

## Chairman's Corner

Steve Zobal  
Chairman

We are in the stretch run of the 1992-93 Section year with a busy three months ahead of us. Our technical committees have planned a full schedule for this spring (watch for the flyers). Programs and Events Chairman Dr. Moe Miller has scheduled entertaining speakers for our remaining monthly dinner meetings. Other key events and dates for the balance of the year are noted below. Join the Section members and guests in participating!

- The year-end Section Awards Banquet and new Section officer introductions are scheduled for June 24. ☺

- We have begun our *Section* election process as outlined in last month's *Horizons*. You should have received your ballot for the AIAA National elections this past month. The ballot submittal deadline is April 6 (AIAA National must receive your ballot by April 6).

- Nomination forms for Associate Fellow, Fellow and Honorary Fellow are available from Jim Visentine, our Membership Chairman (483-8923). Completed nomination forms/references due dates are April 15/May 15 for Associate Fellow and June 15/July 15 for Fellow and Honorary Fellow. Senior Member upgrade forms are processed year round.

- The 41st AIAA Southwest Regional Student Paper Competition will be held this year at the Ramada King's Inn, NASA Road 1, April 1 - 3. Mike Begley, SPC Chairman (333-6996) has all the details.

- The AIAA Houston Section 18th Annual Technical Symposium is May 20 at the University of Houston-Clear Lake. Abstracts are due March 15. Contact Dick Bennett, VC-Technical (283-1956), for more information.



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*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 of Operations, Audrey Schwartz, JSC/IA121, or to the Editor, Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

## Committee News

### **International Space Activities**

**Dr. Zafar Taqvi**  
**International Space Activities Chairman**

ISAC held its fifth monthly meeting on February 16, 1993. Several ongoing activities are well under way.

#### **Sister Section Activities**

Jim McLane, Jr., our longtime China Sister Section Coordinator, is the ISAC Vice-Chairman of sister section activities. New efforts toward establishing sister sections in Russia (Jim Oberg, Coordinator), Canada (Steve Berry, Coordinator), France (Jim Snowden, Coordinator) and Japan (Zafar Taqvi, Coordinator) are under way. All sister sections, established and formative, will be approached for possible participation in our Annual Technical Symposium. This is being coordinated with Dick Bennett, Houston Section Vice-Chairman, Technical.

#### **International Service Activities**

This group handles journals, translation support and the International Space Hospitality (ISH) program. Dr. Larry Friesen has provided inputs on international journals. Gloria Reilly is in charge of translation support. Details of personnel and the languages they will support were included in last month's *Horizons*.

The ISH program idea is being looked into logistically. It will be an opportunity for the membership to meet international space personalities.

The Paris Air Show trip, coordinated by Jim Snowden, had to be canceled due to lack of interest.

A very popular activity launched by Jim Oberg (282-4351) is the Russian space vocabulary Lunch & Learn seminar. The meetings on February 4 and February 19 were very successful. Contact Jim for the next meeting date. ☉

### **Automation & Robotics**

**Dr. Zafar Taqvi**  
**Automation & Robotics Chairman**

The Automation & Robotics TC will host the following programs in March and April:

On Tuesday, March 9, Carlos Roithmayr of JSC's Navigation, Control & Aeronautics Division will discuss "Kane's Method and its Applications in Robotics." The meeting will be in the main hall of the Gilruth Center starting at 11:30 AM.

The Annual Workshop on Automation and Robotics (WAR '93) will be held on Wednesday, March 24, from 9:00 to 2:30 at the Gilruth Center. This year's theme is Intelligent, Dexterous Robotics. See the attached flyer for details.

Dr. Reginald B. Berka, Head of the JSC Robotics Development Section, will speak on "Control of Hyper-Redundant Manipulators in Space Environment" on Wednesday, April 7. This seminar will be held in the Gilruth Center, Room 206.

