Space Congress Programs

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1986 Twenty-Third Space Congress Program

Canaveral Council of Technical Societies

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TWENTY-THIRD
SPACE CONGRESS

Cocoa Beach, Florida April 22, 23, 24, 25, 1986
CHAIRMAN'S MESSAGE

On behalf of all the people involved in the aerospace industry, we have dedicated the Twenty-Third Space Congress to the memory of the Space Shuttle Challenger Crew. It is in their memory and in keeping with the national unity that has emerged from this tragic loss that we are determined to push forward in space exploration and future programs with renewed and continued dedication.

"Developing Space for Tomorrow's Society", describes the direction and focus of the paper and panel sessions for this year's symposium.

For the past quarter of a century the space program has evolved from exploration and experimentation to a system which will benefit mankind in innumerable ways. Progress in Commercialization, Space Station, current and future international programs and in Department of Defense space projects will be discussed in the upcoming sessions. Key technologies for the broader range of space programs will be discussed along with technological and social implications of major direct and related development efforts.

We are fortunate to have present for the Keynote Address Congressman Bill Nelson, who will be able to speak from his own space experiences. To help commemorate the 75th anniversary of Naval Aviation, we are honored to have Admiral Richard Truly, Associate Administrator for Space Flight, as well as the Navy band and color guard. Other activities during the four-day Congress will include exhibit displays provided by major aerospace corporations on state-of-the-art technology, the award winning Youth Science Fair, the Meet the Astronauts Panel at the Kennedy Space Center new Galaxy Theater, the traditional banquet and luncheon plus the popular Golf Tournament on the last day.

Leaders in industry and government from around the world attend the Space Congress each year to share new technology and to expand personal and public knowledge.

Please join us for the exciting array of programs that will be featured at the Twenty-Third Space Congress. Feel free to contact me or any member of my committee for additional information.

J. Frank Hamm
General Chairman
Twenty-Third Space Congress
GENERAL INFORMATION

HEADQUARTERS/REGISTRATION

Headquarters for the Twenty-Third 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 21, 1986. Registration will continue from 7:00 a.m. to 5:00 p.m. on Tuesday, Wednesday and Thursday, and from 8:00 a.m. to Noon on Friday.

PACKAGE REGISTRATION ........ $80.00
(Includes four items listed below)

Tuesday Banquet .................. 20.00
Thursday Luncheon ............... 8.00
Bound Copy of Proceedings ......... 35.00
Sessions all four days ............. 25.00
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. Individual papers in the proceedings will be available at a cost of $1.10 per page. Telephone contact can be made through the Holiday Inn 783-2271 (ask for Dolphin Room).

PRESS ROOM

Press headquarters is in the Egret Room of the Holiday Inn and is staffed and directed by Pat Oliver 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 number in the press headquarters is (305) 783-3770, 3778.

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 783-8552 or 783-8553.

PROCEEDINGS

The proceedings of the Twenty-Third 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 $40 each plus postage from Secretary, CCTS, Post Office Box 245, Cape Canaveral, Florida 32920.

EXHIBITS

Exhibits will include displays of the Space Shuttle, Shuttle payloads and communications satellites. The exhibit hall will be open from 11:00 a.m. to 7:00 p.m. on Tuesday, from 11:00 a.m. to 8:00 p.m. on Wednesday, and from 9:00 a.m. to 1:00 p.m. on Thursday. Representatives of the exhibitors will be in attendance to assist and inform visitors. The exhibit hall is located at the Cocoa Beach Hilton, 1550 N. Atlantic Ave. (A1A), Cocoa Beach.

EXHIBITORS

Boeing Company.
Brevard Community College
Canaveral Council of Technical Societies
Computer Sciences Corporation.
Eastman Kodak
EG&G Florida, Inc.
Florida Institute of Technology
General Dynamics Corporation.
Harris Corporation.
Honeywell
International Business Machines Corporation
Lockheed Missiles and Space Company.
Martin Marietta Corporation
MBB-ERNO
McDonnell Douglas Corporation
Northrop Services, Inc.
Pan Am World Services, Inc.
Planning Research Corporation
Rockwell International Corporation
TRW, Inc.
U.S. Navy
United Technologies Corporation
Westinghouse
Wyle Laboratories

ATTENTION 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. Three and four day cruises aboard the SS Royale, or the SS Oceanic can be enjoyed from Port Canaveral. The Scandinavian Sky also makes 1 day cruises. 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—see the show and be a performer at Circus World.

