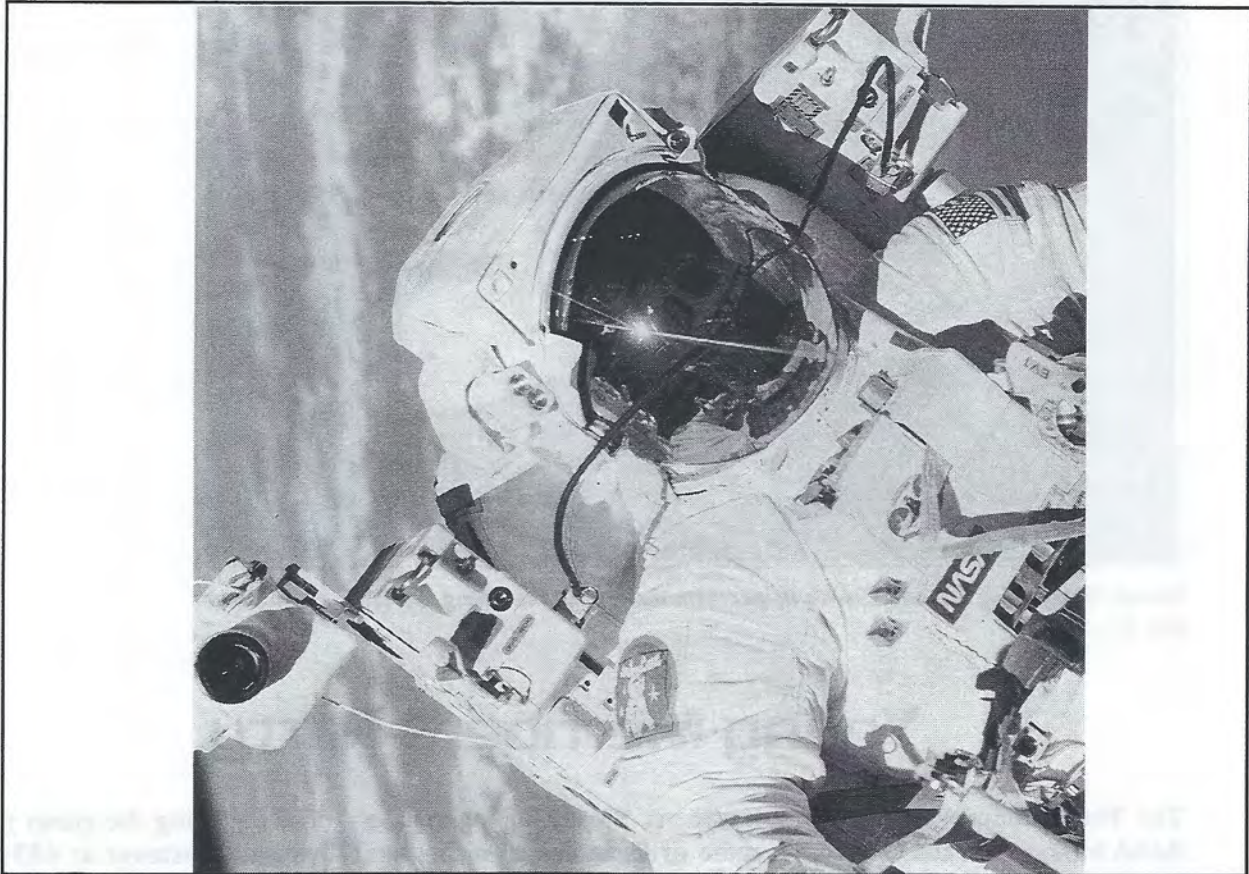


Horizons

American Institute of Aeronautics and Astronautics



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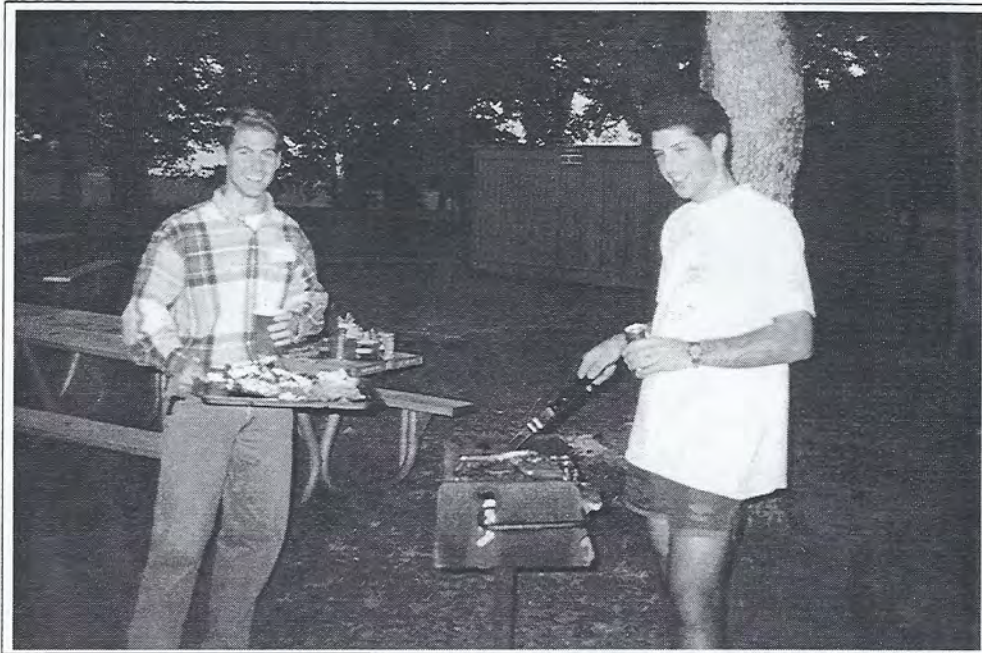
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Inputs for the January's Horizons newsletter are due COB December 15, 1997.



Dennis Vincent and Randall Hoerth helped with the grill at the Young Members get-together Oct. 21.

Young Members Party

The Young Member group for AIAA hosted a fun and entertaining BBQ on Tuesday October 21st at the Gilruth Center. We had a total of approximately 35 people and we had several new prospects that showed up to find out about what AIAA has to offer. We had the opportunity to get to know people and what they desired for AIAA to provide to the young

members. We are hoping to have more of these casual gatherings where we can relax and get to know one another. This is definitely going to be an exciting year for AIAA and I encourage you as members to reach out and invite old or new friends to come and join AIAA. If you have any suggestions on Activities that the young member group should do or ques-

tions regarding the group please call Alli Westover at 483-9461 (work) or 286-1053 (home). Also, if you might be interested in joining the young member committee you can make a difference in AIAA first hand.

Alli Westover



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Chairman's Corner

- by George Nield, Chairman

I am pleased to report that AIAA Headquarters recently announced the winners of the Outstanding Section Awards, and the Houston Section garnered second place among all of the Sections in the Very Large size category. Thanks again to Tom Mulder (last year's Chairman), and all of his leadership team for their hard work and many accomplishments! The competition for this award is very stiff; and in our size category, we have to go head to head with the very best. Congratulations!