There is no charge for any of these programs, but reservations are essential. **MAKE RESERVATIONS EARLY!!** ☉

### **Volunteers Needed for Student Paper Competition**

**Mike Begley**  
**Student Activities/Young Member Chairman**

This year, our Section plays host to the Southwest Region Student Paper Competition. One hundred students from eight universities will converge on the Clear Lake Ramada Inn from Thursday, April 1, to Saturday, April 3. We need volunteers to serve in three capacities: judging, transportation and industry social.

About ten judges are needed now to evaluate the students' papers. Our judging chairman, Dick Bennett, has the paper abstracts which prospective volunteers

may peruse to find papers related to their field of expertise. Also, nine judges are needed for the morning and afternoon paper sessions on Friday, April 2, to evaluate the oral presentations. Volunteers need not serve in both morning and afternoon sessions. For more information, please call Dick Bennett at 244-4532.

About 30 students from the New Mexico and Oklahoma universities will arrive at Hobby Airport. We need volunteers to shuttle them to the hotel Thursday evening, to and from the industry tour on Saturday morning, and to Hobby Airport Saturday afternoon. If you can help out at any one of these times, please call Mike Begley at 333-6996.

The industry social provides an informal environment for the students to meet with aerospace professionals to learn about the state of the industry, the role of new hires, and employment opportunities. Members are asked to come by the hotel Friday afternoon from 5:00 to 6:00 PM for refreshments and conversation. Call Mike Begley to volunteer. ☺

## Houston Section to Host AIAA National Conference

Dr. Zafar Taqvi

The Conference on Intelligent Robots in Factory, Field, Service and Space, a unique and special national conference organized by AIAA will be coming to South Shore Harbor and our Section will host it. The conference, with the theme "Sharing Technology in the National Interest," is scheduled for March 21-24, 1994. NASA/JSC is cosponsor of the conference.

You may recall that our Section had been asking AIAA Headquarters to hold a national conference here for the last several years. We discussed this issue in detail at last year's reception for National TC members.

This conference will provide an opportunity to many of our members not only to participate but to play leadership roles. Details will be forthcoming. ☺

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## Events

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### March Dinner Meeting - Engineering in the Airline Industry

Dr. Zafar Taqvi

This month's dinner meeting on March 24 will feature Mr. Peter J. Rots, Senior Director of Engineering, Continental Airlines, who will speak on engineering in the airline industry.

Mr. Rots has previously served in the commercial aviation industry as head of heavy maintenance. He was a line pilot in the Coast Guard for 30 years, retiring as a rear admiral.

He has an engineering degree from the U. S. Coast Guard Academy, an M. S. in industrial administration from Purdue University and an M. S. in structures from the Air Force Institute of Technology.

Remember that the dinner meeting is on Wednesday this month. Please check the flyer for the reservation deadline. ☺

## Key Decisions in Aerospace History

Carolyn Conley

Robert F. Thompson, Vice President of McDonnell Douglas Aerospace Houston Operations, presented "Key Decisions in Aerospace History" to the monthly meeting of the Houston Section held January 28, 1993. Mr. Thompson has been an AIAA member since the early sixties. He is a Fellow and a recipient of the AIAA Von Karman Lectureship in Astronautics Award. The following are a few excerpts from his presentation.

The aerospace community, those who believe in the Space Station Program, and the public need a primary reason to keep the Space Station funded and on track to be built and deployed in low Earth orbit. If we don't have a larger national commitment, we may not get the Space Station built. As Will Rogers said, "If you don't change, you'll get where you're going." It is a long path and we must maintain our direction.

In the past thirty-five years the United States has made three major decisions to develop its aerospace leadership. First, in 1958 after the Soviet Union launched Sputnik, America decided to get into space. NACA was expanded to include aerospace and became NASA. The Mercury and Gemini programs were an outcome of this initial decision.