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 11:00 a.m. 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 12:30 p.m. on Wednesday, April 23. The awards will be presented to the winners at the 8:00 p.m. "Meet the Astronauts" panel session to be held at the Galaxy theater, SPACEPORT, USA (KSC Visitors Information Center), at 7:30 p.m. on Thursday, April 24.

PIONEERS' DAY
The Pioneers' Banquet '86 will be held on Friday, April 25, at the Officers Open Mess, Patrick Air Force Base.

Speaker: Pete Conrad
Captain, USN (Retired)
Gemini and Apollo Astronaut
Corporate Vice President, McDonnell Douglas Corporation

Social Hour 6:30 p.m.
Dinner 7:30 p.m.

Registration is April 22, 23 and 24 at the Holiday Inn, Cocoa Beach, and 2:00 to 6:30 p.m. at the Officers Open Mess on April 25.

CANAVERAL COUNCIL OF TECHNICAL SOCIETIES
Air Force Association
American Institute of Aeronautics and Astronautics
American Institute of Architects
American Institute of Industrial Engineers
American Meteorological Society
American Society of Civil Engineers
American Society of Heating, Refrigeration and Air Conditioning Engineers
American Society for Industrial Security
American Society of Mechanical Engineers
American Society for Quality Control
American Welding Society
American Society for Training and Development
Armed Forces Communications Electronics Association
Florida Engineering Society
Institute of Electrical and Electronic Engineers
Instrument Society of America
Missile, Space and Range Pioneers, Inc.
National Contract Management Association
National Association of Accounts
Society of Photo-Optical Instrumentation Engineers
Society of Manufacturing Engineers
American Society of Safety Engineers
Society for the Advancement of Materials and Process Engineering
Society for Technical Communication

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 can enjoy a tournament on Friday, April 25th at the Cocoa Beach Golf Course Recreation Center, off Minuteman Causeway.

The tournament will be in a four-player, select shot format with an A, B, C, and D player on each team. Teams will be assigned by the tournament committee. A maximum of 116 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 of $25. Ask for sign up at Registration Desk. Be at the course as soon after 11:30 a.m. as possible. A shotgun start at 12:30 will allow completion in time for Pioneers' Banquet attendance.

TWENTY-THIRD SPACE CONGRESS COMMITTEE

GENERAL CHAIRMAN
Frank Hamm
PRC Systems Services

VICE CHAIRMAN
Andy Pickett
NASA

FINANCE
Cliff Gurr
Martin Marietta Corp.

ASSISTANT TO CHAIRMAN
Janet Bonder
PRC Systems Services

TECHNICAL PAPERS
Ted Carey
Rockwell International

PROGRAM CHAIRMAN
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EXHIBITS
Warren Green
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SPECIAL ARRANGEMENTS
Col. Al Thomas
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RECORDING SECRETARY
Elena De Rosa
PRC Systems Services

ADVISOR
Dwight Easterly
Vitro Corporation

ADVISOR
Wally Boggs
NASA
TWENTY-THIRD SPACE CONGRESS PROGRAM

TUESDAY, APRIL 22, 1986

KEYNOTE ADDRESS (8:30 a.m. to 9:00 a.m.)
Beach Theater

Introduction: Mr. J. Frank Hamm
Speaker: Congressman Bill Nelson

Bill Nelson serves as a member of the Banking Committee and the Science and Technology Committee in the House of Representatives. He is chairman of the Space Science and Applications Subcommittee. He was elected to the 96th Congress in November 1978 and subsequently re-elected in 1980, 1982, and 1984.

He flew as a Payload Specialist Astronaut on Space Shuttle Mission 61-C in January 1986.

