Space Congress Programs

4-27-1993

1993 Thirtieth Space Congress Program

Canaveral Council of Technical Societies

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Chairman's Message

The Thirtieth Space Congress should be a memorable event. The theme we have chosen “Yesterday's Vision Is Tomorrow's Reality” befits this significant anniversary.

Three decades ago the United States had just entered into what we call the “Space Age.” Our manned space program was well underway with the very successful Mercury program. The world shared the excitement of these early adventures but were, for the most part, unaware of the technology and human struggle behind the space effort. Here on the Space Coast, a deeper understanding existed. That understanding, combined with a vision, gave birth to the Space Congress. We believe you will find at this event, some of the excitement of those early days as well as opening a window on the future.

The 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, communities and aerospace companies of the Space Coast have put together an exciting combination of symposiums, displays, social events and educational activities. During this, the oldest such gathering of space expertise of its kind anywhere, you will encounter stimulating presentations, discussions, and displays that focus on the past, present and future of space.

Once again, the Space Congress has attracted an outstanding group of leaders in the military and civilian space programs who will share their assessment of our accomplishments, and vision for the future. This distinguished group of speakers and panel/paper session leaders are noted in the program for your pre-Congress planning. Additionally, we seek to inspire our communities youth to explore space as a career through activities such as the science fair, “Meet the Astronauts Night” and model rocket contest.

On behalf of myself and this year’s committee, we look forward to joining with you in celebration of our joint heritage and future in space. Welcome to the Thirtieth Space Congress.

L. D. Solid
General Chairman
Thirtieth Space Congress
Information

Headquarters/Registration
Headquarters for the Thirtieth Space Congress the Holiday Inn, Cocoa Beach. Registration will take place in the Dolphin Room from noon to 5:00 p.m. Monday, April 27, 1992. 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 .............................................. 10.00
Tuesday Banquet .................................................. 25.00
Wednesday Luncheon ............................................. 10.00
Proceedings ...................................................... 70.00
Sessions all four days ......................................... 30.00
Individual Sessions ............................................. 5.00
Individual Sessions (Students) ............................... 2.00
Golf .................................................................... 35.00

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 directly by calling (407) 868-2174.

Press Room
The press facility is located in the Skylab Room of the Howard Johnson Plaza-Hotel. The press facility is staffed and directed by Chuck Morley and J. B. Kump 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 for the press facility is (407) 868-2146.

Message/Locator Assistance
The sponsoring organization, the Canaveral Council of Technical Societies (CCTS), maintains an office with telephone (407) 868-1623 and fax (407) 783-5579 for convenience of Space Congress participants. It also 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 (407) 868-2345.

Proceedings
The proceedings of the Thirtieth 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.

Exhibitors
ADC Government Operations
AlliedSignal
Analex Space Systems Inc.
BAMSI, Inc.
Bionetics Inc.
Boeing Company
Brevard Community College
Brevard Technical Journal
Communications Concepts, Inc.
Computer Science Raytheon
Countdown
CST
Digital Equipment Corporation
EG&G Florida, Inc.
Empress Software Inc.
ENSCO
Final Frontier Magazine
Florida Institute of Technology
General Dynamics Space Systems Division
Harris Corporation
Hewlett Packard
Honeywell, Inc.
I-NET Inc.
International Business Machines Corporation
ITT Federal Services Inc.
Johnson Controls World Services Inc.
Lockheed Engineering and Science Company
Lockheed Missiles and Space Company
Lockheed Space Operations Company
Loral Space Information Systems
Martin Marietta Astronautics Group
McDonnell Douglas Corporation
Morton Thiokol Corporation
NASA STI
Naval Ordnance Test Unit
Naval Research Laboratory
NYMA, Inc.
Planning Research Corporation
Public Broadcast System
Rockwell International
Software Publishing Co.
STC
Sun Microsystems
United Technologies Corporation
University of Central Florida
Vitro Corporation
Xerox
Xerox Engineering System (XES)

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 22. The awards will be presented to the winners at the "Meet the Astronauts" panel session to be held at the Howard Johnson Plaza-Hotel in Cocoa Beach at 7:00 p.m. on Thursday, April 29.
Pioneers' Day Banquet '93 will be held on Friday, April 30, at the Officers' Club, Patrick Air Force Base.