Second, in 1960 President Kennedy needed a political solution. He suggested we go to the moon, not because it was easy, but because it was hard, even though at that moment we were not sure how to do it. At the peak of Apollo NASA was funded to a level of 4.5% of the annual national budget.

Third, after the successful Apollo program in the late 1960s, NASA and the nation decided the next logical step was Low Earth Orbit (LEO). We had already been to the Moon. It was not reasonable to go to Mars because of the high cost, long transport time and need for more advanced hardware. Considering

cost and other factors, it was decided that the US would concentrate on LEO and build an infrastructure for the twenty-first century. This included a transportation vehicle and space station. The Space Shuttle became more than a launch and landing vehicle; it is also a construction support vehicle that can double as a platform for research, satellite deployment, and earth observations.

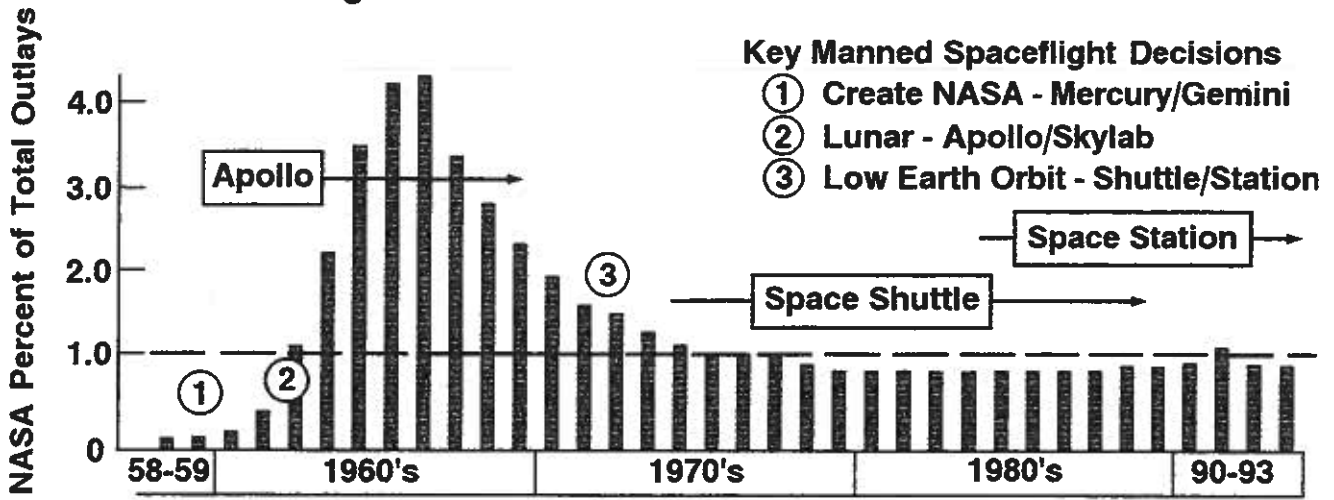
Following this third decision, NASA funding has remained essentially constant at just under 1% of the national budget for the past 18 years (figure 1). Fourteen percent of that 1% is the Space Station Freedom portion of the NASA budget. People have thought of canceling the station because we're not sure what we'll get out of it. However, the same could have been said of two other areas of exploration at the turn of the twentieth century.

If we look at the Aviation Analogy (figure 2) we see it took over 50 years for rapid jet transport to develop. If we look at the Antarctica Analogy (figure 3) we see it took over 40 years for permanently manned science to develop on Antarctica.

