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## Space Congress Programs

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4-25-1989

# 1989 Twenty-Sixth Space Congress Preliminary Program

Canaveral Council of Technical Societies

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Aeronautical University,<sup>®</sup>  
SCHOLARLY COMMONS

**TWENTY-SIXTH**



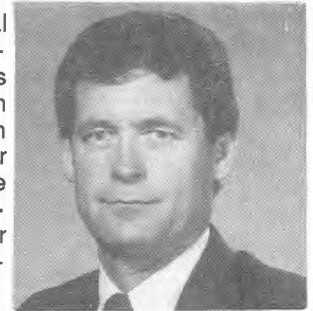
**SPACE CONGRESS**

**PROGRAM**

Cocoa Beach, Florida April 25, 26, 27, 28, 1989

## CHAIRMAN'S MESSAGE

Welcome to the 26th annual Space Congress. In its twenty-six years, this Space Congress has maintained its reputation as the premier conference on space technology and this year is no exception. The theme "**Space - The New Generation**" is appropriate with our Nation's challenge of successfully returning to space.



The 26th Space Congress is sponsored by the Canaveral Council of Technical Societies (CCTS) and supported by the National Aeronautics and Space Administration and the Department of Defense. In addition, the Space Coast communities, local Aerospace Contractors and citizens are instrumental in putting together this most informative symposium.

In the next four days you will hear outstanding speakers such as Congressman Bill Nelson at our opening session and Governor Bob Martinez at the Tuesday evening banquet. Panels will examine NSTS, Space Station and DOD's part of the overall picture. Panel Chairmen include outstanding leaders Mr. Arnold Aldrich, Lt. Gen. Donald L. Cromer, Mr. James B. Odom, Col. Robert T. Cote and Col. Vito J. Pagano. Technical paper sessions cover such topics as the International Aspect of Space Station, Lunar Base development, and Mission to Mars, to name a few. A Press Conference will feature well known media personalities and give us a chance to be on the questioning side. At the Wednesday luncheon Cosmonaut Valentin Lebedev will share his views on the 219 days he spent in space.

We know that you will agree after this week-long symposium that all our programs have been challenging and informative. We will be soliciting your evaluation of the Congress so that we can continue to improve this outstanding annual "Space" event.

If there is anything any of the committee members can do to make your stay at the Congress more enjoyable, please let us know.

We are happy to have you here and hope that you have a wonderful time.

A handwritten signature in cursive script that reads "L. J. Holloway".

L. J. Holloway  
General Chairman  
26th Space Congress

## GENERAL INFORMATION

### HEADQUARTERS/REGISTRATION

Headquarters for the Twenty-Sixth Space Congress is the Holiday Inn, Cocoa Beach. Registration will take place in the Dolphin Room from noon to 5:00 p.m. Monday, April 24, 1989. Registration will continue from 7:00 a.m. to 5:00 p.m. on Tuesday, Wednesday and Thursday, and from 7:00 a.m. to noon on Friday.

PACKAGE REGISTRATION.....	\$130.00
(Includes first five items listed below)	
Tuesday Luncheon.....	7.00
Tuesday Banquet.....	25.00
Wednesday Luncheon.....	10.00
Loose-Leaf Copy of Proceedings.....	70.00
Sessions all four days.....	30.00
Individual Sessions.....	5.00
Individual Sessions (Students).....	2.00

Package registration will save you money; however, each item may be purchased individually at the listed price. Telephone contact can be made through the Holiday Inn (407) 783-2271 (ask for Dolphin Room) or 784-9324.

### PRESS ROOM

Press facilities are located in the Egret Room of the Holiday Inn of Cocoa Beach and the Skylab Room of the Howard Johnson Plaza-Hotel. Press facilities are staffed and directed by Mitch Varnes from 12 noon to 5:00 p.m. on Monday and from 8:00 a.m. to 5:00 p.m. on Tuesday, Wednesday and Thursday and 8:00 a.m. to noon on Friday. The telephone numbers for the press facilities are: Holiday Inn (407) 784-9190, 0493, or 9208 and Howard Johnson Plaza-Hotel 784-9367, or 0056.

### MESSAGE/LOCATOR ASSISTANCE

The sponsoring organization, the Canaveral Council of Technical Societies (CCTS), assists attendees by maintaining a message board. Registrants who wish to leave lodging and local phone information can do so by turning in locator forms, available at the Registration Desk, to the CCTS/Message/ Locator Desk located in the Dolphin Room, Holiday Inn, or by phone to (407) 784-9179, or 9184.

### PROCEEDINGS

The proceedings of the Twenty-Sixth Space Congress are available at the registration desk in the Holiday Inn during the Space Congress. After the close of the Space Congress, additional proceedings can be purchased for \$70 each plus postage from Secretary, CCTS, Post Office Box 245, Cape Canaveral, Florida 32920.

### EXHIBITS

Exhibits will include displays of the Space Station, Space Shuttle, Shuttle Payloads, Expendable Launch Vehicles, and other space related activities. The Exhibit Hall and Exhibit Rooms will be open from 10:00 a.m. to 7:00 p.m. Tuesday, from 10:00 a.m. to 8:00 p.m. on Wednesday, and from 9:00 a.m. to 3:00 p.m. on Thursday. Representatives of the exhibitors will be in attendance to assist and inform visitors. The Exhibit Hall and Exhibit Rooms are located in the Cocoa Beach Hilton, 1550 N. Atlantic Ave. (A1A), Cocoa Beach.