Social Hour: 6:30 p.m.
Dinner: 7:30 p.m.
Speaker: 8:30 p.m.
Gilbert D. Rye
Senior Vice-President of Business Development
Orbital Sciences Corporation

Registration is April 21, 22 and 23 at the Dolphin Room, Holiday Inn, Cocoa Beach, and 5:30 to 6:30 p.m. at the Officers' Club on April 24.

Space Congress Golf Tournament
Golfers will be able to enjoy a tournament at the Patrick AFB Course on Friday, April 30.

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 for your partner, and enclose $35, each person. A maximum of 144 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. Buffet lunch from 11:00 a.m., and shotgun start at 12:30 p.m. will allow completion in time for Pioneers' Banquet attendance. Maps are available at the Registration Desk.

Canaveral Council of Technical Societies
CCTS Member Societies:
Air Force Association
American Institute of Aeronautics and Astronautics
American Institute of Architects
American Meteorological Society
American Society of Civil Engineers
American Society of Heating, Refrigeration and 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
Armed Forces Communication Electronics Association
Florida Engineering Society
Florida Space Business Roundtable
Institute of Electrical and Electronic Engineers
Institute of Industrial Engineers
Instrument Society of America
Missile, Space and Range Pioneers, Inc.
NASA Alumni League
National Contract Management Association
National Space Club
National Technical Association
Society for the Advancement of Materials and Process Engineering
Society for Technical Communications
Society of Logistics Engineers
Society of Manufacturing Engineers
Society of Photo-Optical Instrumentation Engineers
Society of Women Engineers

Associate Members:
Association for Quality and Participation
National Management Association, Florida Space Coast Council
USAF Space & Missile Museum Foundation

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

Attraction Centers
Late April in Florida is a delightful time of 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 Oceanic, the SS Atlantic, the SS Majestic, the Carnivale or the Mardi Gras 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 at Walt Disney World in the Magic Kingdom, Epcot Center, or Disney/MGM Studios, Universal Studios, Florida - 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.
Program

TUESDAY, APRIL 27

KEYNOTE ADDRESS (8:30 a.m. to 9:00 a.m.)
Howard Johnson Plaza-Hotel, Challenger Main Ballroom

Introductions: L. D. Solid
General Chairman
Speaker: General Merrill M. McPeak
Chief of Staff, USAF

General Merrill A. McPeak is chief of staff of the U.S. Air Force, Washington, D.C. As chief, he serves as the senior uniformed Air Force officer over 900,000 people serving at approximately 3,000 locations in the United States and overseas.

General McPeak was born January 9, 1936, in Santa Rosa, Calif. He has earned a bachelor of arts degree in economics and a master's degree in international relations. During the period 1970-1979, the general completed Armed Forces Staff College, National War College, and the executive development program at the University of Michigan Graduate School of Business.

The general was a distinguished graduate of the Air Force Reserve Officer Training Corps program and entered the Air Force in November 1957. He completed pilot training at Hondo Air Force Base, Texas, and Vance Air Force Base, Okla., and received pilot wings in January 1959. General McPeak was designated a distinguished graduate of flying training.

His first operational assignment was flying F-104 Starfighters with the 436th Tactical Fighter Squadron, George Air Force Base, Calif. He subsequently transferred to the 79th Tactical Fighter Squadron, 20th Tactical Fighter Wing, Royal Air Force Station Woodbridge, England, where he flew F-100 Super Sabres.

In September 1965 General McPeak returned to Luke Air Force Base as a gunnery instructor and later served as wing weapons officer for the F-104G program.

From December 1966 to December 1968 General McPeak flew the solo and lead solo positions with the U.S. Air Force Air Demonstration Squadron, the Thunderbirds. He performed in nearly 200 official air shows in the United States and abroad.

The general served as an F-100 tactical fighter pilot with the 37th Tactical Fighter Wing, Phu Cat Air Base, Vietnam, then as operations officer and commander of the "Misty" high-speed forward air controller unit. During his tour of duty in Vietnam, he flew 269 combat missions.