We sometimes ignore the history of analogous projects of great technical achievement and expect more of our progress than what has been achieved. We are on a reasonable schedule! As individuals we need to communicate to our elected representatives our support for continuing development of our space program. In the process we'll continue to provide a unifying leadership role and endure as a leading spacefaring nation. ©

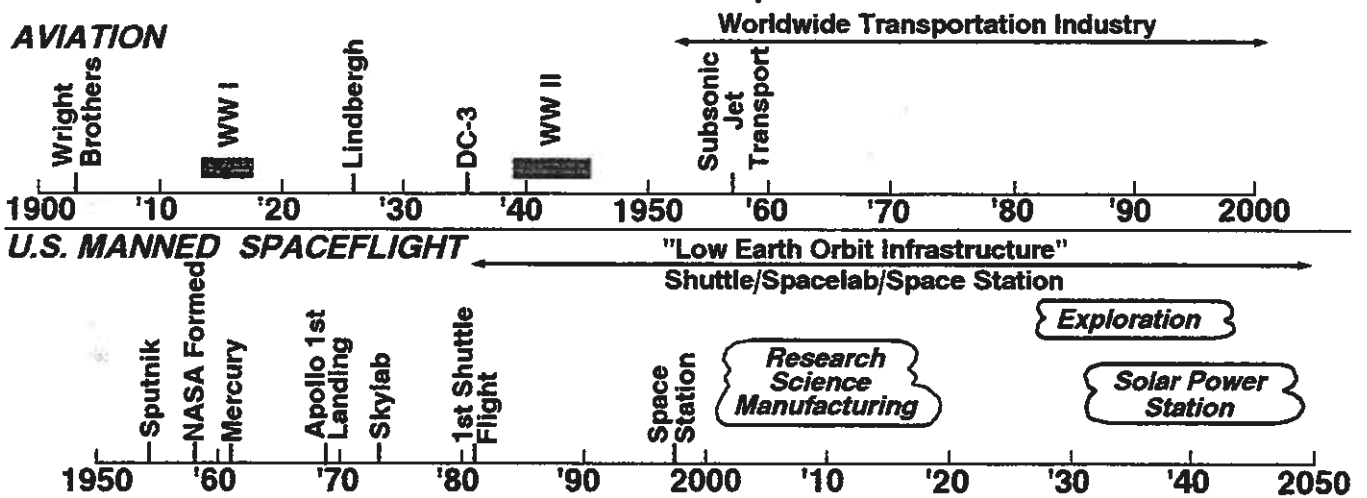


**Figure 1. HISTORICAL NASA BUDGET**



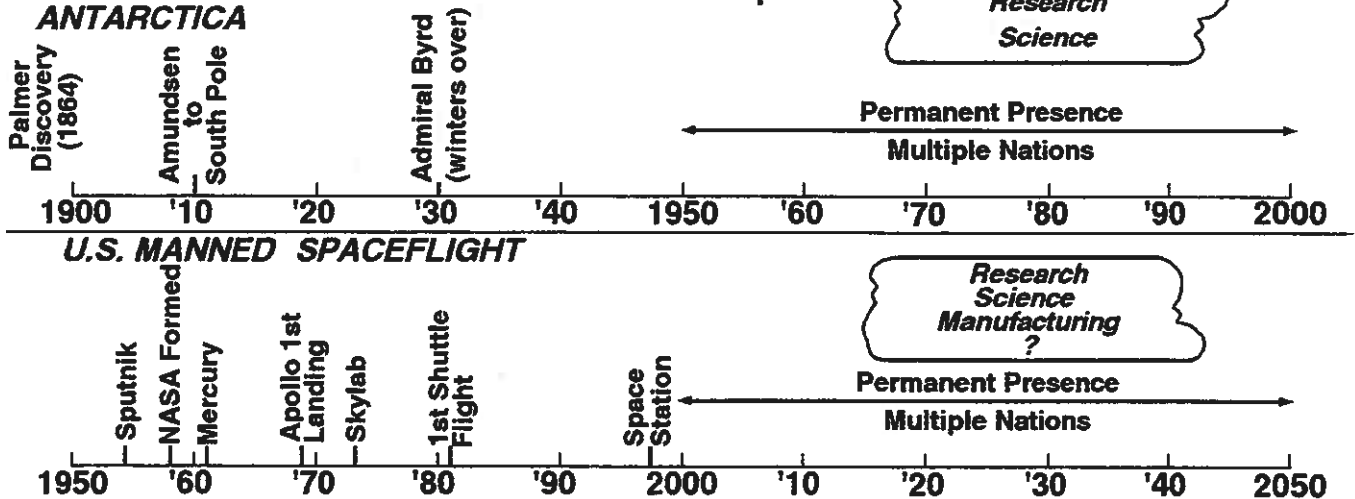
**Figure 2. AVIATION ANALOGY**

100 Year Linear Comparison



**Figure 3. ANTARCTICA ANALOGY**

100 Year Linear Comparison

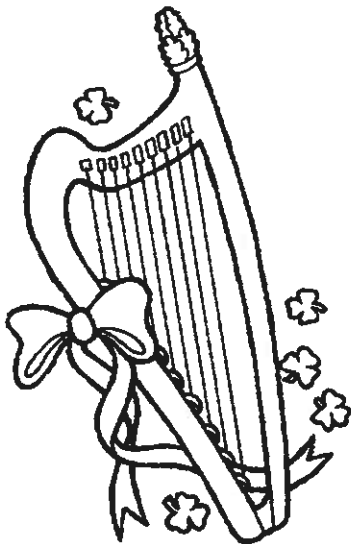


## CLCTS Luncheon

**Bill Best**  
CLCTS Representative

The Clear Lake Council of Technical Societies (CLCTS) held its annual luncheon for member society representatives and chairmen on February 10. Twenty people were in attendance. The goals for the society for the coming year are to put an electronic bulletin board into operation and to become incorporated as a non-profit organization so that funds can be raised for an engineering building. The building would serve as a repository for all the records of the member societies and could also be used for meetings. The bulletin board would enable anyone with a modem to access the latest schedules for meetings and correspond with other members of your society.

In addition, planning for the 10th Annual Awards Banquet to be held on Friday, June 4, is under way and funds to upgrade the satellite receiving system located at the Gilruth Center are being raised. The receiving system is used for video conferences which are available to members. For additional information contact me at 283-0261 or Andy Lindberg at 532-4450.