If you haven't already done so, I'd like to encourage all of you to take a peek at our AIAA Houston Section web page. The address is: <http://www.jsc.nasa.gov/aiaa>. We have a lot of interesting material available there, including names, phone numbers, and e-mail addresses of this year's officers and Council members; an up-to-date calendar of events; newspaper clippings; and even photos of recent Section activities. Add our URL to your Internet "Bookmarks" or "Favorites" list, and come back and visit often.

One of the items we have recently added to our web site is a list of our Houston Section goals. At the October 9, 1997 AIAA Council

meeting, we discussed the fact that with the Section year now well underway, it would be very helpful to have some specific goals for the rest of our terms. I asked each Section Officer and Operations Committee Chair to come up with two goals for their area of responsibility. Technical Committee Chairs were asked for their TENTATIVE plans for at least two events or activities that they expect to hold this year; i.e., what is the proposed subject of the "lunch and learn" or other event, and when will it be held (what month)? We will be updating that list as we go, but please take a look at what we have so far, and let me know if you have any comments on what we are trying to accomplish.

As always, if you have any questions, complaints, or suggestions, please give me a call at (281) 483-1364, or send an e-mail note to gnyield@ems.jsc.nasa.gov.



From the Program Chair

I hope everyone enjoyed our November program with Dr. Bobby Alford of the National Space Biomedical Research Institute.

We have a great program calendar lined up for the year. Here are a few of the speakers we are making arrangements with:

Dr. Norman LaFave, X-Prize Contestant

Dr. Jan Roskam, X-29 and Boeing 747 design consultant

Spokesperson from the Lockheed Martin X-33 project

Burt Rutan - Scaled Composites
Craig Covault - Aviation Week & Space Technology

Of course, it's my job to bring you fresh interesting program topics each month, so I'd like your help. Please think of any programs or topics you would like to see and send me your feedback. If you've heard of interesting programs hosted by other professional societies we would like to know that, too.

I suspect members might welcome a change of pace from the traditional 'sit and listen' program formats, so don't be afraid to be a little creative.

I look forward to hearing from you,

-Dan Selters

dan.selters@lmco.com

Employment Opportunities

The AIAA Houston Section is now beginning to make aerospace-related employment opportunities available. If you are looking for employees, and you would like for the AIAA Houston Section to help your company make employment information available, please contact Charles Halliman (of Information Uncover) at (713) 991-1654.

LOCKHEED MARTIN



Lockheed Martin Space Mission Systems & Services,
a Division of Lockheed Martin Corporation,
located in the Clear Lake area,
has immediate openings for:

SOFTWARE ENGINEERS (minimum 2+ yrs. experience),
SYSTEMS ENGINEERS (minimum 3+ yrs. experience),
HARDWARE ENGINEERS,
ENGINEERING SYSTEMS ANALYSTS and
PROGRAMMERS (minimum 1+ yr. experience).

Positions require a degree in: Aeronautical Engineering, Aerospace Engineering, Computer Science, Computer Engineering, Physics, Math, or Electrical Engineering.

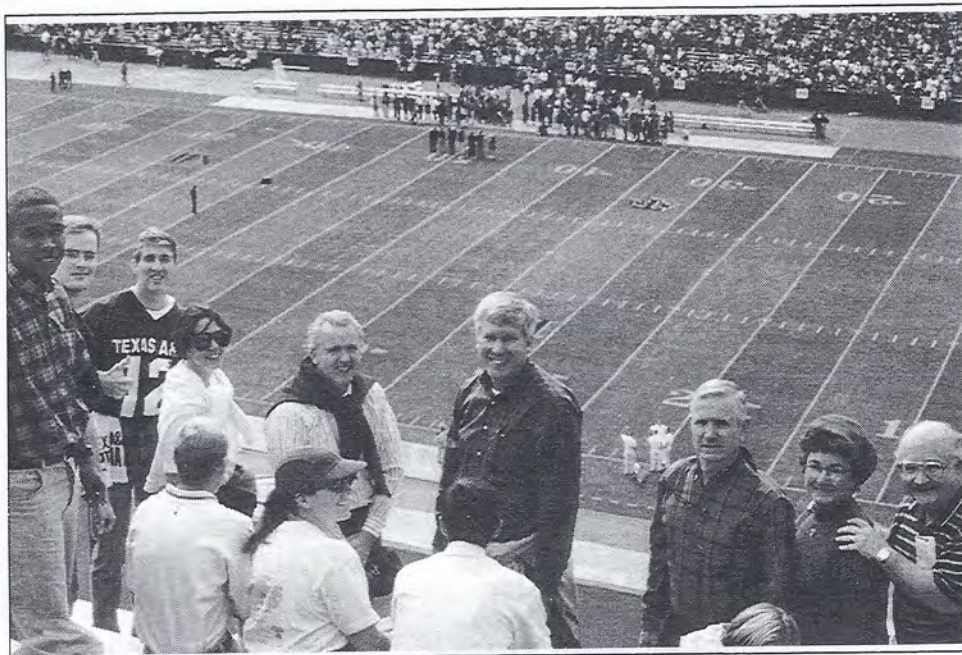
Qualified applicants are asked to submit resumes and cover letter, in strictest confidence, to:

Lockheed Martin Space Mission Systems & Services
Corporate Plaza One
2526 Bay Area Blvd.
Houston, TX 77059

Responses may be sent via fax to (281) 283-4231.



AIAA Houston Chair George Nield talked to the Young Members about section activities at the Young Members Cookoff Oct. 21.



AIAA Houston Chair George Nield with friends and members at the Texas A&M - Baylor football game at the AIAA TAMU weekend.

Barrios Technology

Barrios Technology, a woman-owned small business located in the Clear Lake area, providing Space Operations, Information Technology, and training services to NASA, DoD, and commercial businesses, has immediate openings for:

SYSTEMS/OPERATIONS/TRAINING ENGINEERS (Exp.: 0-8 yrs. technical environment; Degree: BS EE, ME, AE, Engineering, Science, Math, Physics, MS Instructional Technology Media);

WORKSTATION ENGINEER (Exp.: 5+ yrs. Macintosh, PCs, Windows 95; Degree: BS Math, EE, Computer Science);

NETWORK ADMINISTRATOR (Exp.: 5+ yrs. Novell 3.12/4.0 Network Administration; NT 3.5.1/4.0 experience a plus; Degree: BS Math, EE Computer Science);

ORACLE PROGRAMMERS/DEVELOPERS (Exp.: 1+ yrs. PL/SQL; SQL *Loader; Oracle Webserver; Oracle Developer 2000; Oracle 6 or 7).

For consideration, fax your resume to:

Dept. SMS,
(281) 280-1901

or EMAIL to:

cheri.stewart@barrios.com.

For more information about Barrios Technology, Inc., Go to the Barrios HOMEPAGE at www.barrios.com.

We Are Presenting A Financial Education Seminar

TITLE: Inspiration and Enrollment--
Powerful Keys to Leadership

SPEAKER: Bill Hartwell
Russian Integration Group
International Space Station Program
Boeing

LOCATION: 2450 NASA Road One
Room 32C (2ND Floor)
Lockheed Martin Building

DATE: December 2, 1997
TIME: 7:00 - 8:00 PM

Many of us in our daily lives can confuse the two concepts: management and leadership. While every organization benefits from effective forms of both management and leadership, they clearly are separate roles. This seminar is designed to help you distinguish between the two roles.