Bill attended public schools in Brevard County, Florida and graduated from Melbourne High School in 1960. He attended the University of Florida and graduated with a Bachelor of Arts from Yale. He received a Juris Doctor Degree from the University of Virginia and was admitted to the Florida Bar in 1968.

Bill was a Captain in the United States Army Reserve where he served from 1965 to 1971 and was on active military duty from 1968 to 1970.

He was elected to three terms in the Florida House of Representatives beginning in 1972.

Bill is a member of the Kiwanis Club, the Jaycees, and is a Master Mason. He and his family attend the Tabernacle Church in Melbourne and the National Presbyterian Church in Washington.

Bill has been honored by the Florida Jaycees as one of the Five Outstanding Young Men of Florida in 1975 and nominated as the most valuable member of the Florida House of Representatives in 1976. Two Florida colleges have conferred upon him honorary degrees - a Doctor of Laws from Rollins College and a Doctor of Science from Florida Institute of Technology.

He is married to the former Grace Cavert of Jacksonville. They have two children, Billy and Nan Ellen.
**B. COMPUTERS – WHAT'S NEW AND WHAT'S COMING**

**Holiday Inn, Manatee Rooms A&B**

Session Chairman: Dr. Winton W. Royce, Resident Director, Lockheed Software Technology Center, Austin, TX  
Session Organizer: Mr. Frank Byrne, Deputy Director, Information Systems, NASA, Kennedy Space Center, FL

1. **OPTICAL STORAGE SHINES OVER THE HORIZON**  
Mr. Carl Warren, Mini-Micro Systems, Irvine, CA

2. **THE COMING AGE OF PARALLEL-PROCESSING SUPER-COMPUTER**  
Professor Daniel Nosenchuck and Professor Michael Littman, Princeton University, N.J.

3. **KNOWLEDGE BASED PROGRAMMING AT KSC**  
Mr. James H. Tully, Jr., Lockheed Space Operations Company, Kennedy Space Center, FL, and Mr. Carl I. Delaune, Space Station Project Office, NASA, Kennedy Space Center, FL

4. **DESIGNING AN INTERACTIVE VIDEODISC SYSTEM NETWORK FOR EFFECTIVE TRAINING MANAGEMENT**  
Mr. Robert S. Carper, Honeywell Information Systems, Inc., McLean, VA

5. **PCOS – AN EXAMPLE OF A MODERN OPERATING SYSTEM**  
Mr. V. Phillip Tharp, Electronics Branch, NASA, Kennedy Space Center, FL

6. **THE USE OF UNIX IN A REAL-TIME ENVIRONMENT**  
Mr. Robert D. Luken, Digital Applications Branch, NASA, Kennedy Space Center, FL, and Mr. Peter C. Simons, Scientific System Services, Melbourne, FL

**C. LOW COST SHUTTLE PAYLOADS**

**Holiday Inn, Manatee Rooms C&D**

Session Chairman: Mr. Leonard Arnowitz, Chief, Special Payloads Division, NASA, Goddard Space Flight Center, MD  
Session Organizer: Mr. Alan Lindenmoyer, Aerospace Engineer, Special Payloads Division, NASA, Goddard Space Flight Center, MD

1. **EXPERIMENTS OF OPPORTUNITY PAYLOADS REVISITED**  
Mr. David J. Shrewsberry, Head, Attitude Control and Stabilization Branch, Special Payloads Division, NASA, Goddard Space Flight Center, Greenbelt, MD, and Dr. Raymond G. Crandall, X-Ray Astronomy Branch, U.S. Naval Research Laboratory, Washington, D.C.

2. **GET-AWAY SPECIAL: THE LOW-COST ROUTE TO ORBIT**  
Mr. Clarke Prouty, Customer Services Division, NASA Headquarters, Washington, D.C.