## Wednesday Afternoon at the Movies!

**Dr. George Nield**  
Education/Professional Development Committee

The Education and Professional Development Committee is continuing to sponsor presentations of videotapes of interest to the aerospace community. The presentations are held on site at the Johnson Space Center in Building 1, Room 810, starting at 4:15 PM.

Our next showing will be March 31, 1993, and is a definite "4-star" titled "SR-71 Blackbird: The Secret Vigil." The SR-71 remains one of the most remarkable aircraft in the world. It is capable of cruising at speeds of over Mach 3 at altitudes in excess of 80,000 feet. During the Cold War years it flew numerous missions over the Soviet Union, China and Vietnam to provide crucial intelligence photos. Although shot at by nearly 1000 missiles, it has never been hit. Come and see this outstanding Aviation Week video.

If you have any questions, please call George Nield at 483-1364.

## 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 either to Audrey Schwartz, JSC/IA121, or to Lou Livingston, 1911 Pepper Hill, Houston, TX 77058.

### March

#### 9 - Tuesday

Automation & Robotics TC.  
"Kane's Method and its Applications in Robotics,"  
Carlos Roithmayr, Navigation, Control & Aeronautics  
Division, JSC.  
JSC Gilruth Center, 11:30 AM.

#### 18 - Thursday

Executive Council meeting.  
MDC Tower 1, Rm. 160, 5:00-6:15.

#### 24 - Wednesday

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

Workshop on Automation & Robotics (WAR '93).  
JSC Gilruth Center, 9:00 AM-2:30 PM.  
No charge (except for lunch); reservations required.  
Information: Mary Stewart, 483-1724.

#### 29 - Monday

Inputs due COB for April *Horizons*.