Leadership is based on inspiration and vision -- that is, "showing the way." In this discussion, Bill Hartwell will share six specific steps to inspiring others with your vision, and enrolling them to take action. People in leadership positions will get significant value from this discussion. However, anyone interested in living life powerfully should attend.

Come hear Bill Hartwell and learn more about leadership. Bill is committed to life-long education -- especially education associated with leadership roles.

TO MAKE A RESERVATION, PLEASE CONTACT;
Charles Halliman (At Information Uncover)
(Tel) 991-1654 or (Email) 72155.1324@compuserve.com
MAKE RESERVATIONS BY 12:00 P.M., MONDAY, DECEMBER 1, 1997
OPEN TO AIAA MEMBERS AND NON-MEMBERS

AIAA Lunch and Learn:

Wednesday, 03 December 1997, at

Noon, rm 2A-29

International Space Station LARGE SCALE INTEGRATION APPROACH

presented by
Brad Cohen

Boeing Information, Space, and
Defense Systems

Boeing Space Park Drive Bldg.
2100 Space Park Drive, Houston,
Texas

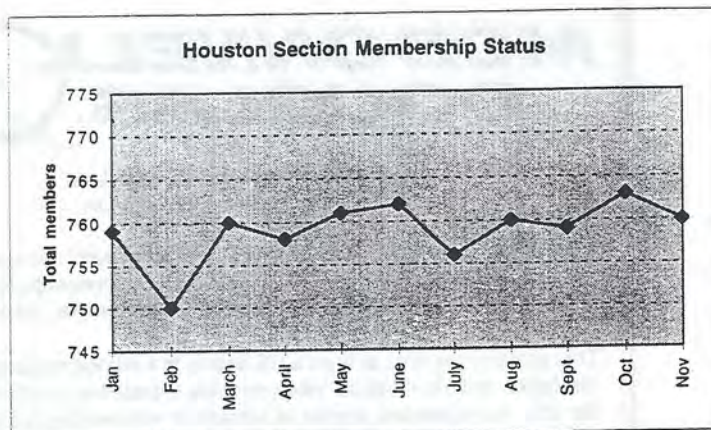
Call Charlotte Madonio at (281)
336-4204 for badging information

The International Space Station is the most complex large scale integration program in development today. The approach developed for specification, subsystem development, and verification lay a firm basis on which future programs of this nature can be based.

International Space Station is composed of many critical items, hardware and software, built by numerous International Partners, NASA Institutions, and U.S. Contractors and is launched over a period of five years. Each launch creates a unique configuration that must be safe, survivable, operable, and support ongoing assembly (assemblable) to arrive at the assembly complete configuration in 2003.

The approaches to integrating each of the modules into a viable spacecraft and continue the assembly is a challenge in itself. Added to this

1997											
Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct
806	804	759	750	760	758	761	762	756	760	759	763
											760



Success

-by Dan Selters,
Lockheed Martin

Wow! We had a great meeting in November. First, we were treated to a delicious prime rib dinner served with baked potato, peas, and hollandaise sauce. We were also joined by over 70 NMA guests in our continuing effort to form partnerships with other Houston area professional societies.

Next, Dr. Bobby Alford had an excellent discussion about the future of space medicine. Dr. Alford is leading the development of a new consortium of Universities, Private Companies, and Government research facilities. The new National Space Biomedical Research Institute (NSBRI) will combine the basic research capabilities of some of the nation's leading biomedical research labo-

See *SUCCESS*...continued on page 22...



Employment Opportunities

**MCDONNELL
DOUGLAS**



Located in Seabrook, Maryland
has immediate openings for:

Instrument Electro-Optics Senior Level Engineer: To work with NASA and contractor engineers in the acceptance of instrument payload flight hardware for the Geo-stationary Operational Environmental Satellite (GOES).

This position requires at least a BS degree in a related engineering or science discipline and six or more years relevant experience to effectively perform the job. An advanced degree in science or engineering is highly desirable. The successful candidate will have relevant system engineering experience related to radiometric calibration for imaging or sounding instruments, familiarity with Infrared and Visible detector technology applications, spaceflight hardware integration and test experience, and problem resolution skills. Excellent technical, organizational, and planning skills are required.

This is a resident position at ITT located in Ft. Wayne, Indiana. Periodic travel will be required to and from the spacecraft contractor facility, GSFC and launch site. The Job Code is 97-004a.hou.

Applicant must have unrestricted authorization to work in the United States.

Spacecraft Attitude Control Systems (ACS) Engineer: To work with NASA and contractor engineers on the Polar Operational Environmental Satellite (POES) Project. Candidate must have a thorough knowledge of the operation and inter-relationships of ACS components such as reaction wheels, torquer coils, Earth sensors, Sun sensors, and inertial measurement units. Applicant must have experience in reviewing and evaluating activities related to the ACS subsystem, advising the customer of inadequacies, making recommendations for subsystem improvements, and performing special analyses and/or test and flight data evaluations. This position requires a BS or higher degree in engineering and at least ten years of experience in spacecraft attitude control subsystem design, development, integration, and test.

This is a resident position at Seabrook, Maryland. The Job Code is 97-011.hou.

Applicant must have unrestricted authorization to work in the United States.

If you are interested in these positions, please submit your resume to Richard Long by FAX (301-464-7413) or e-mail using our Web site at "careers.mda-esd.com" and include the above Job Code number in your response.

McDonnell Douglas Aerospace - Engineering Services Division is an equal opportunity employer - M/F/H/V.

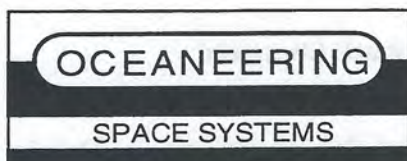
Honors and Awards Nominations Welcome

-by Jayant Ramakrishnan

AIAA takes great pride in recognizing outstanding achievement. The program regularly surveys outstanding achievers in the aerospace field and confers awards on them in public ceremonies. Even though most awards have nomination deadlines, AIAA accepts nominations on a daily basis through the year. We at AIAA Houston are looking for nominations for awards in 1998 and 1999. There are many diverse categories from Aerospace Communications to Distinguished Service awards. We look forward to hearing from our membership on their nominees for awards. Any questions on awards should be directed to Jayant Ramakrishnan at (281) 333-4419 or jayant@dynacs.com.



Employment Opportunities



Oceaneering Space Systems has multiple (>30) contracts to address Technical Challenges in 5 different product areas. This broad business base offers varied design opportunities for engineers, while providing a stable work environment.