## EXHIBITORS

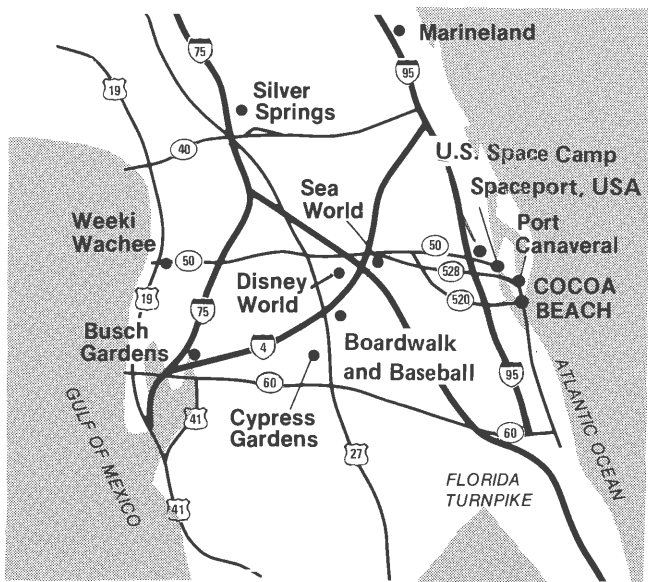
Advanced Process Systems  
Allen-Bradley Company  
Applied Business Technology  
Aviation Week  
Ball Aerospace  
BAMSI  
Bechtel  
Boeing Company  
Brevard Community College  
Canaveral Council of Technical Societies  
Computer Sciences Corporation  
Digital Equipment Corporation  
Diversified Information Systems  
Eastman Kodak  
EG&G Florida, Inc.  
Embry-Riddle Aeronautical University  
Engineering Energy Systems  
E'Prime Aerospace  
Florida Department of Commerce  
Florida Institute of Technology  
General Dynamics Corporation  
Government Technology Services, Inc.  
Harris Corporation  
Hercules Aerospace  
Honeywell  
International Business Machines Corporation  
Krieger Publishing  
Lockheed Missiles and Space Company  
Martin Marietta Corporation  
McDonnell Douglas Space Systems Corporation  
Morton Thiokol  
Pan Am World Services, Inc.  
Perkin-Elmer Corporation  
Rocketdyne  
Rockwell International  
Space Systems Services, Inc.  
Spectrum Technology Group  
Systonetics  
TRW, Inc.  
United States Air Force  
United States Navy  
United Technologies Corporation  
University of Central Florida  
University of Florida  
Vitro, Inc.

### YOUTH SCIENCE FAIR

Science fair displays and demonstrations from local secondary school students will be open to the public from 11:00 a.m. to 7:00 p.m. on Tuesday, and 12:00 noon to 8:00 p.m. on Wednesday. The Thursday schedule is from 9:00 a.m. to 1:00 p.m. All Youth Science Fair Activities will take place in the Dolphin Room of the Cocoa Beach Holiday Inn. Judging will be conducted from 8:00 a.m. to 12:00 p.m. on Wednesday, April 26. The awards will be presented to the winners at the 8:00 p.m. "Meet the Astronauts" panel session to be held at the Howard Johnson Plaza-Hotel in Cocoa Beach at 7:30 p.m. on Thursday, April 27.

### ATTRACTION CENTERS

Late April in Florida is a delightful time of the year for the entire family. The weather is pleasant, the hardy find the Atlantic warm enough for swimming and tourist attractions are not yet crowded. **Cocoa Beach** offers a long stretch of swimming beach, surfing areas, and both deep-sea and shore fishing. **Sea Escape** one day cruises and three and four day cruises aboard the **SS Oceanic** or the **SS Atlantic** can be enjoyed from Port Canaveral. Bus tours of the **Kennedy Space Center** and **Cape Canaveral Air Force Station** are available from the **Spaceport, USA** where a free exhibit-filled space museum can be enjoyed by both children and adults.



Within one to two hours drive is a world of vacation fun in the Magic Kingdom of Walt Disney World and Epcot Center - Sea World, one of America's finest marine attractions - the mystery and excitement of Africa in Busch Gardens - famed Glass Bottom boats at Silver Springs - the beautiful gardens and daily water ski revue with lovely aquamaids at Cypress Gardens - rides and fun at Boardwalk & Baseball.

## PIONEERS' DAY

The Pioneers' Day Banquet '89 will be held on Friday, April 28, at the Officer's Open Mess, Patrick Air Force Base.

Speaker: To be announced.

Social Hour: 7:00 p.m.

Dinner: 8:00 p.m.

Speaker: 9:00 p.m.

Registration is April 25, 26 and 27 at the Dolphin Room, Holiday Inn, Cocoa Beach, and 5:30 to 6:30 p.m. at the Officer's Open Mess on April 28.

## CANAVERAL COUNCIL OF TECHNICAL SOCIETIES

Air Force Association  
 Armed Forces Communication Electronics Association  
 American Institute of Architects  
 American Institute of Aeronautics & Astronautics  
 American Institute of Industrial Engineers  
 American Meteorological Society  
 American Society of Civil Engineers  
 American Society of Heating, Refrig. & A/C Engineers  
 American Society for Industrial Security  
 American Society of Mechanical Engineers  
 American Society for Nondestructive Testing  
 American Society for Quality Control  
 American Society of Safety Engineers  
 American Society for Training and Development  
 American Welding Society  
 East Central Florida Space Business Roundtable  
 Florida Engineering Society  
 Institute of Electrical & Electronic Engineers  
 Instrument Society of America

Missile, Space & Range Pioneers, Inc.  
 National Contract Management Association  
 Society for the Advancement of Materials & Process Engineering  
 Society of Manufacturing Engineers  
 Society of Logistics Engineers  
 Society of Photo-Optical Instrumentation Engineers  
 Society for Technical Communication

Associate Members:

Association for Quality and Participation  
 National Management Association, Florida Space Coast Council

Many of the societies will have educational/promotional brochures/information on display at the CCTS Desk. Attendees are invited to stop by and review this material.

## SPACE CONGRESS GOLF TOURNAMENT

Golfers will be able to enjoy a tournament at the Patrick Air Force Base Course on Friday, April 28.

The tournament will be a four player, select shot format, as in the past. You may sign up with one partner or by yourself. The tournament committee will assign teams based on playing ability. Foursomes may sign up if they provide a combined total certifiable handicap of 55 or higher. Fill in your name and average score or handicap for 18 holes on the registration form, along with the same from your partner, and enclose \$25, each person. A maximum of 140 players will be registered on a first come, first in basis. Lunch, refreshments on the course, green fees, carts, and trophies are included in the fee. Lunch at 11:30 a.m., and shotgun start at 1:00 p.m. will allow completion in time for Pioneers' Banquet attendance. Maps are available at registration desk.





## TWENTY-SIXTH SPACE CONGRESS PROGRAM

MONDAY, APRIL 24, 1989

### SPECIAL LUNCHEON MEETING Patrick AFB Officer's Club

Armed Forces Communications Electronics Assn.  
Open to attendees.

Speaker: Major General G. Wesley Clark, USAF Space Command

Reception: 11:30 a.m.  
Luncheon: 12:00 noon  
Speaker: 12:30 p.m.