#### 31 - Wednesday

Wednesday Afternoon at the Movies.  
"SR-71 Blackbird: The Secret Vigil."  
JSC, Bldg. 1, Rm. 810, 4:15 PM.

### April

#### 7 - Wednesday

Automation & Robotics TC.  
"Control of Hyper-Redundant Manipulators in Space  
Environment," Dr. Reginald Berka, JSC.  
JSC Gilruth Center, room 206, 11:30 AM.  
Information: Dr. Zafar Taqvi, 333-6544.

#### 22 - Thursday

Executive Council meeting.  
MDC Tower 1, Rm. 160, 5:00-6:15.

#### 26 - Monday

Inputs due COB for May *Horizons*.

#### 29 - Thursday

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

### May

#### 20 - Thursday

Executive Council meeting.  
MDC Tower 1, Rm. 160, 5:00-6:15.

#### 21 - Friday

Inputs due COB for June *Horizons*.

#### 27 - Thursday

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

### June

#### 17 - Thursday

Executive Council meeting.  
MDC Tower 1, Rm. 160, 5:00-6:15.

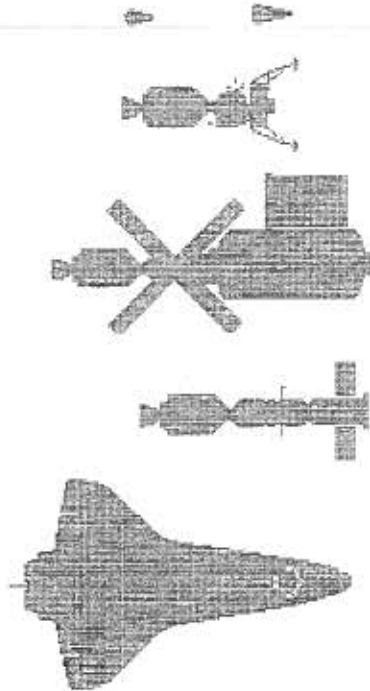
#### 24 - Thursday

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

## OUTSTANDING SECTION AWARD



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



## SECTION SPECIAL EVENT AWARD



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

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

**Non-Profit Organization  
U.S. POSTAGE PAID  
Webster, Texas  
Permit Number 1**







STEVE ZOBAL  
CHAIRMAN 1992-93

**American Institute of Aeronautics and Astronautics**

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

**Wednesday, March 24, 1993**

**ENGINEERING IN THE  
AIRLINE INDUSTRY**

**PETER J. ROTS**

**Senior Director of Engineering  
and Technical Publications  
Continental Airlines**



**PRESENTER**

Mr. Rots received his engineering degree from the U.S. Coast Guard Academy and advance degrees from Purdue University and the Air Force Institute of Technology. He served 30 years in the Coast Guard as a line pilot, qualified in fixed and rotary wing, reciprocating and jet propulsion, overhaul test pilot and various aeronautical engineering assignments. He retired as a Rear Admiral. Since his retirement, he has spent 5 years in the commercial aviation industry in the positions of head of heavy maintenance and his current position at Continental Airlines.

**Executive Host**

**Tom Camp  
Department Manager  
NASA Software Support  
PRC Inc.**

**DINNER MEETING**

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

**MENU: CAJUN CHICKEN**

**MEMBERS & SPOUSES \$8.50  
NONMEMBERS \$9.50  
STUDENTS/YOUNG MEMBERS \$7.50**

**AIAA HOUSTON SECTION MEETINGS  
ARE HELD AT THE JOHNSON SPACE CENTER  
ROBERT R. GILRUTH RECREATION CENTER**

Frankie Hap  
333-6064  
Lockheed

Ardell Broussard  
280-1500  
McDonnell Douglas

Kim Wunsch  
483-1350  
RSOC

Sarah Leggio  
282-3160  
Bendix

**CALL ONE OF THE ABOVE FOR RESERVATIONS.  
DEADLINE IS FRIDAY, MARCH 19, AT 12:00 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.**