Oceaneering Space Systems (OSS), a division of Oceaneering International, Inc., located in the Clear Lake area, specializes in developing robust high technology solutions to our customer's challenges in harsh environments. We design and manufacture tools and equipment for astronauts and robots, advanced life support systems, advanced thermal protection systems for rockets, advanced microgravity science facilities for use in space and ground operations, and state of the art Non-Destructive Testing systems. OSS has immediate openings for:

MECHANICAL DESIGN ENGINEERS
(Practical Design experience)
SOFTWARE ENGINEERS
((Flight Software Design experience)
ELECTRICAL ENGINEERS
(Non Destructive Testing experience)
MECHANICAL ENGINEERS
(Testing, Design, Hardware Installation experience)
QUALITY ENGINEERS
(0 to 3 years Quality Assurance experience)
STRESS ANALYSIS ENGINEERS
(3 to 5 years experience in Aerospace Analysis)
THERMAL ANALYSIS ENGINEER
(3 to 5 years experience in Thermal modeling)
MATERIAL & PROCESSES ENGINEER
(0 to 3 years experience)
SAFETY, RELIABILITY & MAINTAINABILITY ENGINEERS
(0 to 3 years exp.)

Qualified applicants are asked to submit resumes and cover letter, in strictest confidence, to:

Oceaneering Space Systems
Personnel Department
16665 Space Center Blvd.
Houston, Texas 77058

Responses may be sent via fax to 281-228-5549
or via E-mail to arotherm@oss.oceaneering.com

EOE-M/F

www.oii-adtech.com/oii/view/emp0014.htm

International Space Development Conference

-by Russ Filler, Chairman-Elect

The National Space Society will hold the International Space Development Conference at the Houston Hobby Radisson May 26-30, 1999. The AIAA Houston Section is one the co-sponsors of the event. Our section will be holding its Annual Technical Symposium on Thursday - the first day of the conference.

The NSS is in the process of developing the programs, identifying the speakers and events for this conference. There is a lot of potential for this conference. NSS is not a technical society and could certainly use our help in planning for this conference. We have many talented members in this section that could help. They need help to identify speakers, session topics, and event planning. If you have any thoughts or would like to explore how you might help, please feel free to contact Dr. George Nield or Russ Filler.



Operation Pacific Fury a Success

-by Elizabeth Shepperd

AIAA Co-Sponsors OPERATION PACIFIC FURY

Although the battles in the South Pacific during World War II ended more than 50 years ago, those turbulent years lived again for a few hours on Galveston's East Beach during the third weekend in October of this year. The Smithsonian-quality Admiral Nimitz Museum, located in Fredericksburg, Texas and dedicated to the history of the WWII Pacific Theater of Operations, collaborated with the Texas Military Historical Society and AIAA-Houston Section to produce OPERATION PACIFIC FURY on Galveston Island on October 18/19, 1997. The Nimitz Museum provided two days of special education programming the weekend before the invasion. The goal of the Nimitz Museum is the education and commemoration on the heroic service and sacrifice of our Armed Forces in the Pacific Theater, and to remind all Americans, especially our youth, of the realities and lessons of war.

Elaborate reproductions of Japanese fortifications transformed Galveston Islands' East Beach into a Japanese-held Pacific island, where hundreds of World War II re-enactors stormed ashore. The invasion included not only operational period vehicles and planes, such as amphibious landing vehicles, Sherman Tanks, M3 Half-tracks, B-25s, Zeroes, Wildcats,

and P-38s, but also mortars, machine guns, extensive pyrotechnics, and working flame-throwers to lend authenticity. Although the U. S. Navy was asked to provide some of the landing craft, liability concerns kept those from participating. The invasion was scaled to the company level so that the spectators could more easily understand the maneuvers being performed. Station KTRH Talk Radio provided the sound system for the Nimitz historian to explain all facets of the action as it took place. The flow of action was as historically accurate as it was possible to make it, while condensing several weeks of military strategy and tactics into each four-hour event.

After the Japanese soldiers were in place in their bunkers and fox-holes, the first Allied maneuver was to isolate the island by having spotter planes fly aerial reconnaissance over the targeted area. OPF used an L-5 Stinson for this segment. These light planes had no armament or weapons of any kind, and were fired upon by the Japanese forces on the ground. The isolation stage was followed by the softening up stage, where Army Air Force bombers and Naval bombardments would shell the island in an attempt to neutralize enemy air power, and to confuse and disrupt Japanese defensive preparations. OPF used a B-25 bomber, with aerial cover provided by a Grumman Hellcat and

a Douglas Dauntless, to simulate this stage. Pyrotechnics placed on the beach exploded as the B-25 flew overhead to provide "bombs" dropped on the entrenchments. At this point the Japanese re-enactors hauled down the Japanese flag over their Headquarters bunker because it was an easy target for the bomber. Japanese Zero's defended their island so that the audience could see dogfights in the air.

The third stage was the pre-invasion preparations, where bombing and shelling were intensified and Underwater Demolition Teams performed reconnaissance to determine tidal and hydrographic conditions. The UDTs would then blow paths through the coral reefs and destroy mines and beach obstacles, all without the benefit of SCUBA gear. The UDTs at OPF were dropped in Galveston Bay around the end of East Beach to swim ashore with only mask, fins, and their demolition gear. A cold front had blown into Texas on Friday before OPF, making the weather excellent for the land re-enactors and the audience, but cold and uncomfortable for the UDTs.

The last stage of the invasion was also the most difficult and dangerous. Everything possible was done to support the foot soldiers

See *PACIFIC...continued on page 11...*

PACIFIC...continued from page 10...

and marines, artillerymen, and tankers being landed on the island from the amphibious landing craft. The fight at this point became close and personal. Allied troops had to land on a beach alive with enemy fire from machine guns, grenades, rifles, artillery, and mortars. Both Japanese and Allied forces simulated all of these elements during OPF, including working flame-throwers that the Americans used to destroy several Japanese bunkers. When the marines and soldiers finally took the Japanese HQ, the American flag was raised to the cheers and shouts from the audience. After weapons were stacked and all the units reformed, a prayer was dedicated to those who gave their lives in the many engagements depicted by OPF, that helped to end WWII. The marine band played "Taps" as the audience stood in silent devotion to end each day's event.

While the four-hour assault happened twice that weekend in Galveston, a continuous living history lesson took place all weekend long at Fort Travis on the nearby Bolivar Peninsula. Military vehicles were on static display, and the re-enactment troops were housed inside concrete bunkers and tents at Fort Travis. The soldiers and marines drilled on the open fields, slept on cots in the bunkers and inside tents, and ate K-rations. The Nimitz Museum went to great efforts to make the encampment as authentic as possible.

Marvin Schroeder, Interpretive Specialist from the Nimitz Museum in Fredericksburg, Texas,

was the event chairman. His particular area of specialty is from 1836 to World War II, and he has been doing living history re-enactments for over 20 years. Also head of the Nimitz Volunteers, known as "G Company," at the Nimitz Museum, Schroeder frequently provides WWII re-enactments for visiting school groups both on site at the museum and at the local airport. OPERATION PACIFIC FURY marks the Texas Parks & Wildlife's first attempt at a WWII re-enactment of this size and scope, and 300 miles from the museum base of operations as well. During the planning stages of OPF, Schroeder read a book by General Eisenhower on the logistics of large scale invasions, just to keep his own problems in perspective. In a recent interview, Schroeder explained the enormous amount of coordination required for the Galveston invasion.

