333-6134

A I A A

HOUSTON SECTION



FIELD TRIP

TO

TEXAS A&M UNIVERSITY

SATURDAY, OCTOBER 22, 1994

HOSTED BY TEXAS A&M AIAA STUDENT CHAPTER

PROGRAM

- **Student Chapter Activities Presentation**
- **Tour of labs and facilities, including low speed wind tunnel**
- **Lunch provided**
- **TEXAS A&M - RICE FOOTBALL GAME!!!**
- **Tour bus transportation to and from College Station with beverages and snacks provided (courtesy of Houston Section of AIAA)**

Depart from and return to Lockheed parking lot 2400 NASA ROAD 1

Depart- 7:45 AM SATURDAY, OCTOBER 22

Return - 7:00 PM SATURDAY OCT 22

COST \$25 EACH

Maximum Bus Capacity is 47.

Minimum Group of 25 Required for trip

Call Jeanette Everling for information and Reservations @483-1555

RESERVATION DEADLINE IS NOON OCTOBER 14

WE HOPE YOU'LL JOIN US!!



American Institute of Aeronautics and Astronautics

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

Guidance, Navigation and Flight Control

Technical Committee Sponsors Lunch and Learn Meeting

Topic: Integrated Structural/Control Design by Iterative Redesign

Speaker: Dr. Karolos Grigoriadis
Thursday, October 13, 1994

NASA Gilruth Recreation Center
11:45-12:30
Room 204

ABSTRACT

The traditional two-step approach of designing the structural system first and then the controller is significantly limited since the two problems are coupled. This talk will present some recently developed design techniques to integrate the plant design and the controller design problems by an iterative redesign procedure. Significant reduction of the active control effort can be obtained using these techniques. In addition, multiobjective design techniques using alternating projection methods will be discussed.

FOR MORE INFORMATION, PLEASE CALL:

Dr. Jayant Ramakrishnan
Dr. David Zimmerman

(713) 333-4419
(713) 743-4520

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

AIAA Education and Career Enhancement
Committee

is proud to present

“Financial Management Seminar”
on

1. Retirement Planning
2. Computerized Investing

on Thursday, October 20, 1994 at 7:00 pm
at LPI Lecture Hall.

(Bay Area Blvd. & Middlebrook Drive)

The seminar is presented by Charles Schwab & Co.

All are invited

For More Information, please call:

Jayant Ramakrishnan 333-4419

Mike Begley 333-6996



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

**AIAA Education and Career Enhancement
Committee**

is proud to present

“INTERNET Seminar”

on Tuesday, November 8, 1994 at 7:00 pm
Hess Room at LPI
(Bay Area Blvd. & Middlebrook Drive)

The seminar is presented by NEOSOFT

All are invited!!

For More Information, please call:

Naz Bedrossian 333-2127

Bill Best 282-6970