AUTOMATION AND ROBOTICS TECHNICAL COMMITTEE  
OF  
AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS  
HOUSTON SECTION  
AND  
AUTOMATION AND ROBOTICS DIVISION, NASA/JSC  
PRESENT

# WAR '93

A ONE DAY WORKSHOP ON AUTOMATION AND ROBOTICS  
GILRUTH RECREATION CENTER, NASA/JSC  
Wednesday, MARCH 24th, 1993, 9:00 AM-2:30 PM

## THEME: INTELLIGENT, DEXTEROUS ROBOTICS

8:30 AM- 9:00 AM	Registration
9:00 AM- 9:15 AM	Welcome
9:15 AM-10:15 AM	<b>Peter Bonasso, MITRE Corp.</b> <i>Robots that Succeed: Programming Real-World Problems</i>
10:15 AM-10:30 AM	Break
10:30 AM-11:30 AM	<b>Dr. Marcel Schoppers, Robotics Research</b> <i>Harvesting (Topic: TBD)</i>
11:30 AM- 1:00 PM	<b>Jim Lowrie, Martin Marietta</b> <i>Design and Fabrication of the Flight Telerobotic</i>
Luncheon (Reservation necessary )	<i>Servicer</i>
1:30 PM- 2:30 PM	<b>Dr. Steve Jacobson, SARCOS, Inc., Utah</b> <i>Machines that move under computer control</i>

**EXCEPT FOR THE LUNCHEON, THE WORKSHOP IS FREE.  
REGISTRATION IS MANDATORY.  
SEATS ARE LIMITED, FIRST-COME-FIRST SERVE**

**Cosponsored by:**

ISA Clear Lake Automation, Systems and Aerospace Section (CLASAS-formative)  
IEEE Galveston Bay Section, Joint Automation and Robotics, and Aerospace Systems Chapter  
(GBS/JARASC-formative)

Further details will be forthcoming

**For registration and reservation contact:**

**Mary Stewart/ER3, call at 483-1724 or FAX enquiry at 483-7580  
Cost of luncheon is \$ 8.00 [Reservation/cancellation required]**

FILL OUT THE FORM AND MAIL TO MARY STEWART

-----  
**REGISTRATION FORM**

Name.....Company Affiliation .....

Address.....Telephone.....

Luncheon Reservation    Yes/No            Amount Enclosed.....  
Membership            AIAA.....    IEEE.....    ISA.....    Any other.....

# ***Support Space Station Freedom***

***Please write your U. S. Representative and Senators now to save the Space Station budget. And ask your friends and relatives in other states to write their elected officials as well.***

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Once again, NASA's budget is headed for a tough time in both the U.S. House and Senate -- particularly funding for Space Station Freedom, which may be at greater risk of cancellation than at anytime in the past. We therefore urge you to write your elected representatives in Washington and let them know that you believe Space Station Freedom is a vital part of America's future and our continued leadership in space. Space Station Freedom: It's the next step.

## ***What's at Stake***

If *Space Station Freedom* is cancelled, America has a lot to lose:

- **Jobs.** 75,000 to 100,000 jobs depend directly or indirectly on Space Station Freedom nation-wide.
- **Our Economic Competitiveness.** Today, aerospace is one of the few industries where the U.S. still leads the world in the development and marketing of new technology. Space Station Freedom will build on this success by stimulating additional research in such diverse areas as biomedicine, materials science, and environmental engineering.
- **Our Children's Future.** Twenty years ago the Apollo program inspired our nation's youth to pursue careers in math, science, and engineering. Today, with student test scores at an all time low, our young people need the kind of inspiration that would be provided by the construction of Space Station Freedom.