Held in conjunction to the Space Congress.

TUESDAY, APRIL 25, 1989

### KEYNOTE ADDRESS (8:30 a.m. to 9:00 a.m.) Howard Johnson Plaza-Hotel

Introduction: Mr. Lyle Holloway  
Speaker: Congressman Bill Nelson

Bill was elected to the U.S. Congress in 1978 and was re-elected to his sixth term in 1988. He is chairman of the Space Science and Applications subcommittee and a member of the Banking, Finance and Urban Affairs Committee.

As chairman of the subcommittee, Bill trained and flew with the crew of the Space Shuttle Columbia. After being launched from Kennedy Space Center on January 12, 1986, Columbia and its crew returned to Earth six days later at Edwards Air Force Base in California. Bill conducted several experiments designed to aid cancer research, the storage of human blood, and the understanding of man's adaptation to space travel.

Bill is a fifth generation Floridian whose family settled in Washington County in Florida's Panhandle in 1829. His grandparents homesteaded in 1915 on what is now the Kennedy Space Center. He attended public schools in Brevard County and was graduated from Melbourne High School in 1960. He earned a bachelor of arts degree at Yale University, a law degree from the University of Virginia and was admitted to the Florida Bar in 1968. Bill was a U.S. Army Captain, serving on active duty from 1968 to 1970.

He was elected to the Florida legislature in 1972 and served six years until he was elected to Congress. While a state legislator, he was honored by the Florida Jaycees as one of the Five Outstanding Young Men of Florida and was nominated as the Most Valuable Member of the House of Representatives.

Four Florida colleges have conferred upon him honorary degrees - a Doctor of Laws from Rollins College, a Doctor of Science from Florida Institute of Technology, a Doctor of Laws from Bethune-Cookman College and a Doctor of Science from Embry-Riddle Aeronautical University.

Congressman Nelson was unanimously elected chairman of the U.S. Congressional Travel and Tourism Caucus in January. The caucus is a bipartisan coalition of more than 150 members of Congress who share the common goal of increasing awareness of tourism and its economic impact in the U.S.

He is married to the former Grace Cavert of Jacksonville. They have two children: Billy, age 12, and Nan Ellen, age 11. The family attends the Tabernacle Church in Melbourne and Christ Church of Arlington, Virginia.



### PANEL SESSION I (9:00 a.m. to 11:30 a.m.) Howard Johnson Plaza-Hotel

#### NATIONAL SPACE TRANSPORTATION SYSTEM

Session Chairman: Mr. Arnold D. Aldrich, Director, National Space Transportation System, NASA Headquarters, Washington, D.C.  
Session Organizers: Mr. Frank S. Coe, Acting Director, Program Planning and Control, NASA Headquarters, Washington, D.C.  
Mr. Cecil W. Houston, Manager, MSFC Resident Office, KSC, FL

#### MEMBERS:

Col. Richard O. Covey, Pilot STS-26, NASA, JSC  
Mr. Robert M. Glaysher, Vice President, Engineering, Space Transportation Systems Division, Rockwell International  
Mr. Richard L. Davis, Vice President and Assistant General Manager, Space Operations, Morton Thiokol, Inc.  
Mr. Robert D. Paster, Vice President and Program Manager, Space Shuttle Main Engine, Rocketdyne Division, Rockwell International  
Mr. Leonard S. Nicholson, Manager, NSTS Integration and Operations, NASA, JSC

### MEET THE PRESS LUNCHEON (12:00 noon to 1:30 p.m.) Holiday Inn, Manatee Room

Session Chairman: Mr. Julian W. Scheer, Senior Vice-President of Corporate Affairs, The LTV Corporation, Washington, D.C.

#### MEMBERS:

Mr. John Zarrella, Correspondent, CNN  
Mr. Jay Barbree, Aerospace Correspondent, NBC, Radio/Television  
Mr. Bill Harwood, Aerospace Journalist, UPI  
Mr. John Glisch, Senior Writer and National Correspondent, Orlando Sentinel

### PAPER SESSION I (2:00 p.m. to 5:00 p.m.)

#### A. NSTS - THE NEXT GENERATION Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms

Session Chairman: Mr. Jack Harden, Associate Director, STS Management and Operations, NASA, KSC  
Session Organizer: Ms. Karin Biega, Mission Planning Office, STS Management and Operations, NASA, KSC

1. ADVANCED SOLID ROCKET MOTOR (ASRM)  
Mr. Kenneth W. Jones, Chief Engineer, ASRM Engineering Office, Space Transportation Systems Directorate, NASA, MSFC  
Mr. Lowell K. Zoller, Project Manager, Advanced Solid Rocket Motor, Shuttle Projects Office, NASA, MSFC
2. LIQUID ROCKET BOOSTERS FOR SHUTTLE  
Mr. James E. Hughes, Manager, LRB Studies, NASA, MSFC
3. LAUNCH SITE INTEGRATION OF LIQUID ROCKET BOOSTERS  
Mr. Leland P. Scott, Advanced Programs, Lockheed Space Operations Company, Titusville, FL  
Mr. William J. Dickinson, Future Launch Systems Office, NASA, KSC
4. SHUTTLE EVOLUTION FOR THE 1990'S  
Mr. Charles Teixeira, Chief Systems Definition Branch, NASA, JSC  
Mr. Charles Mallini, Aerospace Engineer, Advanced Programs Office, NASA, JSC
5. SHUTTLE-C HEAVY-LIFT VEHICLE OF THE 90'S  
Mr. Robert G. Eudy, Manager, Shuttle-C Task Team, NASA, MSFC
6. ADVANCED MANNED LAUNCH SYSTEM (AMLS) REVIEW  
Dr. Theodore A. Talay, Space Systems Definition, NASA, LaRC  
Mr. Douglas O. Stanley, Vigyan Research Associates, Inc., Hampton, VA  
Mr. Roger A. Lepsch, Space Systems Division, NASA, LaRC

## B. NATIONAL SPACE PROGRAMS

### Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms

Session Chairman: Mr. L. J. (Bud) Evans, President, Center for Space and Advanced Technology (CSAT), Arlington, VA

Session Organizer: Mr. Dwight Easterly, VITRO Corporation, Cocoa Beach, FL

1. GERMAN NATIONAL SPACE PROGRAM  
Dr. Udo Pollvogt, President, ERNO-USA, Inc., German National Space Program
2. CANADA'S PLACE IN SPACE  
Mr. Bryan Erb, National Research Council - Canada
3. INDIA - A SPACE PIONEER  
Mr. Arun Batra, First Secretary, Indian Space Research Organization
4. ITALY'S EXPANDING COMMITMENT TO SPACE  
Mr. Vincenzo Letico, Italian National Space Plan
5. FRANCE'S INTERNATIONAL SPACE PROGRAM: MAJOR CONTRIBUTION TO SPACE TECHNOLOGY AND INFRASTRUCTURE  
Author's name not available at time of publication.