General McPeak is a command pilot and parachutist with more than 6,000 flying hours in a variety of aircraft, principally fighters. The air forces of Germany, Spain, Mexico, Thailand, Yugoslavia, France, Israel, Russia, Bulgaria, Venezuela and Poland have awarded him pilot wings. He is a member of the Council on Foreign Relations, New York City, and the International Institute for Strategic Studies, London.

He was promoted to general August 1, 1988. General McPeak is married to the former Elynor Moskowitz of San Diego. They have two sons, Mark and Brian.

PANEL SESSION I (9:00 a.m. to 11:30 a.m.)
Howard Johnson Plaza-Hotel, Challenger Main Ballroom

SPACE RESEARCH AND DEVELOPMENT

Panel Chairman: Rear Admiral Herbert A. Browne, Jr., USN, Commander, Naval Space Command, Dahlgren, VA
Session Organizer: Capt. Bruce Stevenson, USAF, Air Force Space Command, 45th Space Wing, Patrick AFB, FL

MEMBERS:

Dr. Peter G. Pappas, Chief Scientist, USA Strategic Defense Command, Arlington, VA
Dr. John R. Davis, Chief Scientist, Space and C4 Systems Requirements, Navy Department, OPNAV-N6H, Pentagon, Washington, D.C.
Peter Wilhelm, Director, Navy Center for Space Technology, Washington, D.C.
MGen. Vernon L. Conner, USA, U.S. Space Command, Executive Director for Joint Strategic Defense Planning Staff, Peterson AFB, CO
BGen. Jimmy R. Morrell, USAF, Air Force Space Command, Commander, 45th Space Wing, Patrick AFB, FL
BGen. Robert Dickman, USAF, Air Force Space Command, Director of Plans, Peterson AFB, CO

SPACE VIDEOS (9:00 a.m. to 5:00 p.m.)
Howard Johnson Plaza-Hotel, Skylab Room

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

Introductions: L. D. Solid
General Chairman
Speaker: Miles (Mike) Ross
Past Deputy Director
Kennedy Space Center, FL

Mike Ross graduated from MIT with a degree in Mechanical Engineering and Engineering Management.
His first participation in missile and space programs was at the Applied Physics Laboratory of The Johns Hopkins University, where he was a member of the Senior Staff. He designed components and procedures for the Proximity Fuze, a radar-controlled gun director, and the Terrier surface-to-air missile program.
He was also Flight Test Director for Terrier missiles at the Naval Ordnance Test Station, China Lake, California.
In 1956, Mike joined the Ramo Woolridge Corporation as project manager of the Thor missile program at Cape Canaveral, with responsibility for systems engineering...
and technical direction. He later became Director of Florida Operations for Ramo Woolridge, now TRW.

In 1967, he moved to the Kennedy Space Center, first as Deputy Center Director for Operations, and in 1968 as Deputy Center Director. He received NASA's Exceptional Service Medal, the Medal for Outstanding Leadership, and the Distinguished Service Medal.

In 1977 Mike returned to TRW as European Regional Manager, and was based in Brussels. In this position, he worked with NATO, SHAPE, and provided technical and marketing assistance to companies in seven countries which were starting or expanding operations in space programs.

Mike and wife, Patricia, have four sons - a naval architect, an Army colonel, a United Airline pilot, and an advertising manager. Pat and Mike retired in 1984 and are living in Cocoa Beach. He holds a Commercial Pilot's license, and is now trying to fly a radio controlled model helicopter.

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

A. ADVANCED TECHNOLOGY DEVELOPMENT
Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms

Session Chairman: Col. Louis A. Kouts, Director, National Test Bed SDIO/SDT Pentagon, Washington, D.C.