3. **ECONOMY OF MIDDECK PAYLOADS**  
Mr. Edward L. Michel and Mr. William J. Huffstetler, Flight Projects Engineering Office, NASA, Johnson Space Center, TX

**SPACE CONGRESS BANQUET**

**Officer’s Club, Patrick Air Force Base**

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

**Introduction:** Mr. J. Frank Hamm  
**Speaker:** Rear Admiral Richard H. Truly, USN, Associate Administrator for Space Flight, NASA Headquarters

Richard H. Truly was designated a naval aviator in 1960. His initial tour of duty was in Flight Squadron 33, where he flew F-8 Crusaders and made more than 300 carrier landings. From 1963 to 1965, he was a student and later an instructor at the U.S. Air Force Aerospace Research Pilot School, Edwards Air Force Base, Calif. In 1965, he was among the initial military astronauts selected to the USAF Manned Orbiting Laboratory program. He became a NASA astronaut in 1969 and spent 14 years with NASA.

Truly was pilot for one of the two-man crews that flew the Shuttle Enterprise approach and landing test flights in 1977. He was then assigned as backup pilot for STS-1, the first orbital flight test of the Space Shuttle. His first space flight was STS-2 (Nov. 12-14, 1981) as pilot of the Shuttle Columbia. He was commander of STS-8 (Aug. 30 – Sept. 5, 1983), the Shuttle Challenger, the first night launch and landing in the Shuttle program.

Truly became the first commander of the Naval Space Command upon its commissioning on Oct. 1, 1983. The Command is responsible for management and operational control of all Navy satellites in use and provides direct space system support to the fleet worldwide.

After attending schools in Fayette and Meridian, Miss., Truly enrolled as an NROTC midshipman at the Georgia Institute of Technology in 1955. He received a bachelor of aeronautical engineering degree and was commissioned an Ensign in the U.S. Navy in 1959.

Truly has received numerous Defense, Navy and NASA awards. He also is the recipient of the Robert H. Goddard Memorial Trophy, the Thomas D. White Space Trophy and the Robert J. Collier Trophy.

Truly is married to the former Colleen Hanner of Milledgeville, Ga. They have three children.

He was appointed to his present position on February 20, 1986.
Previously a Research Associate in the Graduate Program in Science, Technology and Public Policy at George Washington University. He has contributed freelance articles to a dozen magazines and newsletters including Science Digest, Omni and Air Progress.

PAPER SESSION II (2:30 p.m. to 5:30 p.m.)

A. STREAMLINING GROUND OPERATIONS

1. ROCKWELL SERVICES CENTER — A CONTRIBUTOR TO STREAMLINING GROUND OPERATIONS

Mr. Charles W. Murphy, Director, Support Operations, Kennedy Space Center, FL
Mr. Ronald S. Tulino, Manager, Rockwell Services Center, Cape Canaveral, FL

2. STREAMLINING SHUTTLE GROUND OPERATIONS

Mr. Richard L. Heimbold, Director, Process Engineering, Lockheed Space Operations Company, Kennedy Space Center, FL, and Mr. William H. Reichert, Manager, Integration Engineering, Lockheed Space Operations Company, Kennedy Space Center, FL

3. AUTOMATION ACTIVITIES IN THE MISSION OPERATIONS DIRECTORATE

Mr. William V. Bates, Head Operations Automation Section, NASA, Johnson Space Center, TX

4. STREAMLINING GROUND OPERATIONS – COMMERCIAL PAYLOAD PROCESSING

Mr. George D. Baker, Vice President, Marketing, Astrotech Space Operations, Inc., Silver Spring, MD

5. SPACE STATION GROUND OPERATIONS

Mr. Edward J. Scully, Director, Space Station Operations, McDonnell Douglas Astronautics Company, Kennedy Space Center, FL

6. SATELLITE SERVICING – LOGISTICS SUPPORT

Mr. Joseph E. Abel, Logistics Manager, Satellite Servicing, Lockheed Missiles & Space Company, Huntsville Engineering Center, Huntsville, AL

7. COMMERCIALIZATION OF SPACE

Mr. James A. Ralph, President, International Space Company, Melbourne, FL
2. 3M/NASA PROGRAM
Dr. Christopher J. Podsidaly, Director, Science Research Laboratory, Corporate Research Laboratories, 3M/NASA Program, St. Paul, MN