## C. SPACE ENTERPRISE DEVELOPMENT

### Holiday Inn, Manatee Room

Session Chairman: Mr. Chick Garcia, Manager, Grumman Corporate Development, Titusville, FL

Session Organizer: Mr. Bob Mellor, Lockheed Space Operations Co., KSC, FL

1. A FLORIDA FIRM ENTERS THE COMMERCIAL SPACE BUSINESS  
Mr. James A. Ralph, President, International Space Corp., Melbourne, FL
2. MANNED INDUSTRIAL SPACE SOONEST  
Mr. Leon Ronquillo, Martin Marietta Manned Space Systems, Chalmette, LA  
Mr. Dean Monitor, Martin Marietta Manned Space Systems, Slidell, LA
3. U.S. COMMERCIAL SPACE ENTERPRISE - OPPORTUNITY AND CHALLENGE  
Mr. Arthur N. Greene, Director, Program Development, E'Prime Aerospace Corporation, Titusville, FL
4. CORABI TELEMETRICS INTERNATIONAL  
Dr. Ronald S. Weinstein, M.D., Chairman, CORABI Telemetrics
5. THE IMPACT OF THE UNIVERSITY ON CORPORATE, REGIONAL, AND STATE COMMERCIAL SPACE DEVELOPMENT  
Dr. J. Bruce Rafert, Acting Executive Director, Space Research Institute, Florida Institute of Technology, Melbourne, FL
6. RANTECK: THE COMPANY  
Mr. William K. Vardaman, Ranteck, Huntsville, AL

## SPACE CONGRESS BANQUET

### Howard Johnson Plaza-Hotel

Cocktails: 7:00 p.m. to 8:00 p.m.  
Banquet: 8:00 p.m.

Introductions: Mr. Lyle Holloway  
Mr. C. M. Giesler

Spotlight Speaker: Bob Martinez, Governor of the State of Florida  
Featured Speaker: To be announced.

Bob Martinez was inaugurated as Florida's 40th Governor on January 6, 1987, ushering in a new era in state government. Florida's first Governor of Hispanic descent and just the second Republican chief executive since Reconstruction, he became the leader of one of the nation's fastest growing and most dynamic states.

His election as Governor continued a lifetime of community involvement and public service that included two terms as Mayor of his native city of Tampa and important roles in local, state and federal organizations. He brought with him to the Governor's Mansion a diverse background that included experience as a public school teacher, labor negotiator and small business owner, in addition to his extensive public service.



In a state in which Republicans are in the minority, he was elected with 54.5 percent of the vote. He immediately began work on his pledge to effectively manage state government, to cut waste and streamline agencies, to boost Florida's economy, and to meet the challenge of unprecedented growth that increases Florida's population by almost 900 people each day.

When he took office, Bob Martinez inherited an overcrowded prison system, a drug-fueled crime problem, widespread problems in dealing with the nation's third-highest incidence of AIDS, and environmental issues associated with Florida's urban areas.

Governor Martinez perceived early a problem of great economic and social impact on Florida. The apprehension surrounding recent trends in space transportation led him to begin efforts to assure Florida's continued growth in Aerospace business, through many facets of his "Spaceport Florida" initiative.

**WEDNESDAY, APRIL 26, 1989**

**PANEL SESSION II (8:30 a.m. to 11:30 a.m.)**  
**Howard Johnson Plaza-Hotel**

### DEPARTMENT OF DEFENSE SPACE PROJECTS

Session Chairman: Lt. Gen. Donald L. Cromer, Commander, Space Division, Los Angeles AFB, CA

Session Organizer: Captain Gary Spirnak, 6555 ASTG, Cape Canaveral AFS, FL

#### MEMBERS:

- Brig. Gen. Garry A. Schnelzer, Deputy for Systems, SDIO, Office of the Secretary of Defense, Pentagon, Washington, D.C.
- Brig. Gen. Donald G. Hard, Deputy Director for Operations, HQ USAF, Pentagon, Washington, D.C.
- Rear Admiral David Frost, Commander, Naval Space Command, Dalghren, VA
- Brig. Gen. Robert L. Stewart, Deputy Commander, U.S. Army Strategic Defense Command, Huntsville, AL
- Brig. Gen. Jay W. Kelley, DCS/Operations, AF Space Command, Peterson AFB, CO

SPACE CONGRESS BANQUET  
Howard Johnson Plaza Hotel

Cocktails: 7:00 p.m.  
Dinner: 8:00 p.m.

Introduction: Mr. Lyle Holloway

Speaker: Lt. General James A. Abrahamson, USAF Retired



Up until February of this year, Lt. General James A. Abrahamson was director of the Strategic Defense Initiative Organization, Office of the Secretary of Defense, Washington, D.C. He was responsible to the president and the secretary of defense for managing, directing and selecting key research and development programs designed to eliminate the threat posed by strategic nuclear ballistic missiles and to increase the contribution of defensive systems to U.S. and allied security. In carrying out this mission, he provided overall policy direction and supervision for the conduct of research and development programs associated with the Strategic Defense Initiative Organization mission as well as oversight of the acquisition process for all Strategic Defense Initiative program requirements. In concert with the Joint Chiefs of Staff and under secretary of defense for policy, he also was responsible for the review and development of strategy and policy implications of defensive capabilities.

General Abrahamson was born May 19, 1933, in Williston, N.D. He earned a bachelor of science degree in aeronautical engineering from the Massachusetts Institute of Technology in 1955 and a master of science degree in the same field through the Air Force Institute of Technology program at the University of Oklahoma in 1961. He completed Squadron Officer School in 1958, Air Command and Staff College in 1966 and the Industrial College of the Armed Forces in 1973.