Session Organizer: LT. Jeffery P. Jacques, USAF, Assistant Installation Mobility Officer, 45th Logistics Support Squadron, Patrick AFB, FL

1. SPACE TECHNOLOGY REQUIREMENTS AND INTERDEPENDENCY FOR NATIONAL COMPETITIVENESS
   Dr. Kumar Krishen, NASA, Johnson Space Center, Houston, TX

2. IN-SPACE WELDING VISIONS & REALITIES
   David Tamir, Rockwell International Corporation, Space Systems Division, Kennedy Space Center, FL
   Lee Flanigan, Rockwell International Corporation, Rocketdyne Division, Marshall Space Flight Center, Huntsville, AL
   Dr. Thomas A. Siewert, National Institute of Standards and Technology, Materials Processing Group, Boulder, CO
   Dr. Koichi Matsubuchi, Massachusetts Institute of Technology, Department of Ocean Engineering, Cambridge, MA
   Dr. Thomas W. Eagar, Massachusetts Institute of Technology, Department of Materials Science & Engineering, Cambridge, MA
   Dr. Renjeng Su, University of Colorado at Boulder, Center for Space Construction, Boulder, CO

3. THE NAVY NUCLEAR PROGRAM AS AN ANALOGUE OF LONG DURATION, NUCLEAR POWERED, MANNED SPACE MISSIONS
   LT. John Anthony Camara, USN, P.E., Officer Department, Naval Nuclear Power School, Orlando, FL
   Dr. E. F. Strother, Adjunct Professor, Florida Institute of Technology, Melbourne, FL

4. IS IT SEP YET?
   C. Uphoff, Ball Space Systems Division, Boulder, CO
   R. Reinert, Ball Space Systems Division, Boulder, CO
   J. R. French, JRF Engineering, La Canada, CA

5. MODELING CURRENT AND FUTURE LAUNCH VEHICLE PROCESSING USING OBJECT-ORIENTED SIMULATION TECHNIQUES
   D. G. Linton, Associate Professor, Electrical & Computer Engineering Department, University of Central Florida, Orlando, FL
   S. Khajenoori, Associate Professor, Electrical & Computer Engineering Department, University of Central Florida, Orlando, FL
   M. Heileman, Advanced Programs Engineer, Rockwell International Corporation, Space Systems Division, Kennedy Space Center, FL
   K. Halder, Graduate Research Assistant, Electrical & Computer Engineering Department, University of Central Florida, Orlando, FL
   H. Cat, Graduate Research Assistant, Electrical & Computer Engineering Department, University of Central Florida, Orlando, FL
   V. Bullington, Graduate Research Assistant, Electrical & Computer Engineering Department, University of Central Florida, Orlando, FL
   G. Hebert, Graduate Research Assistant, Electrical & Computer Engineering Department, University of Central Florida, Orlando, FL

B. TODAY'S VISION (SEI, NLS, AEROSPACE PLANE)
Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms

Session Chairman: Col. Steven C. Stadler, USAF, DCS/Requirements, Headquarters AFSPACECOM, Peterson AFB, CO

Session Organizer: Capt. Mike Ramponi, USAF, Studies & Analysis Officer, Plans Directorate, 45th Space Wing, Patrick AFB, FL

1. FACILITY CONCEPT FOR NASP DERIVED VEHICLES
   David A. Luke, Jr., Mechanical Engineer, Merrick & Co., Denver, CO

2. IN-SPACE OPERATIONS FOR LUNAR AND MARS SPACE TRANSFER VEHICLES
   James L. Raper, Sr., Deputy Manager, Space Exploration Initiative Office, NASA, Langley Research Center, Hampton, VA
   Rick C. Vargo, Technical Specialist, McDonnell Douglas Space Systems, Kennedy Space Center, FL

3. CONCEPTUAL DESIGN OF A CARGO LANDER FOR THE FIRST LUNAR OUTPOST
   Michael J. Wright, University of Minnesota, NASA, Marshall Space Flight Center, Summer Fellow, Huntsville, AL

4. THE LUNAR CAMPSITE MISSION CONCEPT
   Carl M. Case, Manager, Exploration Systems Office, Boeing Defense & Space Group, Missiles & Space Division, Huntsville, AL

5. CONTINUOUS IMPROVEMENT: TRANSFORMING YESTERDAY'S REALITY INTO TOMORROW'S VISION
   Mina Akhavi, Rockwell International, Space Systems Division, Downey, CA
   Patrick Antony, Rockwell International, Space Systems Division, Downey, CA
   Larry Davidoff, Rockwell International, Space Systems Division, Downey, CA
6. THE ROLE OF ADVANCED ROBOTIC SYSTEMS IN INTERSTELLAR EXPLORATION

Dr. Joseph A. Angelo, Jr., Director Advanced Technology, Science Applications International Corp., Melbourne, FL
The general was commissioned through the Air Force Reserve Officer Training Corps and was awarded pilot wings in November 1959. After completing F-100 training, General Horner served as an F-100 pilot with the 492nd Tactical Fighter Squadron, Royal Air Force Station Lakenheath, England.