3. OPPORTUNITIES FOR COMMERCIAL PARTICIPATION IN MICROGRAVITY MATERIAL RESEARCH
Mr. Kenneth R. Taylor, Chief, Commercial Processing in Space Group, Program Development, NASA Marshall Space Flight Center, AL

4. "INTOSPACE"-EUROPEAN SPACE MARKETING APPROACH
(Presenter to be named), MBB/ERNO, Bremen, West Germany

5. "EURECA"-EUROPEAN RETRIEVABLE CARRIER
Mr. Sammuel Gazey, Program Director, MBB/ERNO, Bremen, West Germany

6. GOVERNMENT PROCUREMENT IN THE FUTURE OF COMMERCIAL SPACE PROGRAMS
Dr. Brad M. Meslin, Executive Vice President, Center for Space Policy, Cambridge, MA

C. CONTRACTING AND MANAGEMENT
Holiday Inn Manatee Rooms C&D

Session Chairman: Rear Admiral Stuart J. Evans, USN (Retired), Assistant Administrator for Procurement, NASA Headquarters, Washington, D.C.

Session Organizer: Mr. Fred H. Van Dyck, CPCM, McDonnell Douglas Astronautics Company, Kennedy Space Center, FL

1. THE DCAA ACCESS TO RECORDS OFFENSIVE – WHERE WILL IT LEAD AFTER WESTINGHOUSE?
Mr. Rocco J. Maffei, Jr. and Mr. William E. Porter, Control Data Corporation Legal Services, Minneapolis, MN

2. THE PERSONAL COMPUTER AND GRAVITY PROBE-B MANAGEMENT
Ms. Alice (Joyce) K. Neighbors, Manager GP-B Task Team, Program Development, Marshall Space Flight Center, AL

3. INFLUENCES ON CORPORATE EXECUTIVE DECISION BEHAVIOR IN GOVERNMENT ACQUISITIONS
Mr. James R. Wetherington, DBA; Contract Specialist, NASA, Kennedy Space Center, FL

4&5 TWO NEW CONTRACT TYPES FOR OPERATON OF GOVERNMENT OWNED FACILITIES and CONTRACTING WITHOUT PAPER
Mr. George T. Nickolas, Chief, Small Caliber Ammunition Division, Procurement Directorate, Headquarters US Army, Munitions and Chemical Command, Rock Island, IL

6. DECISION SUPPORT IN THE SOURCE SELECTION PROCESS
Major Curtis R. Cook, United States Air Force Institute of Technology, George Washington University, Washington, D.C.

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

THURSDAY, APRIL 24

PANEL SESSION III (8:30 a.m. to 11:30 a.m.)
Beach Theater

DEPARTMENT OF DEFENSE SPACE PROJECTS

Session Chairman: Lieutenant General Forrest McCartney, USAF, Commander, Space Division, AFSC, Los Angeles AFS, CA
Session Organizer: First Lieutenant Jesse R. Dillard, Jr., Eastern Space and Missile Center, Patrick AFB, FL

MEMBERS:
Major General Donald Henderson, Commander, Space and Missile Test Organization, Vandenberg AFB, CA
Major General Thomas Sawyer, Deputy Chief of Staff Operations, Air Force Space Command, Peterson AFB, CO
Rear Admiral Richard Tourrette, Associate Director for Space Flight, NASA Headquarters, Washington, D.C.
Colonel Joseph Rutter, Deputy for Defense Satellite Communications System, Space Division, USAF, Los Angeles Air Force Station, CA

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

A. SPACE STATION TECHNOLOGY
Beach Theater

Session Chairman: Mr. Seymour Z. Rubenstein, President, Rockwell International, Space Station Division, Downey, CA
Session Organizer: Dr. Gerald D. Carey, Rockwell International, Space Station Division, Downey, CA

1. SPACE STATION TECHNICAL OVERVIEW
Mr. Daniel H. Herman, Director, Engineering Division, Office of Space Station, NASA Headquarters, Washington, D.C., and Mr. Marc Bensimon, Chief of Systems/Management Engineering Branch, Engineering Division, NASA Headquarters, Washington, D.C.