## ***The Benefits of Space***

Although less than 1% of the federal budget is spent on space, it has benefited our lives in many ways. Every day, orbiting satellites help track the course of deadly hurricanes, provide valuable intelligence for our military, and aid the spread of news and information around the world. Other benefits include:

- **Health Care.** Space-derived technologies have led to the development of insulin pumps for diabetics, laser heart surgery, diagnostic imaging systems like the CAT scan, and reading machines for the blind.
- **The Environment.** Orbiting satellites help monitor our global environment, assessing the magnitude of such threats as drought, deforestation, ozone depletion, and global warming.
- **Commercial Spin-offs.** Space research has also driven the development of new commercial products, including advanced insulations, protective coatings, and miniaturized electronics.

This is just a sample of what we've already received from our investment in space. But what of the future? The weightless environment of Space Station Freedom holds the key to developing new materials, medicines, and techniques that could ultimately lead to the growth of new skin for burn victims and organs for transplants. The possibilities are endless.

## How to Write Your Congressman\*

Because it's good politics, Senators and Representatives pay attention to their mail. They know that their response to your letter may decide your vote in the next election. The most effective letter you can write is a personal one, written in your own words. It should be concise, informed, and polite. Some specific recommendations:

- In a short first paragraph, state your purpose -- then support your position with the rest of the letter.
- Be factual. Avoid emotional or philosophical arguments. Explain why you think it's important to fund Space Station Freedom, and how cancellation of the program would affect you and others in your community.

\*Adapted from "The U.S. Congress Handbook, 1991".

### Suggested Format

The Honorable \_\_\_\_\_  
United States Senate  
Washington, D.C. 20510  
Dear Senator \_\_\_\_\_:

or

The Honorable \_\_\_\_\_  
United States House of Representatives  
Washington, D.C. 20515  
Dear Representative \_\_\_\_\_:

*I am writing to express my support for the space program, and specifically for Space Station Freedom. This program is important to me because . . . .*

*In conclusion, I urge you to support the space program, and particularly full-funding of Space Station Freedom.*

Sincerely,  
Your Name

### Names and Phone Numbers of Your Representatives in Washington

#### U.S. Senate:

Bob Krueger (D)  
Phil Gramm (R)

#### Phone:

(202) 224-5922  
(202) 224-2934

#### U.S. House of Representatives:

Bill Archer (R), 7th District  
Jack Fields (R), 8th District  
Jack Brooks (D), 9th District  
Craig Washington (D), 18th District  
Tom DeLay (R), 22nd District  
Mike Andrews (D), 25th District  
Gene Green (D), 29th District

(202) 225-2571  
(202) 225-4901  
(202) 225-6565  
(202) 225-3816  
(202) 225-5951  
(202) 225-7508  
(202) 225-1640

### Other Members of the Texas Congressional Delegation

Dick Arney (R)	(202) 225-7772	Joe Barton (R)	(202) 225-2002
Henry Bonilla (R)	(202) 225-4511	John Bryant (D)	(202) 225-2231
Jim Chapman (D)	(202) 225-3035	Ron Coleman (D)	(202) 225-4831
Larry Combest (R)	(202) 225-4005	Chet Edwards (D)	(202) 225-6105
Martin Frost (D)	(202) 225-3605	Kika de la Garza (D)	(202) 225-2531
Pete Geren (D)	(202) 225-5071	Henry B. Gonzalez (D)	(202) 225-3236
Ralph Hall (D)	(202) 225-6673	Eddie Bernice Johnson (D)	(202) 225-8885
Sam Johnson (R)	(202) 225-4201	Solomon Ortiz (D)	(202) 225-7742
Jake Pickle (D)	(202) 225-4865	Bill Sarpalius (D)	(202) 225-3706
Lamar Smith (D)	(202) 225-4236	Charles Stenholm (D)	(202) 225-6605
Frank Tejeda (D)	(202) 225-1640	Charles Wilson (D)	(202) 225-2401

**Please call or write  
your congressional representatives today!**