The general graduated from Air Command and Staff College as a distinguished graduate in July 1966. He then attended the Aerospace Research Pilot School at Edwards Air Force Base, Calif., and, upon graduation, served as an astronaut with the Air Force's Manned Orbiting Laboratory Program from August 1957 until it was canceled in June 1969.

In March 1974 General Abrahamson was assigned as inspector general, Air Force Systems Command, Andrews Air Force Base, Md. From May 1976 to July 1980 he served as director for the F-16 Multinational Air Combat Fighter Program, Aeronautical Systems Division, Wright-Patterson Air Force Base. He then became deputy chief of staff for systems at Air Force Systems Command headquarters.

In November 1981 the general was assigned as associate administrator for the Space Transportation System, Headquarters National Aeronautics and Space Administration, Washington, D.C. He was responsible for the nation's space shuttle program, leading it safely and successfully through 10 developmental and early operational launches. During his tenure, NASA performed many firsts, including the first satellite retrieval and repair mission that vividly demonstrated the operational capabilities of the space shuttle. He assumed these duties in April 1985.

The general is a command pilot with more than 3,000 flying hours. His military decorations and awards include the Distinguished Service Medal, Legion of Merit with two oak leaf clusters, Meritorious Service Medal, Air Medal with one oak leaf cluster, Air Force Commendation Medal, NASA Distinguished Service Medal, Order of King Olaf of Norway, Order of the Orange from the Netherlands and the Order of King Leopold of Belgium. He also wears the Space Badge and Command Missile badge. General Abrahamson has received honorary doctorate degrees in engineering from New York University, Utah State University and Rensselaer Polytechnic Institute. In 1984 he received the General Bernard A. Schriever Award for outstanding achievement in support of Air Force missile and space programs. In 1985 he received the Dr. Robert H. Goddard Trophy for leadership and excellence in advancing space flight programs contributing to United States leadership in astronautics. In 1987 he was honored as Man of the Year in Science and Technology from the Achievement Rewards for College Scientists Foundation, Metropolitan Chapter, Washington, D.C.

He was promoted to lieutenant general July 21, 1982, with same date of rank.

General Abrahamson is married and has five children.



**LUNCHEON (12:00 noon to 1:30 p.m.)**  
**Holiday Inn, Manatee Room**

\*Special Informal Reunion Manned Spacecraft Center/Florida Operations, contact Tom Curry, (407) 799-0090.

Introductions: Mr. Lyle Holloway  
Mr. C. M. Giesler  
Speaker: Cosmonaut Valentin V. Lebedev

Valentin Vitalevich Lebedev was born April 14, 1942 in Moscow, U.S.S.R. He graduated from the Moscow Aviation Institute in 1966 and has since earned the degree, Doctor of Technical Sciences. He is an active Pilot-Cosmonaut, and was twice decorated Hero of the Soviet Union.



He made his first mission to space in December 1973 as flight engineer aboard the spacecraft Soyuz-13. This mission lasted eight days.

Lebedev's second mission began when he and Anatoly Berezovoy lifted off on May 13, 1982 in the Soyuz T-5 spacecraft for a longer space journey aboard Salyut-7 space station. Lebedev was flight engineer aboard Soyuz T-5. While on the space station, he performed a two-hour EVA, completed over 300 medical and technical experiments and took over 20,000 photographs from orbit. Also his crew was visited by Svetlana Savitskaya, first woman to walk in space, and by Jean-Loup Cretein, the French Astronaut trained by both NASA and the USSR.

He is author of the book "Diary of A Cosmonaut: 211 Days in Space," available now in English translation.

Lebedev lives in Moscow with his wife Ludmila and his son Vitaly.

**PAPER SESSION II (2:00 p.m. to 5:00 p.m.)**

**A. SPACE AND THE OPERATIONAL COMMANDER**  
**Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms**

Session Chairman: Col. Dominick Martinelli, Space Division Chief of Staff, Los Angeles, CA

Session Organizer: Capt. Gary Spirnak, 6555th Aerospace Test Group, Patrick AFB, FL

1. USES OF ON-ORBIT REFUELING AND REFUELING SYSTEMS OPTIONS FOR AIR FORCE SATELLITES  
1Lt. Thomas Utsch, Air Force Systems Command Space Division, Office of Deputy for Plans and Advanced Programs, Los Angeles AFB, CA
2. SATISFYING USER REQUIREMENTS - SPACE AND THE OPERATIONAL COMMANDER  
Capt. Nancy M. McMahan, Chief, Program Requirements, DSCS Program Office, Space Division, Los Angeles AFB, CA
3. POTENTIAL USE OF SMALLER SATELLITES FOR MILITARY SPACE OPERATIONS  
2Lt. Dennis Montera, Air Force Systems Command Space Division, Office of Deputy for Plans and Advanced Programs, Los Angeles AFB, CA  
1Lt. Thomas Utsch, Air Force Systems Command Space Division, Office of Deputy for Plans and Advanced Programs, Los Angeles AFB, CA

**B. COMMERCIAL SPACE TRANSPORTATION**

**Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms**

Session Chairman: Mr. Norman C. Bowles, Associate Director for Licensing Programs, Office of Commercial Space Transportation, Department of Transportation (DOT), Washington, D.C.

Session Organizer: Mr. Jerry Vick, Space Station Support Office, Payload Management and Operations Directorate, NASA, KSC

1. THE U.S. COMMERCIAL LAUNCH SERVICES INDUSTRY AND INTERNATIONAL COMPETITION  
Dr. Lee R. Scherer, General Dynamics Commercial Launch Services  
Mr. Dennis R. Dunbar, General Dynamics Commercial Launch Services
2. COMMERCIAL LAUNCH SERVICES - THE KEY TO THE CAPITAL MARKETS FOR SPACE PROJECTS  
Ms. Dee Ann Divis, Manager, Washington Operations, Third Millennium, Inc.
3. THE ROLE OF THE DELTA ROCKET IN AMERICA'S SPACE FUTURE  
Mr. Robert S. Cows, Director, Commercial Programs, Delta/Delta II, McDonnell Douglas Space Systems Company
4. A REUSABLE COMMERCIAL SPACE TRANSPORT IN A WORLD OF EXPENDABLES: DEVELOPMENT, CERTIFICATION AND OPERATION  
Mr. Gary C. Hudson, President, Pacific American Launch Systems, Inc.  
Mr. Maxwell W. Hunter, II, Consultant, Pacific American Launch Systems, Inc.
5. THE PEGASUS AIR-LAUNCHED SPACE BOOSTER  
Mr. Robert E. Lindberg, Director, Advanced Projects, Orbital Sciences Corp.
6. THE SELECTION OF A LAUNCH VEHICLE  
Mr. Joel S. Greenberg, President, Princeton Synergetics, Inc.  
Ms. Carissa B. Christensen, Policy Analyst, Princeton Synergetics, Inc.