The Nimitz Volunteers were joined by members of the Texas Military Historical Society to become the Japanese and American military forces. Volunteers also came from as far away as England, Norway, and from 31 states in the U.S. to participate. The Marine Corps Leagues of Galveston, Houston, and San Antonio, and the Confederate Air Force, along with the Military Vehicle Preservation Association provided the operational ground vehicles, while Sun Coast Resources Inc. furnished their fuel. Metal building fabricators NCI and HL&P of Galveston provided the Japanese beach defenses, and SYSCO foods prepared some meals for the

troops.

The Houston Section of The American Institute of Aeronautics and Astronautics (AIAA) made a donation to the Nimitz Museum that allowed the planes from the Texas Aviation Hall of Fame's Galveston Lone Star Flight Museum to participate in the invasion. The donation also contributed to the dance held in the museum on Saturday night, when almost 500 people, most in authentic civilian or military dress of the 1940's, enjoyed big band music. The Sentimental Journey Orchestra, also dressed in World War II uniforms, set up under the wing of a PBY Catalina amphibious aircraft. Participants enjoyed the opportunity to dance to songs like "Chattanooga Choo-Choo," "GI Jive", and "Don't Sit Under the Apple Tree." A Jitterbug contest late in the evening allowed the more experienced dancers in the crowd to really show their stuff.

This year's AIAA Houston Section Chairman, Dr. George Nield, had tasked his executive council officers and board members to find ways in which AIAA could serve the community and participate in local activities. It was Edward Jablonski, the Vice Chairman-Technical, who was the lead behind AIAA's involvement with OPF. Edward, who has been involved with historical re-enactments in communities for over ten years, and was led to re-enactments by his interest in the history

See *PACIFIC...continued on page 12...*

PACIFIC...continued from page 11...

of technology, proposed the Houston Section's donation and participation in response to the directive for community service support activities. He arranged for section members to attend the functions and to volunteer at the information booth set up to allow participants and audience alike to learn more about the benefits of professional membership in AIAA.

The event was a tremendous success for all those involved, and the community is looking forward to similar events by the Nimitz/Lone Star Flight Museum/ AIAA partnership.



Ed Jablonski and comrades in arms at Operation Pacific Fury in Galveston.



Congressional Contacts

-by Wayne Rast, Public
Policy Chair

AIAA members and their families should become active in informing their elected leaders about their concerns and interests. Particularly on controversial issues, this is the main way that legislators can gauge what is important to their constituents.

There are many reasons why people decide not to get involved in the process. It takes too much time out of already busy schedules. Or the belief that what they

say won't matter to their Representative, that their opinion won't count because the "little guy" doesn't command enough attention in Washington.

Well, I can tell you from my personal experience, arising from two years in D.C. as an AIAA Congressional Fellow, that most of the popular reasons listed above sound perfectly reasonable, but are generally wrong. And what a wasted opportunity it is!

Legislators welcome well thought-out and informed views that help them understand their constituent's concerns. A large portion of every D.C. staff consists of Legislative Assistants (LAs), whose job it is to learn about and deal with constituent issues. Any smart legislator queries his staff

*See CONGRESS...continued on
page 13...*

CONGRESS...continued from page 12...

regularly about what recurrent issues are getting the most mail. Recurrent issues voiced by constituents will often frame the legislative agenda for each member.

The best kept secret is how few persons are needed to make an issue seem large to a member. Since most people, even those who care greatly about an issue, rarely bother to express their views, anytime a person actually takes the time to send in a reasonable viewpoint, it is safe to assume that there are others that also hold that view but did not bother to write in. The net result of this can be very interesting. For instance, if most of the members of the AIAA Houston section availed themselves of the opportunity to express their similar views on a subject, the amount of letter volume alone on that similar subject in a Representative's office would make it appear that a much larger number of their constituents share the concern. Such efforts can and do spark legislators to action. I have seen it happen.

So don't get discouraged about raising your voice. After all, they are representing YOU.

In the event that the above words have moved you to act, I offer a few hints about Congressional letter writing for your consideration.

1) Try to keep each letter situated on one main topic. There are practical reasons for this. Your letters are usually responded to by a single LA. All letters are distributed out to respective LAs by subject matter. So if you write a single

letter describing your concerns on Medicare, the environment, space issues, and immigration, it will likely get answered by the LA dealing with whatever subject that you spent the most time writing about, or that you appeared to stress. But the other issues will sometimes not get seen by the appropriate LA. Also, it is easy to tally and remember concerns of writers who deal with a single topic per letter.

2) Don't bother to write to any legislator except your own. By mutually agreed upon courtesy, any mail that comes from outside a Legislator's district is automatically forwarded to the appropriate legislator's district. Such forwarding generally happens before the letter is opened (they know who it goes to by town and zip code of constituent).

3) Include your name and address so that they can return a response to your letter, if you so desire. Including a phone number often will also allow them the option of phoning you with a response. The same applies for providing your E-mail address. You will note that the majority of members listed below have E-mail addresses for your convenience. This takes much of the drudgery out of registering your opinions.

4) Don't overly worry if the responses that you receive from your legislator's office seem to be boilerplate or somewhat impersonal. Particularly if the issue is very common. Your opinion has been noted, and that's what is most important.

The following list contains pertinent information for each Texas Representative that is either Houston area or involved in space issues through their committee assignments. If you don't know who your Representative is, find out. The information is on your voter registration card. If you don't have one, then get one. The list order is by Congressional district.

4th Congressional District: **RALPH HALL (Dem-9th term)**

Washington address:
2221 RHOB
Washington, DC 20515

202-225-6673
202-225-3332 (fax)

E-mail address:
rmhall @ hr.house.gov

Committees:
Commerce, Science (Ranking member)

District Offices: Rockwall (972)771-9118; Sherman (903)892-1112; Tyler (903)597-3729; Gainesville (817)668-6370

7th Congressional District: **BILL ARCHER (Rep-14th term)**

Washington address:
1236 LHOB
Washington, DC 20515

202-225-2571
202-225-4381 (fax)

See *CONGRESS...continued on page 16...*

AIAA Calendar

The AIAA Houston Section Calendar provides information on all Houston Section events and other activities of interest. The listing includes Council meetings, which are open to all interested members, Horizons deadlines, committee meetings, Lunch & Learns, and similar events. Also included are local aerospace-related events. Please send pertinent details to Dr. George Nield at NASA JSC, Mail Code YA, Houston, Texas 77058; phone (281) 483-1364; fax (281) 483-2968; or e-mail gfield@ems.nasa.jsc.gov.

1997

* December 1997

- December 2 - Leadership Seminar, sponsored by the AIAA Education and Professional Development Committee. 7:00 p.m. - 8:00 p.m. 2450 NASA Road 1 (Lockheed Building), Room 32C. Free to both members and non-members. For reservations call Charles Halliman at (713) 991-1654 or e-mail: 72155.1324@compuserve.com.
- December 3 - Lunch and Learn, "Large Scale Integration Approach," featuring Brad Cohen of Boeing Information, Space, and Defense Systems. 12:00 noon. Room 2A-29, Boeing Space Park Drive Building, 2100 Space Park Drive, Houston, Texas. For badging information, please call Charlotte Madonio at (281) 336-4204.
- December 4 - Council Meeting, 5:00 p.m., Center for Advanced Space Studies.
- December 6 - Physics Fun 1997! Hands-on science project demonstrations for local fourth graders. Johnson Space Center Rocket Park, 9:00 a.m. - 11:30 a.m. For more information, call Bill Hartwell at (281) 244-8665.
- December 11 - Dinner Meeting.
- December 15 - Horizons Deadline. Please send newsletter articles or activity information to Bill Best, Publications Chair, at the following e-mail address:
william.d.best@usahq.unitedspacealliance.com
- December 16 - Region IV RAC Telecon.