The general served a temporary tour of duty with the 388th Tactical Fighter Wing at Korat Royal Thai Air Force Base, Thailand. While there, he flew 41 combat missions in the F-105 over North Vietnam. When he returned to the United States, he was assigned to Nellis Air Force Base, Nev., as an F-105 instructor pilot. In May 1967, the general returned to Korat Royal Thai Air Force Base as an F-105 Wild Weasel pilot with the 388th Tactical Fighter Wing and flew 70 more combat missions over North Vietnam.

He was later assigned to Nellis Air Force Base. He served as an F-105 instructor, and as an F-105 liaison officer with the Air Force Tactical Fighter Weapons Center. General Horner transferred to Langley Air Force Base, Va., where he was an air operations staff officer. After graduating from Armed Forces Staff College in January 1972, he was assigned to Headquarters U.S. Air Force in Washington, D.C.


In August 1990, General Horner deployed to Saudi Arabia as the forward commander for U.S. Central Command as well as the commander of U.S. Central Command Air Forces. There he assumed command of all U.S. and allied air assets for the duration of Operation Desert Shield and Desert Storm. He returned to Shaw Air Force Base in April 1991. He assumed his present position on June 30, 1992.

The general is a command pilot with more than 5,300 flying hours. He has maintained proficiency in a variety of modern fighter aircraft, including the F-15 and F-16. His U.S. military awards and decorations include the Distinguished Service Medal with one oak leaf cluster, Silver Star with one oak leaf cluster, Legion of Merit, Distinguished Flying Cross, Meritorious Service Medal with two oak leaf clusters, Air Medal with 10 oak leaf clusters, Air Force Commendation Medal with three oak leaf clusters, Combat Readiness Medal, National Defense Service Medal with one bronze service star, Armed Forces Expeditionary Medal with service star, Vietnam Service Medal with service star and Republic of Vietnam Campaign Medal.

In addition to his U.S. military awards, General Horner has been decorated with Canada's Meritorious Service Cross and honored by France, Pakistan and the sovereign states of Bahrain, Kuwait, Saudi Arabia and the United Arab Emirates.

He was promoted to general on June 19, 1992.

General Horner is married to the former Mary Jo Gitchell of Cresco, Iowa. They have three children: Susan, John and Nancy.

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

A. CURRENT LAUNCH SYSTEMS

Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms

Session Chairman: Lee R. Scherer, Consultant, Commercial Launch Services, General Dynamics Corporation, San Diego, CA

Session Organizer: Shaman Mullick, Advanced Programs, Harris Space Systems Corporation, Rockledge, FL

1. PUBLIC SPACE LAUNCH ACQUISITION: A COMPARATIVE CASE STUDY

Capt. Lee W. Rosen, USAF, Upper Stage Program Office, San Pedro, CA

Capt. Kenneth R. Leeson, USAF, Upper Stage Program Office, San Pedro, CA
2. LAUNCH SYSTEM DEVELOPMENT IN THE PACIFIC RIM
   Dr. Barbara A. Stone, Special Assistant for Industry Liaison, NASA, Office of Commercial Programs, Washington, D.C.
   John R. Page, Head, Aerospace Engineering, School of Mechanical and Manufacturing Engineering, The University of New South Wales, Kensington, NSW, Australia

3. REPORT OF THE COMSTAC TASK GROUP ON SOVIET ENTRY INTO THE WORLD SPACE MARKET
   Robert D. Jones, Program Manager, Advanced Technology, Rocketdyne Division, Rockwell International Corporation, Canoga Park, CA

4. USE OF EXCESS MISSILE SYSTEMS FOR COMMERCIAL LAUNCHES
   Donald K. (Deke) Slayton, Director, Corporate Business Development, Aerospace Systems Group, EER Systems Corporation, Seabrook, MD