**C. TECHNOLOGY BENEFITS**

**Holiday Inn, Manatee Room**

Session Chairman: Mr. Bill Rock, Manager, Advanced Projects, Technology and Commercialization Office, NASA, KSC

Session Organizer: Ms. Tina Phillips, Advanced Projects, Technology and Commercialization Office, NASA, KSC

1. SPACE STATION AS A BRIDGE TO FUTURE MISSIONS  
Dr. Robert J. Sirko, McDonnell Douglas Astronautics Company  
Dr. Robert M. Wood, McDonnell Douglas Astronautics Company
2. OPTICAL ALIGNMENT MEASUREMENT OF SPACE SHUTTLE TILES  
Ms. Rebecca L. Welling, Lockheed Missiles and Space Company  
Dr. Rick A. Williams, Lockheed Missiles and Space Company  
Dr. Edward D. Huber, Lockheed Missiles and Space Company
3. AEROSPACE HYDROGEN TECHNOLOGY AND ITS POTENTIAL IMPACT ON A 21st CENTURY GLOBAL HYDROGEN ECONOMY  
Dr. Joseph A. Angelo, EG&G, Inc.  
Dr. Ronald G. Barlie, Florida Institute of Technology
4. INTRODUCING NEW TECHNOLOGIES INTO SPACE STATION SUBSYSTEMS  
Ms. Cindy L. Mollakarimi, Lockheed Space Operations Company  
Dr. Michael J. Wiskerchen, Stanford University
5. HEAT PIPES FOR LOW-HUMIDITY APPLICATIONS  
Mr. Mukesh K. Khattar, Florida Solar Energy Center
6. FLORIDA COMMERCIAL SPACE INITIATIVES AND TECHNOLOGY TRANSFER MECHANISMS  
Dr. Roger L. Moore, University of Central Florida

**EXHIBIT CENTER COCKTAIL RECEPTION**  
(6:00 p.m. to 7:30 p.m.)  
Hilton, Cocoa Beach

**THURSDAY, APRIL 27**

**PANEL SESSION III (8:30 a.m. to 11:30 a.m.)**  
Howard Johnson Plaza-Hotel

**SPACE STATION PROGRAM**

Session Chairman: Mr. James B. Odom, Assoc. Administrator for Space Station, NASA Headquarters, Washington, D.C.  
Session Organizers: Mr. Daniel H. Herman, Senior Engineer, Office of Space Station, NASA Headquarters, Washington, D.C.  
Mr. J. Robert (Bob) Gunter, Technical Assistant, KSC  
Space Station Project Office, FL

**MEMBERS:**

Mr. E. Ray Tanner, Director, Space Station Freedom Program, Reston, VA  
Mr. John M. (Mike) Lounge, NASA Astronaut, JSC  
Ms. Marcia Smith, Specialist in Aerospace Policy, Library of Congress, Washington, D.C.  
Dr. Robert J. Gurney, Head, Hydrological Science Branch, GSFC, Greenbelt, MD  
Dr. Franklin D. Lemkey, Senior Consulting Scientist, United Technology Research Center, East Hartford, MA  
Dr. Jack L. Kerrebrock, Associate Dean of Engineering, MIT, Cambridge, MA  
Dr. Franklin D. Martin, Assistant Administrator for Exploration, NASA, Washington, D.C.

**PAPER SESSION III (1:00 p.m. to 4:00 p.m.)**

**A. THE INTERNATIONAL ASPECT OF SPACE STATION**  
Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms

Session Chairman: Mr. William K. Stephenson, Acting Director, International Programs Group, Space Station Program Office, Reston, VA  
Session Organizer: Ms. Terese Kozmoski, Space Station Project Office, NASA, KSC

1. **SYSTEMS DESCRIPTION OF MOBILE SERVICING SYSTEM (MSS) FOR SPACE STATION FREEDOM**  
Dr. Andrew S. Jones, Deputy Director, Canadian Space Station Program  
Mr. V. K. Agarwal, Systems Engineering, Canadian Space Station Program  
Mr. R. Hayes, APM Design and Development, Canadian Space Station Program, Remote Manipulator Systems Division, Spar Aerospace Limited, Toronto, Canada
2. **EUROPE'S INVOLVEMENT IN THE INTERNATIONAL SPACE STATION**  
Mr. F. A. Longhurst, European Space Agency, The Hague in the Netherlands  
Mr. G. R. Bolton, European Space Agency, The Hague in the Netherlands
3. **JAPANESE EXPERIMENT MODULE: MULTIPURPOSE RESEARCH AND DEVELOPMENT LABORATORY**  
Dr. Takehiko Kato, Director, Washington Liaison Office, National Space Development Agency of Japan
4. **INTERNATIONAL UTILIZATION AND OPERATIONS**  
Mr. Stanley R. Goldberg, Deputy Director, Program Utilization and Operations Group, NASA Space Station Freedom Program, Reston, VA
5. **SPACE STATION FREEDOM SAFETY PROGRAM**  
Mr. John G. Griggs, III, Chief, Safety Division, Safety/Product Assurance Office, NASA Space Station Freedom Program, Reston, VA

**B. EXPLORATION MISSIONS - LUNAR AND MARS**  
Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms

Session Chairman: Mr. Jimmy Underwood, Director of Mission Studies, Office of Exploration, NASA Headquarters, Washington, D.C.  
Session Organizer: Mr. Dennis Matthews, Advanced Projects, Technology and Commercialization Office, NASA, KSC