1998

* January 1998

- January 8 - Council Meeting, 5:00 p.m., Center for Advanced Space Studies.
- January 12 - Horizons Deadline. Please send newsletter articles or activity information to Bill Best, Publications Chair, at the following e-mail address:
william.d.best@usahq.unitedspacealliance.com
- January 15 - Dinner Meeting.
- January 23 - Special Event, featuring Dr. Leonard Shlain, author of the best-seller "Art and Physics."
6:00 p.m. reception, 7:00 p.m. presentation. Space Center Houston. For reservations, please call TAACCL at (281) 335-7777.
- January 30 - Region IV RAC Meeting, TBD Location.



Space Anniversaries

Courtesy of Ron Baalke
Jet Propulsion Lab

December 1997

- * Dec 02 - 5th Anniversary (1992), STS-53 Launch (Discovery), DOD Mission
- * Dec 07 - 25th Anniversary (1972), Apollo 17 Launch
- * Dec 08 - 5th Anniversary (1992), Galileo, 2nd Earth Flyby
- * Dec 10 - 20th Anniversary (1977), Soyuz 26 Launch (USSR)
- * Dec 13 - 30th Anniversary (1967), Pioneer 8 Launch
- * Dec 13 - 35th Anniversary (1962), Relay 1 Launch
- * Dec 14 - 25 Years (1972) Since Man Has Been to the Moon (Apollo 17)
- * Dec 14 - 35th Anniversary (1962), Mariner 2 Venus Flyby
- * Dec 15 - Edward Barnard's 140th Birthday (1857)
- * Dec 16 - Arthur C. Clarke's 80th Birthday (1917)
- * Dec 17 - 40th Anniversary (1957), 1st Successful Atlas Launch
- * Dec 23 - 325th Anniversary (1672), Cassini's Discovery of Saturn Moon Rhea
- * Dec 25 - Isaac Newton's 355th Birthday (1642)

CONGRESS...continued from page 13...

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Committees: Ways & Means (Chair), Joint Taxation(Chair)	<u>18th Congressional District:</u> <u>SHEILA JACKSON LEE</u> <u>(Dem-2nd term)</u>	202-225-7508 202-225-2947 (fax)
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Washington address: 417 CHOB Washington, DC 20515	E-mail address: thewhip@ mail.house.gov	District Offices: Houston (281)999-5879; Houston (281)477-0761
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E-mail address: none listed	District Offices: Stafford (281)240-3700	
Committees: Resources, Science (District in- cludes JSC)	<u>25th Congressional District:</u> <u>KEN BENTSEN (Dem-2nd</u> <u>term)</u>	



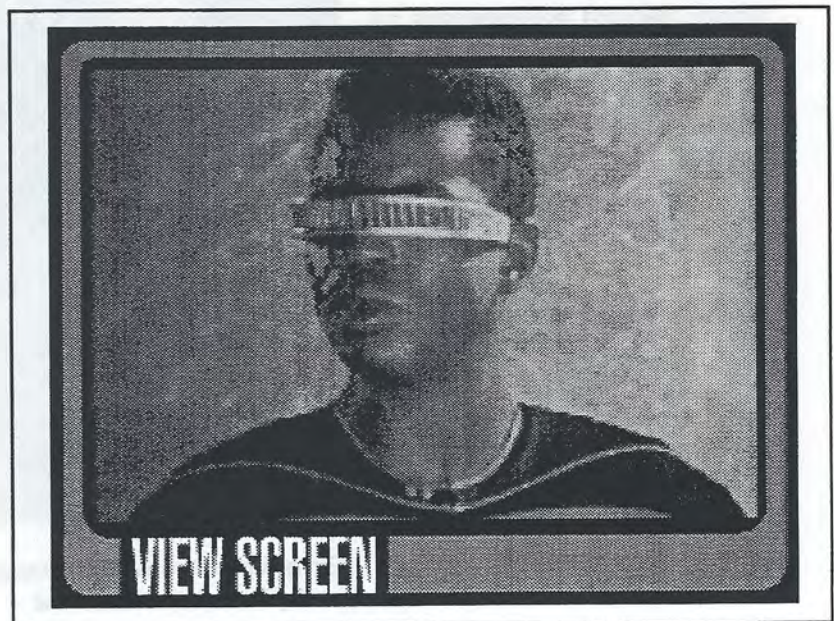
Chairman-Elect Receives the Distinguished Alumni Award

-by Russ Filler

AIAA Houston Section Chairman-elect Russ Filler recently received the Distinguished Alumni Award from his Alma Mater - South Side High School in Fort Wayne, Indiana. The Award is given to alumni whose efforts and accomplishments make a difference in their school, community and career. Also receiving the Award was Emmy-nominated actress Stephanie Cozart Burton who has worked with shows such as "in Living Color" and "Reading Rainbow." Her husband is LeVar Burton, who starred as Lt. Commander Geordi LaForge on Star Trek "The Next Generation." Russ Filler enjoyed talking with him the about how much influence Star Trek has had on the space program, as well as on the entertainment industry. Russ also gave a talk to his high school about the space station, Mir and, of course, student and educator membership in the AIAA.



Russ Filler and LeVar Burton, Star Trek TNG's Lt. Commander Geordi LaForge.



Student Conference Chairpersons Receive Award

-by Tom Mulder, Past
Chairman

Eric Duncan and Kirsty Reidy were recognized by George Nield and Russell Filler at the October 23rd AIAA Dinner Program for chairing the AIAA 45th Annual Southwest Region Student Conference. The Houston Section and University of Texas - Austin co-hosted the successful event, held April 10-12th at the Ramada Inn on NASA Road One. Forty-four persons attended the conference, which featured presentations by fourteen students from universities throughout the Region. Congratulations, Eric and Kirsty!



Eric Duncan receives his Special Service Citation award from Russ Filler, while Kirsty Reidy looks on.



Kirsty Reidy receives her Special Service Citation award. Eric Duncan looks pleased with his award.

Dr. Norm Thagard Presents a Fine Evening for Members

-by Sheryl Kelley,
Boeing

AIAA Meeting, Gilruth Center,
Johnson Space Center, 10/23/97
Speaker: Norm Thagard, Retired
Astronaut
Background information on
Thagard's career is available at:
<http://www.jsc.nasa.gov/Bios/htmlbios/thagard.html>



Dr. Norm Thagard lecturing at the AIAA Dinner Meeting

Dr. Thagard presented a slide show that chronicled his experiences as a NASA astronaut, particularly highlighting his experiences as the first American to live aboard Mir Station in the Shuttle-Mir program. For Dr. Thagard's early flight history, see the website identified above. He showed many photos, including a picture across the back of the Shuttle showing a crown of light during an OMS (Orbiter Maneuvering System) burn, his first flight (with Sally Ride), Russian

facilities, views of Earth from space showing interesting geological and meteorological features, etc.... He had very positive things to say about his fellow astronauts and cosmonauts and talked about some of them who are friends that he still maintains a relationship with.