2. TECHNICAL OVERVIEW OF JAPAN'S SPACE STATION ACTIVITIES
Mr. Takehiko Kato, Japanese Liaison for Space Station, NASDA, Johnson Space Center, TX

3. DESIGN FEATURES AND OPERATION OF THE INDUSTRIAL SPACE FACILITY
Mr. Caldwell Johnson, Director of Engineering, Space Industries, Inc., Houston, TX

4. SPACE STATION MICROGRAVITY AND MATERIAL PROCESSING FACILITY — A NATIONAL LAB IN SPACE
Mr. Harry L. Atkins, Commercialization of Material Processing in Space Group, Program Development, NASA, Marshall Space Flight Center, AL, and Mr. Edgar Pevey, Senior Systems Analyst, Teledyne Brown Engineering, Huntsville, AL
2. THE NATIONAL AEROSPACE PLANE PROJECT

3. EXPERT SYSTEMS FOR FUTURE SPACE TRANSPORTATION SYSTEMS
Mr. Barry Ehrlich, Project Manager, Rockwell International, Space Transportation Systems Division, Downey, CA

4. FLIGHT CONTROL FOR ADVANCED SPACE TRANSPORTATION SYSTEMS
Mr. W. Gene Janes, Staff Engineer, Flight Control Division, Flight Dynamics Laboratory, Wright Patterson AF Base, OH, and Mr. Vernon O. Hoehe, Assistant Branch Chief, Control Dynamics Branch, Wright Patterson AF Base, OH

PANEL SESSION IV (7:30 p.m. to 9:30 p.m.)
Galaxy Theater – Spaceport USA

MEET THE ASTRONAUTS

Session Chairman: Mr. Richard G. Smith, Center Director, NASA, Kennedy Space Center, 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.

FRIDAY, APRIL 25

PANEL SESSION V (8:30 a.m. to 11:30 a.m.)
Beach Theater

SECOND GENERATION SPACE TRANSPORTATION SYSTEM

Session Chairman: Mr. Paul F. Holloway, Deputy Director, NASA, Langley Research Center, VA
Co-Chairman: Col. William F. H. Zersen, Deputy Commander for Launch and Control Systems, Space Division AFSC, Los Angeles AFS, CA

Session Organizer: Mr. David Moja, Acting Manager, Future Projects Office, NASA, Kennedy Space Center, FL

MEMBERS:

Dr. Donald B. Jacobs, Vice President, Space Transportation Division, Boeing Aerospace Company, Seattle, WA
Dr. John B. Peller, Vice President, Engineering, Rockwell International Corporation, Downey, CA
Mr. Richard L. Brackeen, Vice President, Space Launch, Martin Marietta Denver Aerospace, Denver, CO
Mr. William F. Rector, III, Division Vice President, General Dynamics, San Diego, CA
PAPER SESSION IV (12:45 p.m. to 3:45 p.m.)

A. ROBOTICS AND ARTIFICIAL INTELLIGENCE IN AEROSPACE OPERATIONS
   Holiday Inn, Manatee Rooms A&B

   Session Chairman: Dr. David E. Flinchbaugh, Section Chief, Systems Engineering, McDonnell Douglas Astronautics Company, Titusville, FL
   Session Organizer: Mr. Michael Reggio, Engineering, Morton Thiokol, Kennedy Space Center, FL

1. AI APPLICATIONS IN SPACE SYSTEMS OPERATIONS: AN OVERVIEW OF THE SIORA PROGRAM
   Mr. Michael J. Wiskerchen, Stanford University, Stanford, CA, and Mr. James R. Grady, Lockheed Missiles & Space Company, Palo Alto, CA

2. SPACE SHUTTLE FUEL CELL MONITORING AUTOMATION PROTOTYPE
   Ms. Marilyn Kimball, Training Applications Branch, NASA, Johnson Space Flight Center, TX

3. VERY SMART ROBOTIC SPACECRAFT FOR DEEP SPACE AND INTERSTELLAR EXPLORATION
   Dr. Joseph A. Angelo, Jr., Chairman, Space Technology Program, Florida Institute of Technology, Melbourne, FL