1. **STATUS OF OFFICE OF EXPLORATION FY89 STUDIES**  
Mr. Uriah Lovelace, Office of Exploration, NASA, HQ
2. **A LUNAR ORBITING NODE IN SUPPORT OF MISSIONS TO MARS**  
Mr. A. Butterfield, The Bionetics Corporation  
Mr. J. R. Wrobel, The Bionetics Corporation  
Dr. L. Bernard Garrett, Spacecraft Analysis Branch, NASA, LaRC
3. **A TRANSPORTATION SYSTEM FOR A LUNAR BASE**  
Mr. Andrew J. Petro, NASA, JSC
4. **POTENTIAL EUROPEAN INVOLVEMENT IN THE U.S. PATHFINDER PROGRAM**  
Mr. Rudi G. Reichert, Dornier System GmbH
5. **THE PROSPECTOR'S PROPOSAL: RESEARCH ADVANCING SURVIVABILITY THROUGH RESOURCE OPTIONS**  
Mr. Devin C. Walters, et. al., United States Air Force Academy
6. **SOLAR SAIL TECHNOLOGY FOR MANNED MARS EXPLORATION**  
Mr. John Garvey, McDonnell Douglas Astronautics Company

**C. STATE INITIATIVES IN SPACE**  
Holiday Inn, Manatee Room

Session Chairman: Mr. Stephen L. Morgan, President, Synergistics Communications Company, Inc., Orlando, FL  
Session Organizer: Mr. Bob Mellor, Lockheed Space Operations Co., KSC, FL

1. **"SPACEPORT FLORIDA" AND OTHER STATE-SPONSORED SPACE DEVELOPMENT PROGRAMS IN FLORIDA**  
Dr. Chris Shove, Director, Office of Space Programs, Florida Department of Commerce, Tallahassee, FL
2. **A SPACEPORT FOR CAPE YORK - AN INITIATIVE OF THE STATE OF QUEENSLAND**  
Mr. Mick Borzi, O. B. E., Commissioner, Queensland Government Office, Los Angeles, CA
3. **ACTIVITIES, PLANS AND PROGRAMS OF THE FLORIDA SPACE RESEARCH FOUNDATION**  
Dr. David Webb, Resident Scholar, Space Research Foundation, Orlando, FL
4. **SPACE INDUSTRY DEVELOPMENT INITIATIVES IN VIRGINIA**  
Mr. Michael W. Miller, Program Director, Center for Innovative Technology, Herndon, VA
5. **HAWAII'S INITIATIVES IN SPACE**  
Mr. Harry Foden, Vice President, Arthur D. Little, Inc., Cambridge, MA

**SPACE CONGRESS RECEPTION (6:00 p.m. to 8:00 p.m.)**  
Holiday Inn - Observation Deck

**PANEL SESSION IV (7:30 p.m. to 9:30 p.m.)**  
Howard Johnson Plaza-Hotel



## MEET THE ASTRONAUTS

Session Chairman: Lt. Gen. Forrest S. McCartney, USAF Retired, Center Director, NASA, KSC, FL

A panel open to the general public with several astronauts and payload specialists discussing present and future activities for men and women in space.

Science Fair Winners will be presented awards.

Astronauts John M. "Mike" Lounge and Charles F. (Charlie) Bolden, Jr., and Dr. Mae Jemison are expected to be present.

## FRIDAY, APRIL 28

### PANEL SESSION V (8:30 a.m. to 11:30 a.m.) Howard Johnson Plaza-Hotel

#### DOD LAUNCH RESPONSIVENESS

Session Co-Chairmen: Col. Robert T. Cote, Director, Space Systems, Headquarters, AF Systems Command, Andrews AFB, Washington, D.C.  
Col. Vito J. Pagano, Director, Space Systems, DCS/Plans, Headquarters, AF Space Command, Peterson AFB, CO  
Session Organizer: Captain Gary Spirnak, 6555 ASTG, Cape Canaveral AFS, FL

#### MEMBERS:

Col. Lester L. Lyles, Asst. Deputy Commander for Launch Systems, Space Division, Los Angeles AFB, CA  
B/G (selectee) Jean E. Klick, Deputy Commander for Communications, Operations Support, and Control Systems, Space Division, Los Angeles AFB, CA  
Col. Jack R. Wormington, Program Director, Advanced Launch Systems, Space Division, Los Angeles AFB, CA

### PAPER SESSION IV (12:45 p.m. to 3:45 p.m.)

#### A. LAUNCH RESPONSIVENESS Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms

Session Chairman: Col. William S. Files, Jr., Deputy Program Director Titan IV System Program Office, Deputy Commander for Launch Systems, Space Division, Los Angeles, CA  
Session Organizer: Capt. Gary Spirnak, 6555th Aerospace Test Group, Patrick AFB, FL

1. OPTIMUM MILITARY SPACE FORCE STRUCTURE CHARACTERISTICS  
Lt. Col. Owen E. Jensen, Deputy Director, Space Systems DCS/Plans HQ Air Force Space Command
2. WIND MEASUREMENTS BY ELECTROMAGNETIC PROBES  
Dr. Michael Susko, Science and Engineering Directorate, NASA, MSFC
3. COMMON INTERFACES  
Dr. James K. Yakura, Aerospace Corporation  
Dr. Dianne K. Sakaguchi, Aerospace Corporation  
Mr. Richard P. Toutant, Aerospace Corporation

#### B. SPECIAL TOPICS Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms

Session Chairman: Mr. Don Capone, Donald J. Capone Consulting Services, Inc., Cocoa Beach, FL  
Session Organizer: Mr. Ned Wagnon, Engineering Development Directorate, NASA, KSC

1. PAYLOAD PROCESSING STUDY FOR ELV LAUNCHES  
Mr. Creighton A. Terhune, Deputy Director, Payloads Project Management, NASA, KSC  
Ms. Shirley P. Green, Payload Operations and Analysis Office, NASA, KSC
2. SHUTTLE-C ENGINEERING DEVELOPMENT AND OPERATION  
Mr. Roger Burg, Space Transportation Systems Div., Rockwell International
3. A PRACTICAL INTRODUCTION TO AEROSPACE VEHICLE DESIGN  
Capt. Michael J. Caylor, United States Air Force Academy
4. DESIGNING A SMALL SATELLITE - STARSET  
Maj. Thomas A. Lash, United States Air Force Academy
5. DESIGN THE SUPPORT RATHER THAN SUPPORT THE DESIGN  
Mr. Arthur L. Scholtz, Boeing Aerospace Operations  
Mr. William J. Dickinson, Future Launch Systems Office, NASA, KSC
6. OFFSHORE SPACE LAUNCH DEVELOPMENTS  
Mr. David P. Tuturea, Marine Engineering Dept., Brown & Root U.S.A. Inc.  
Dr. Farhad Rajabi, Marine Engineering Dept., Brown & Root U.S.A. Inc.