5. NASA'S RESEARCH AND TECHNOLOGY PROGRAM FOR ENHANCING THE COMPETITIVENESS OF THE CURRENT U.S. EXPENDABLE LAUNCH FLEET

6. EXPENDABLE LAUNCH VEHICLES FOR SPACE STATION FREEDOM DELIVERY MISSIONS
   Otto Steinbronn, Advanced Programs Director, General Dynamics, Commercial Launch Services, San Diego, CA

B. PAST AND FUTURE PAYLOADS (2:00 p.m. to 5:30 p.m.)
   Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms

Session Chairman: JoAnn H. Morgan, Director, Payloads Projects Management, NASA, Kennedy Space Center, FL
Session Organizer: Shirley Green, Payload Support Office, NASA, Kennedy Space Center, FL

1. THE TRACKING AND DATA RELAY SATELLITE SYSTEM
   Charles S. Vanek, TDRS Project Manager, Goddard Space Flight Center, Greenbelt, MD

2. DEVELOPMENT OF SPACE SYSTEMS PAYLOADS FOR EARTH ORBIT AND PLANETARY APPLICATIONS
   Sidney P. Saucier, Manager, Space Systems Projects, Marshall Space Flight Center, Huntsville, AL

3. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION'S MICROGRAVITY SCIENCE AND APPLICATIONS PROGRAM

4. LIFE SCIENCES SHUTTLE FLIGHTS - 15 YEARS
   Bonnie P. Dalton, Chief, Payload Operations Branch, Ames Research Center, Moffet Field, CA
   Robert P. Hogan, Deputy Chief, Space Life Sciences Payload Office, Ames Research Center, Moffet Field, CA
   Dr. Gary C. Jahn, Sciences Operations Branch, Ames Research Center, Moffet Field, CA

5. EVOLUTION OF BIOMEDICAL PAYLOADS TO EXPAND HUMAN PRESENCE IN SPACE
   Howard J. Schneider, Ph.D., Space and Life Sciences Directorate, NASA, Johnson Space Center, Houston, TX

C. COMMERCIAL SPACE DEVELOPMENT
   Holiday Inn, Manatee Rooms A & B

Session Chairman: John G. Mannix, Associate General Counsel for Intellectual Property, NASA Headquarters, Washington, D.C.
Session Organizer: Chris Cook, EG&G, Kennedy Space Center, FL

1. THE U.S. COMMERCIAL SPACE LAUNCH INDUSTRY: RESPONDING TO THE MARKET FORCES
   Ralph DePalma, Consultant, Merritt Island, FL

2. TECHNOLOGY TRANSFER AND THE OFFICE OF ADVANCED CONCEPTS AND TECHNOLOGY
   Carissa Bryce Christensen, Princeton Synergetics, Inc., Princeton, NJ

3. NASA'S COMMERCIAL MICROGRAVITY ADVANCES

4. LOW COST ACCESS TO SPACE WITH THE STARFIRE/CONESTOGA LAUNCH VEHICLE SYSTEMS
   Bill Saavedra, Director, Corporate Business Development, Aerospace Systems Group, EER Systems Corporation, Seabrook, MD

5. SPACE LAUNCH INFRASTRUCTURE
   Linda Hull Strine, Deputy Associate Director for Program Affairs, U.S. Department of Transportation, Washington, D.C.
   Carissa Bryce Christensen, Princeton Synergetics, Inc., Princeton, NJ

EXHIBIT CENTER RECEPTION (6:00 p.m. to 7:30 p.m.)
Cocoa Beach Hilton and Comfort Inn & Suite Resort
THURSDAY, APRIL 29

PANEL SESSION III (8:30 a.m. to 11:30 a.m.)
Howard Johnson Plaza-Hotel, Challenger Main Ballroom

SPACE STATION
Panel Chairman: Richard (Dick) Kohrs, Director, Space Station Freedom, NASA Headquarters, Washington, D.C.
Session Organizer: Joel Dodds, McDonnell Douglas Space Systems, Kennedy Space Center, FL

MEMBERS:
Jerry W. Craig, Manager, ACRV Project Office, NASA, Johnson Space Center, Houston, TX
Dr. Earle K. Huckins, Director, Space Station Engineering, Washington, D.C.