My notes from the meeting focus on his experiences training in Star City for his Mir flight and his experiences aboard Mir Station. Below are brief anecdotes told by Norm about some of the

slides from his presentation.

Slide: the Russian equivalent of the Vomit Comet. It is painted as a Russian commercial airliner - Aeroflot. Even military aircraft in Russia bear these commercial markings. Norm said as he was training in it,

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THAGARD...continued from page 19...

flying through the parabolic curves that afforded a few moments of weightlessness, he looked forward into the cockpit and could see the glow of tube technology in the avionics.

Slide: Helicopter rescue from water. Norm said that unlike in his American version of this training, the water was COLD. After he was pulled up into the helicopter and seated, he felt around for a seat belt to attach. He found none. Then he looked over and saw the rescue equipment operator with most of his upper body hanging out the side of the helicopter as he fed cables down and hoisted them up -- and he was completely untethered as they hovered 80 feet over the water. Norm said the Russians have a sort of fatalistic attitude. They believe that if it's your time to go, it's your time to go...

Slide: Group photo of cosmonauts and astronauts in training (with almost an equal number of local children who come to the area to watch them train). Norm said that most of the kids came every day into the completely unsecured environment. It also allowed Norm to have his own sons there.

Slide: Photo of the Soyuz on the rail car going out to the launch site surrounded by crowds of people who came to watch. Norm referenced the explosion of the N1 in 1967 where 165 people were killed

and pointed out that even after that experience they have a rather cavalier attitude (fatalistic?) toward the rockets, allowing people to walk right up to the loaded and venting rocket. Indeed in the photograph, you could see the venting and people only feet away. Norm pointed out that this was the same equipment that first sent Gagarin into space.

Slide: Crew photo. Norm talked about the space suits. Whereas in Florida, he had been terribly hot after suiting up before the launch and he tried to really constrain physical activity to keep from producing more heat, in Russia he was grateful for the warm suit -- it was well below freezing the day of his launch.

Slide: Closer view of the spacecraft. Norm said that during training, one of his biggest fears as he trounced around on frozen surfaces was that he would fall and break something and not get to go on his mission (he had broken 7 bones earlier in life). As he climbed a ladder up to board the vehicle, someone called his name. When he turned in the bulky suit, he missed a handrail he had reached for and very nearly fell. He was most relieved to recover his balance in time to prevent falling.

Slide: Launch photo. Norm said he's often asked whether he was afraid of launching on the Russian vehicle vs. the Shuttle. He said that, in fact,

he felt much safer on the Russian vehicle knowing that they had a proven separation system that had actually saved cosmonauts lives during an explosion before.

Slide: Aboard Mir Station. Norm took with him a Florida State University pennant which was frequently photographed. He said that the cosmonauts loved the pennant and would always move it into the scene when they were broadcasting. (During training, when the crew had come to the US for Shuttle training, Norm had taken an opportunity to drive them to Florida for an FSU football game.) Norm added that what the viewing public would never know was that he had taken another pennant up there, too -- a US Marine Corp pennant. They never wanted that one for the pictures.

Slide: The toilet aboard Mir. Norm pointed to a small piece of paper taped above the toilet. He read the Russian phrase on the paper and said that, below it, there was a phone number. He didn't have to translate for the audience to get it, but he did go on to say that the way he knew one of the American astronauts had put it up there during docking was because of a grammatical error in the Russian. It seems that the Russian word for TIME is one of only a few

See *THAGARD...continued on page 21...*

THAGARD...continued from page 20...

Russian nouns that end in "ya" that is not feminine, and one of the Americans had mistakenly used a feminine form of the word GOOD to modify the neuter noun TIME...(So now you can all guess what the note said, right?!...)

Slide: External view of Mir showing incomplete extension of Spektr's solar array.

Norm pointed out that Spektr module had some problems from the beginning. When Spektr's solar array didn't completely deploy, Mission Control directed the cosmonauts to conduct another EVA to manually extend the last section of the array. The cosmonauts were tired, they had already conducted multiple EVAs, they hadn't been trained on how to work with the arrays with this problem, and they were afraid they might damage the hardware. (cosmonauts are FINED when they damage anything) So they told Mission Control their concerns and said that the next crew coming up should do it instead of them. There was an argument. The Cosmonauts won and left the solar array manual deployment EVA for the next crew. And upon their return home they were fined anyway -- for arguing with Mission Control!

Question/Answer period:

1. What does your experience

aboard Mir tell you about the difficulties of long flights such as to Mars?

Norm pointed to research done on human performance in isolated environments (including not just experience in space, but in places like Antarctica) that says there is a significant difference in the psychological impacts of experiences of less than six months versus longer than six months. In his opinion, you ought to be able to put up with just about anything for almost six months; after that the challenge increases significantly. He believes that a trip to Mars that is goal-directed (point A to point B), would be less taxing than staying aboard a Station that experiences repetitive orbits. Norm said that workload is the single most significant factor in affecting how people perform in long duration flights. He believes his cosmonaut crewmates were significantly overworked for the entire mission. Thagard, on the other hand, had lost the freezer on the Spektr module where he was to have stored the blood and urine samples he would have been taking for his research. Since he couldn't store them, there was no point in taking them and nothing to do research on. So he didn't have enough to do and was extremely bored.

2. What was your experience with the Russian Mission Control Center?

Not satisfactory. Norm said that they would have some days where there was only 42 minutes of total

communication time with Mission Control. With his freezer problem, it took 2 days to report the problem and more than a week to get an answer back. By then, the freezer had completely failed and could not be recovered. The Russians have to buy expensive satellite time to provide communications as they cannot afford to deploy comm ships as they did in the past. Several times they shifted the crew's circadian rhythms by 12 hours in order to better utilize costly satellite time.

3. What biological impacts were most pronounced to you after returning from your long stay aboard Mir?

Norm said that, whereas after brief Shuttle flights he had always regained his sense of balance within 24 hours of his return, it took all of 5 days to regain his normal sense of balance after his stay on Mir. He described a sort of gyroscopic effect where if he leaned forward or backward, he would feel like he was still moving even after he had stopped. He said that when turning corners there was a sense that he had turned enough, but then he might strike his shoulder on the opposite wall, having misjudged it. Norm said that after Shuttle flights, he would often have a sensation of floating when he got in bed at night. And during the night, he would wake up all over the place in the bed. His first night back home after his first

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Shuttle mission, his wife woke him up to get in the right place again -- he had migrated to a crossways position across the bottom of the bed. After his Mir experience, he was surprised to find he had no problem sleeping in the right place.

Norm described a 20% loss of red blood cells resulting in anemia as an effect of long duration space-flight. The mechanism that regulates production of red cells resides in the upper body. On earth, red cells are more concentrated in the lower body due to gravity. When red cells normally in the lower body on earth are dispersed throughout the body during weightlessness, the mechanism senses in error that there are a sufficient number of red cells and halts production.

Norm said that upon his return doctors took a femur measurement and detected a 12% reduction in bone density. To date, he still has a 5% loss. Doctors estimate that it will take another 6 months or so to completely recover.