4. PHOTOGRAMMETRIC CLOSED LOOP CONTROL OF A REMOTE MANIPULATOR SYSTEM
   Mr. Graham Norgate, Manager of R&D, Remote Manipulator Systems, SPAR Aerospace Limited, Ontario, CA

5. A ROBOT HAND FOR REMOTE SATELLITE SERVICING
   Dr. Antal Bejczy, Jet Propulsion Laboratory, Pasadena, CA

6. AN INTERACTIVE ANIMATED DISPLAY OF MAN-CONTROLLED AND AUTONOMOUS ROBOTS
   Dr. John Duffy, Professor and Director, Center for Intelligent Machines and Robotics, University of Florida, Gainesville, FL, and Mr. Carl D. Crane, Research Associate, Center for Intelligent Machines and Robotics, University of Florida, Gainesville, FL

B. SPECIAL TOPICS
   Holiday Inn, Manatee Rooms C&D

   Session Chairman: Mr. Sam T. Beddingfield, Beddingfield Aerospace Consultants, Titusville, FL
   Session Organizer: Mr. Preston E. Beck, Assistant Research Professor, Florida Institute of Technology, Melbourne, FL

1. EXPENDABLE LAUNCH VEHICLE AS A COMPLEMENT TO THE SPACE SHUTTLE
   Mr. Lee R. Scherer, Director, Commercial Space Program, General Dynamics, Space Systems Division, San Diego, CA

2. RECOVERY TECHNOLOGY FOR UNMANNED LAUNCH VEHICLES
   Mr. Gary W. Johnson, STS Study Group, NASA, Marshall Space Flight Center, AL

3. SELF-LIMITING EXPLOSIVE PROPERTIES OF LIQUID HYDROGEN AND OXYGEN
   Mr. Wallace H. Boggs, Technical Assistant to Chief, Facilities Division, NASA, Kennedy Space Center, FL

4. GOVERNMENT CONCEPTUAL ESTIMATING FOR CONTRACTING AND MANAGEMENT
   Mr. Joseph A. Brown, Lead Cost Engineer, NASA, Kennedy Space Center, FL

5. CAPE CANAVERAL — A MAIN CAMPUS FOR THE UNIVERSITY OF SPACE
   Dr. Joseph A. Angelo, Jr., Chairman, Space Technology Studies, Florida Institute of Technology, Melbourne, FL

6. SOLAR DYNAMIC POWER FOR SPACE STATION
   W. Grosskopf, Member of Technical Staff, Space Station, Rockwell International, Rocketdyne, Canoga Park, CA (Presented by Ernie Binz, Chief Engineer, Space Station)

SPACE CONGRESS GOLF TOURNAMENT
(12:30 p.m. to 5:00 p.m.)

Cocoa Beach Golf Course — Recreation Department off Minuteman Causeway

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

   6:30 Social Hour
   7:30 Dinner

PROGRAM SUMMARY

MONDAY, April 21
12:00 noon to 5:00 p.m. REGISTRATION DESK OPEN
                       Holiday Inn Dolphin Room

TUESDAY, April 22
7:00 a.m. to 5:00 p.m. REGISTRATION DESK OPEN
                       Holiday Inn Dolphin Room
8:30 a.m. KEYNOTE ADDRESS
           Beach Theater
9:00 a.m. to 11:30 a.m. PANEL SESSION 1 — SPACE STATION
                         Beach Theater
11:00 a.m. to 7:00 p.m. YOUTH SCIENCE FAIR
                         Holiday Inn Dolphin Room
11:00 a.m. to 7:00 p.m. EXHIBITS
                         Hilton Convention Center
1:00 p.m. to 4:00 p.m.  
PAPER SESSION I:  
A. INTERNATIONAL SPACE ACTIVITIES  
   Beach Theater  
B. COMPUTERS — WHAT'S NEW AND WHAT'S COMING  
   Holiday Inn Manatee Rooms A&B  
C. LOW COST SHUTTLE PAYLOADS  
   Holiday Inn Manatee Rooms C&D  
7:00 p.m.  
BANQUET SOCIAL HOUR  
   Patrick Air Force Base, Officers  
   Open Mess  
8:00 p.m.  
BANQUET  
   Patrick Air Force Base, Officers  
   Open Mess