SPACE VIDEOS (9:00 a.m. to 5:00 p.m.)
Howard Johnson Plaza-Hotel, Skylab Room

PAPER SESSION III (1:00 p.m. to 4:00 p.m.)
A. SPACE STATION
Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms
Session Chairman: Robert W. Moorehead, Deputy Director, Space Station Freedom Program and Operations, NASA, Reston, VA
Session Organizer: Gert Adkins, McDonnell Douglas Space Systems, Kennedy Space Center, FL

1. RACK LEVEL TEST FACILITY - THE COLUMBUS APM PAYLOAD VERIFICATION TOOL
Dr. Wilfried Schroeder, Utilization and Mission Planning, ERNO Raumfahrttechnik GmbH, Bremen, Germany
D. Husung, Utilization and Mission Planning, ERNO Raumfahrttechnik GmbH, Bremen, Germany
H. Pieterek, ESA, Noordwijk, Bremen, Germany

2. SPACE STATION UTILIZATION INITIATIVES
Mark Uhran, DSO, Utilization & Operations Office, NASA, Reston, VA

3. INTERNATIONAL SCIENCE FACILITY
Stanley Goldberg, DSX, International Programs Office, NASA, Reston, VA
Elizabeth Carter, Space Station Freedom Program Office, ESA, Bremen, Germany

4. SPACE STATION AVIONICS ARCHITECTURE
John Rush, DSS, System Engineering & Integration Office, NASA, Reston, VA

B. SPACE EDUCATION
Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms

Session Chairman: R. Gilbert Moore, Physics Department, Utah State University, Logan, UT
Session Organizer: Priscilla Elfrey, Patent Counsel and Technology Transfer Office, NASA, Kennedy Space Center, FL

1. FLORIDA'S SPACE EDUCATION DEVELOPMENT PROGRAM
Gerard G. Ventre, Ph.D., Technical Director and Associate Director, FSGC, University of Central Florida, Orlando, FL

2. A HIGH-SCHOOL LEVEL SUMMER SPACE EDUCATION SEMINAR
Dr. Stephen Horan, New Mexico Space Grant Consortium, New Mexico State University, Las Cruces, NM

3. CREATING SPACE EXPERIMENT OPPORTUNITIES FOR THE ACADEMIC COMMUNITY
James A. Ralph, Spaceport Florida Authority, Cocoa Beach, FL
Edward Ellegood, Spaceport Florida Authority, Cocoa Beach, FL

4. NEW INITIATIVES IN UNDERGRADUATE AND GRADUATE SPACE EDUCATION
Dr. David C. Webb, Embry Riddle Aeronautical University, Daytona Beach, FL

5. DISTANCE LEARNING AS A TRAINING AND EDUCATION TOOL
Dr. David L. Hosley, Manager, Technical Training, Lockheed Space Operations Company, Kennedy Space Center, FL

6. SPACE EDUCATION BENEFITS FROM INDUSTRIAL CONSORTIA
Barbara A. Stone, Ph.D., Office of Advanced Concepts and Technology, NASA, Washington, D.C.
John R. Page, The University of New South Wales, Kensington, NSW, Australia

C. 30 YEARS OF PROGRESS, SPINOFFS FROM SPACE TECHNOLOGY
Holiday Inn, Manatee Rooms A & B
Session Chairman: Dr. Doris J. Rouse, Director, NASA Technology Applications Team, Research Triangle Institute, Research Triangle Park, NC
Session Organizer: Don Capone, Southern Technology Application Center, Kennedy Space Center, FL

1. OUTER SPACE TO INNER SPACE: THE STORY OF THE TRANSFER OF NASA EXCIMER LASER TECHNOLOGY TO MEDICAL ANGIOPLASTY PRODUCTS
Dr. James Laudenslager, President, Advanced Interventional Systems, Inc., Irvine, CA

2. FLOW CYTOMETRY FOR CLINICAL USE AND SPACE-BASED RESEARCH
Dr. David Robinson, M.D., Associate Professor of Surgery, Division of Oncology, University of Miami School of Medicine, Miami, FL