Norm experienced a big loss in cardiovascular fitness (despite his two hour per day exercise program). When he left he ranked at the 99th percentile for 36 year old males in cardiovascular fitness. (He was 51.) After returning he was in the 50th percentile for men closer to his own age.

Norm said that his radiation exposure was the equivalent of 1200 chest x-rays. He points out that this

is no problem for him because he's older and by the time he were to get his resulting leukemia, something else would already have killed him. He did point out, however, that for a young woman, two 6-month stays aboard Mir would give her the lifetime allotment of radiation that is "statistically acceptable."

4. *What question do you wish people would ask, that you have never gotten as you travel and speak?*

Norm's answer (appropriate for how late the meeting had gone): "I can't think of a one..."

SUCCESS...continued from page 7...

ratories with the operational and applied research of NASA to understand and remove the impediments to safe and effective human exploration and development of space. The NSBRI's discoveries and research products will lead to countermeasures against the effects of weightlessness and space radiation and will contribute to the clinical benefit of all mankind. Specifically, the NSBRI will:

- * Define the molecular, cellular and organ-level responses that impede long-term space flight.
- * Develop countermeasures to combat the impediments to long-term space flight.

Dr. Alford identified several phe-

SUCCESS...continued from previous column...

nomena that present impediments to long-term space flight:

- * Bone Demineralization
- * Cardiovascular Alterations;
- * Human Performance Factors: Sleep and Chronobiology
- * Immunology, Infection and Hematology
- * Muscle Alteration and atrophy
- * Neurovestibular Adaptation; Balance and Spatial Disorientation
- * Radiation Effects; DNA Damage and Repair
- * Technology Development; Sensors, Instrumentation, Intelligent Software

Well, I'm sure sorry if you missed us in November but be sure and lookout for our fantastic fall lineup of programs. As always, if there's a program topic you're interested in or if there's a way the Section can serve you better, let us know.

See you next month,
-dan.



Cranium Cruncher

First of all, let me acknowledge a number of correct responses to October's "Turkeys in the Road" puzzle which I received after I went to press last month. The additional correct turkey catchers were: Gary Noyes; William Proft; Carl Scott; Karina Shook; Bill Warren; and John Vollmer. Thanks for getting those birds off the road!

Last Month's "Building Blocks" puzzle must not have stumped you, because as of press time I've gotten 18 correct answers from the following folks: David Abuisi; Hubert Brasseaux; Mary Cerimele; Mike Duke; Paul Felker; Winston Goodrich; Steve Johnson; Bob Maraia; Wendell Mendell; Bill Miller; Gary Noyes; Andrew Petro; Mark Phillips; Karina Shook; Stephanie Sipila; Chris Stewart; John Trebes; and Monica Visinsky. My random process selected Gary Noyes as this month's winner from the pool of all correct responses. Congratulations, Gary - you'll receive a free meal at an upcoming AIAA monthly program as your prize!

By the way, the correct sequence of building blocks last month produced the six words: ant; each; venue; mammal; sextant; hologram. Now here's a little logic puzzle that will give you some holiday cheer, I hope. I call it "High Rent".

A group of six people, who live in the same apartment building,

got together for lunch one day. As they ate and talked, they discovered that each one lived on a different floor and that no one paid the same amount of rent. In fact, they learned that the higher the floor, the higher the rent, and that one person's rent is \$525.

Your task is to figure out from the following clues the full names of the six renters, the floor on which each lives, and the amount of rent they pay.

1. Ms. Jordan lives between Danielle and Adams.
2. The highest rent is not paid by Falk, Stuart, or Peter. It is \$175 more than the 17th floor rent.
3. Floor 21 is rented at \$75 more than where Adams lives and \$50 less than what Adrienne pays.
4. Sarah pays \$475, \$175 less than Ms. Drake.
5. Price's rent is \$50 higher than Adrienne's and \$100 more than Jacob's.
6. The rent at the 12th floor is \$450. No one with the initial P or A lives there.
7. Stuart's rent is lower than Jordan's.
8. There is no information about Farah.

First names are: Adrienne; Danielle; Farah; Jacob; Peter; Sarah.

Last names are: Adams; Drake; Falk; Jordan; Price; Stuart.

These folks live on floors 12; 14; 17; 21; 24; 25.

Any good sleuth ought to be able to figure this one out! Send me your answers via paper mail to:

Norman Chaffee
Mail Code AP2
NASA JSC
Houston, TX 77058

Or reach me by E-mail at Norman.H.Chaffee@jsc.nasa.gov.

I'll publish a list of correct responses next month and someone will be the lucky winner of a free meal at a future AIAA event! Good Luck!

Norman Chaffee





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

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Lockheed Martin Engr & Sci
M/C B14
2400 Nasa Rd 1
Houston TX 77058-3711

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Horizons

December, 1997





GEORGE NIELD
CHAIRMAN 1997-98

American Institute of Aeronautics and Astronautics

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

Tuesday, December 9, 1997

SPACE SHUTTLE UPGRADE PROGRAM

WILLIAM F. READDY
Manager, Space Shuttle
Program Development



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

TOPIC / PRESENTER

The Space Shuttle Upgrade Program is intended to identify, prioritize, and implement major Shuttle enhancements which will keep the vehicle flying safely and economically for many years to come. Some of the systems being investigated include Liquid Flyback Boosters, electric auxiliary power units, new technology fuel cells, and upgraded avionics.

Captain William F. Readdy received a bachelor of science degree in aeronautical engineering (with honors) from the U.S. Naval Academy in 1974. He was designated a naval aviator in September 1975 and following training in the A-6 Intruder, he joined Attack Squadron 85 aboard the USS Forrestal deployed to the North Atlantic and Mediterranean from 1976 until 1980. Upon completion of the U.S. Naval Test Pilot School, Patuxent River, Maryland, he served as project pilot on a variety of test programs while assigned to the Strike Aircraft Test Directorate. Following a short tour as an instructor pilot at the U.S. Naval Test Pilot School, he reported in 1984 to the USS Coral Sea, on Caribbean and Mediterranean deployments. In October 1986, Readdy accepted a Naval Reserve commission and joined NASA as a research pilot. Selected as an astronaut in the 1987 Group he has completed three Shuttle flights and has logged over 672 hours in space.

DINNER MEETING

5:30 Social
6:15 Dinner
7:00 Presentation

Entree: BAKED HAM

MEMBERS	\$ 5.00
NONMEMBERS	\$10.00
STUDENTS	\$ 3.00

MIROS GARZA
483-0934

miroslava.r.garza1@jsc.nasa.gov

JANET STEWART
333-6724

janet.stewart@lmco.com

NICK JOHNSON
483-5313 or

nicholas.l.johnson1@jsc.nasa.gov

CALL OR E-MAIL ONE OF THE ABOVE FOR RESERVATIONS OR RESERVE AT <http://seat1a.jsc.nasa.gov/aiaa>

NOTE: RESERVATION DEADLINE IS THURSDAY DECEMBER 4 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.
SEE AIAA-HOUSTON SECTION WEBSITE FOR MORE DETAILS www.jsc.nasa.gov/aiaa