WEDNESDAY, April 23

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 — PRODUCTIVITY  
   Beach Theater  
11:00 a.m. to 8:00 p.m.  
YOUTH SCIENCE FAIR  
   Holiday Inn Dolphin Room  
11:00 a.m. to 8:00 p.m.  
EXHIBITS  
   Hilton Convention Center  
11:45 a.m. to 1:00 p.m.  
SPACE CONGRESS LUNCHEON  
   Holiday Inn Manatee Rooms  
2:30 p.m. to 5:30 p.m.  
PAPER SESSION II:  
A. STREAMLINING GROUND OPERATIONS  
   Beach Theater  
B. SPACE COMMERCIALIZATION  
   Holiday Inn Manatee Rooms A&B  
C. CONTRACTING AND MANAGEMENT  
   Holiday Inn Manatee Rooms C&D  
6:00 p.m. to 7:30 p.m.  
EXHIBIT CENTER COCKTAIL RECEPTION  
   Hilton Convention Center

THURSDAY, April 24

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 III — DEPARTMENT OF DEFENSE SPACE PROJECTS  
   Beach Theater  
9:00 a.m. to 1:00 p.m.  
YOUTH SCIENCE FAIR  
   Holiday Inn Dolphin Room

FRIDAY, April 25

8:00 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 — SECOND GENERATION SPACE TRANSPORTATION SYSTEM  
   Beach Theater  
12:30 p.m. to 5:00 p.m.  
SPACE CONGRESS GOLF TOURNAMENT  
   Cocoa Beach Golf Course  
12:45 p.m. to 3:45 p.m.  
PAPER SESSION IV  
A. ROBOTICS AND ARTIFICIAL INTELLIGENCE IN AEROSPACE OPERATIONS  
   Holiday Inn Manatee Rooms A&B  
B. SPECIAL TOPICS  
   Holiday Inn Manatee Rooms C&D  
6:30 p.m.  
MISSILE, SPACE AND RANGE PIONEERS' ANNUAL BANQUET  
   Patrick Air Force Base, Officers  
   Open Mess
ACKNOWLEDGEMENTS

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Air Force Eastern and Missile Center
Artists’ Forum of Brevard Museum and Art Center
Ball Aerospace Division
Barnett Bank
Beach Theater and Draft House
Boeing
Brevard Community College
Brevard County School Board
Cocoa Beach Hilton
Cocoa Beach Recreation/Golf Course
Computer Sciences Corporation
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Florida Solar Energy Center
General Dynamics Corporation
Grumman Corporation
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Holiday Inn of Cocoa Beach
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IBM
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Le Rendez-Vous Restaurant
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Lockheed Space Operations Company
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Mousetrap Restaurant
National Aeronautics and Space Administration
Northrop Services, Inc.
Pan Am World Services, Inc.
Patrick AFB Officers Open Mess
Patrick AFB Yacht Club

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TWA Services, Inc.
USBI Booster Production Company
United Technologies Hamilton Standard Division
United Technologies Chemical Systems Division
U.S. Navy Honor Guard, Naval Training Center, Orlando
U.S. Navy, Naval Ordnance Test Unit
Wyle Laboratories

THE ARTISTS FORUM of the Brevard Museum and Art Center has graciously agreed to display a collection of thirty-six selected works of the “Brevard Artists Space Experience”
A visit to view the launch of Mission 61-A, Challengers Mission of October – November 1985

IN MEMORY OF CHALLENGER’S 51-L CREW
THE TWENTY-THIRD SPACE CONGRESS SALUTES THE U.S. NAVY CURRENTLY CELEBRATING 75 YEARS OF NAVAL AVIATION

A LONG HISTORY OF CONTRIBUTION TO AVIATION, AERONAUTICS, AND AEROSPACE