### SPACE CONGRESS GOLF TOURNAMENT (11:30 a.m. to 5:00 p.m.)

Patrick AFB Golf Course - Map available at registration desk.

### PIONEERS' ANNUAL BANQUET (6:30 p.m.) Patrick AFB, Officer's Open Mess

Speaker: Charles F. (Charlie) Bolden, Backup Astronaut, STS-30 (schedule permitting)

Social Hour: 6:30  
Dinner: 7:30  
Speaker: 8:30

## PROGRAM SUMMARY

### MONDAY, April 24

ARMED FORCES COMMUNICATION  
ELECTRONICS ASSOC. SPECIAL  
LUNCHEON PROGRAM

12:00 noon to  
5:00 p.m.

REGISTRATION DESK OPEN  
Holiday Inn Dolphin Room

### TUESDAY, April 25

7:00 a.m. to  
5:00 p.m.

REGISTRATION DESK OPEN  
Holiday Inn Dolphin Room

8:30 a.m.

KEYNOTE ADDRESS  
Howard Johnson Plaza-Hotel

9:00 a.m. to  
11:30 a.m.

PANEL SESSION I - NATIONAL SPACE  
TRANSPORTATION SYSTEM  
Howard Johnson Plaza-Hotel

11:00 a.m. to  
7:00 p.m.

YOUTH SCIENCE FAIR  
Holiday Inn Dolphin Room

10:00 a.m. to  
7:00 p.m.

EXHIBITS  
Hilton Convention Center

12:00 noon to  
1:30 p.m.

MEET THE PRESS PANEL  
Holiday Inn Manatee Room

2:00 p.m. to  
5:00 p.m.

PAPER SESSION I:  
A. NSTS - THE NEXT GENERATION  
Howard Johnson Plaza-Hotel

B. NATIONAL SPACE PROGRAMS  
Howard Johnson Plaza-Hotel

C. SPACE ENTERPRISE DEVELOPMENT  
Holiday Inn Manatee Room

7:00 p.m.

BANQUET SOCIAL HOUR  
Howard Johnson Plaza-Hotel

8:00 p.m.

BANQUET  
Howard Johnson Plaza-Hotel

### WEDNESDAY, April 26

7:00 a.m. to  
5:00 p.m.

REGISTRATION DESK OPEN  
Holiday Inn Dolphin Room

8:30 a.m. to  
11:30 a.m.

PANEL SESSION II - DOD SPACE PRO-  
JECTS  
Howard Johnson Plaza-Hotel

11:00 a.m. to  
8:00 p.m.

EXHIBITS  
Hilton Convention Center

12:00 noon to  
8:00 p.m.

YOUTH SCIENCE FAIR  
Holiday Inn Dolphin Room

12:00 noon to  
1:45 p.m.

SPACE CONGRESS LUNCHEON  
Holiday Inn Manatee Room

2:00 p.m. to  
5:00 p.m.

PAPER SESSION II:  
A. SPACE AND THE OPERATIONAL COM-  
MANDER  
Howard Johnson Plaza-Hotel

B. COMMERCIAL SPACE TRANSPORTA-  
TION  
Howard Johnson Plaza-Hotel

C. TECHNOLOGY BENEFITS  
Holiday Inn Manatee Room

6:00 p.m. to  
7:30 p.m.

EXHIBIT CENTER COCKTAIL RECEPTION  
Hilton Convention Center

### THURSDAY, April 27

7:00 a.m. to  
5:00 p.m.

REGISTRATION DESK OPEN  
Holiday Inn Dolphin Room

8:30 a.m.  
11:30 a.m.

PANEL SESSION III - SPACE STATION  
PROGRAM  
Howard Johnson Plaza-Hotel

9:00 a.m. to  
1:00 p.m.

YOUTH SCIENCE FAIR  
Holiday Inn Dolphin Room

9:00 a.m. to  
3:00 p.m.

EXHIBITS  
Hilton Convention Center

1:00 p.m. to  
4:00 p.m.

PAPER SESSION III:  
A. THE INTERNATIONAL ASPECT OF  
SPACE STATION  
Howard Johnson Plaza-Hotel

B. EXPLORATION MISSIONS - LUNAR  
AND MARS  
Howard Johnson Plaza-Hotel

C. STATE INITIATIVES IN SPACE  
Holiday Inn Manatee Room

6:00 p.m. to  
8:00 p.m.

SPACE CONGRESS RECEPTION  
Holiday Inn Observation Deck

7:30 p.m. to  
9:30 p.m.

PANEL SESSION IV - MEET THE ASTRO-  
NAUTS  
Howard Johnson Plaza-Hotel

### FRIDAY, April 28

7:00 a.m. to  
12:00 noon

REGISTRATION DESK OPEN  
Holiday Inn Dolphin Room

8:30 a.m. to  
11:30 a.m.

PANEL SESSION V - DOD LAUNCH RE-  
SPONSIBILITIES  
Howard Johnson Plaza-Hotel

11:30 a.m. to  
5:00 p.m.

SPACE CONGRESS GOLF TOURNA-  
MENT  
Patrick Air Force Base Golf Course

12:45 p.m. to  
3:15 p.m.

PAPER SESSION IV:  
A. LAUNCH RESPONSIVENESS  
Howard Johnson Plaza-Hotel

B. SPECIAL TOPICS  
Howard Johnson Plaza-Hotel

7:00 p.m. to  
10:00 p.m.

MISSILE, SPACE AND RANGE PIONEERS'  
ANNUAL BANQUET  
Patrick Air Force Base, Officer's Open  
Mess

### ACKNOWLEDGEMENTS

The Twenty-Sixth Space Congress gratefully acknowledges the special support of the following organizations:

Advanced Process Systems

Air Force Eastern Space and Missile Center

Allen-Bradley Company

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Newspapers: Florida Today, The Orlando Sentinel, The Sun, The Cocoa  
Tribune, The Titusville Star-Advocate  
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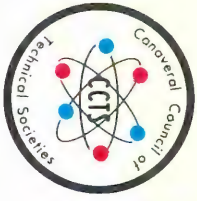
### AND A VERY SPECIAL THANKS TO:

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David Houle  
Greg Long  
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also

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- for support of the kazoo contest, an unofficial fun activity.

City Officials of Cocoa Beach, to Mayor Bob Lawton and especially the Cocoa  
Beach Police Department



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