Dr. Gerry Taylor, Ph.D., Associate Mission Specialist, Life Sciences Division, NASA, Johnson Space Center, Houston, TX
3. MEDITRAIN-MEDICAL INSTRUMENTATION AS SPIN-OFF FROM SPACE APPLICATION

J. Schneider, NOVA Aerospace, Vienna, Austria
W. Bumba, Vienna, Austria
M. Mossaheb, Vienna, Austria
N. Bachl, Dept. of Sports Physiology, University of Vienna, Vienna, Austria
R. Baron, Dept. of Sports Physiology, University of Vienna, Vienna, Austria
KH. Tschan, Dept. of Sports Physiology, University of Vienna, Vienna, Austria

4. COMMERCIALIZING STRATEGIC DEFENSE INITIATIVE TECHNOLOGY

Nick Montanarelli, Deputy Director, Technology Application Office, Office of the Secretary of Defense, Washington, D.C.

5. STRATEGIC FACTORS IN THE DEVELOPMENT OF THE NATIONAL TECHNOLOGY TRANSFER NETWORK

Barbara A. Stone, Ph.D., Office of Advanced Concepts and Technology, Washington, D.C.

6. DIVIDENDS FROM SPACE; HOW NASA TECHNOLOGY HAS PROVIDED A COMPETITIVE ADVANTAGE FOR U.S. INDUSTRY

Doris J. Rouse, Ph.D., Director, NASA Technology Application Team, Research Triangle Park, NC

FRIDAY, APRIL 30

PANEL SESSION V (8:30 a.m. to 11:30 a.m.)
Howard Johnson Plaza-Hotel, Challenger Main Ballroom

YESTERDAY'S VISION IS TOMORROW'S REALITY

Panel Chairman: James M. Beggs, Chairman of the Board, Spacehab, Inc., Washington, D.C.
Session Organizer: George H. Mosakowski, NASA, Kennedy Space Center, FL
MEMBERS:
LT. General Richard C. Henry, USAF, Retired
John Yardley
Bill Nelson
Frank Borman: Invited

NOSTALGIA DISPLAY (7:30 a.m. to 12:30 p.m.)
Howard Johnson Plaza-Hotel, Ballroom, North End

SPACE CONGRESS GOLF TOURNAMENT
(11:00 a.m. to 5:30 p.m.)
Patrick AFB Golf Course
Buffet Lunch: 11:00 a.m.
Shotgun Start: 12:30 p.m.
Map available at registration desk.

PIONEERS' ANNUAL BANQUET
Patrick AFB, Officers' Club
Social Hour: 6:30
Dinner: 7:30
Speaker: 8:30
Gilbert D. Rye
Senior Vice-President of Business Development
Orbital Sciences Corporation
PROGRAM SUMMARY

MONDAY, APRIL 26
12:00 noon to 5:00 p.m.
REGISTRATION DESK OPEN, Holiday Inn, Dolphin Room

TUESDAY, APRIL 27
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, Challenger Main Ballroom
9:00 a.m. to 11:30 a.m.
PANEL SESSION I: SPACE RESEARCH AND DEVELOPMENT, Howard Johnson Plaza-Hotel, Challenger Main Ballroom
9:00 a.m. to 5:00 p.m.
SPACE VIDEOS, Howard Johnson Plaza-Hotel, Skylab Room
11:00 a.m. to 7:00 p.m.
YOUTH SCIENCE FAIR, Holiday Inn, Dolphin Room
12:00 noon to 1:30 p.m.
LUNCHEON, Holiday Inn, Manatee Room
2:00 p.m. to 5:00 p.m.
PAPER SESSION I:
A. ADVANCED TECHNOLOGY DEVELOPMENT, Howard Johnson Plaza-Hotel, Atlantis/Discovery Rooms
B. TODAY'S VISION (SEI, NLS, AEROSPACE PLANE), Howard Johnson Plaza-Hotel, Columbia/Enterprise Rooms
C. INTERSTELLAR INITIATIVES, Holiday Inn, Manatee Room
7:00 p.m.
BANQUET SOCIAL HOUR, Howard Johnson Plaza-Hotel, Challenger Main Ballroom
8:00 p.m.
BANQUET, Howard Johnson Plaza-Hotel, Challenger Main Ballroom

WEDNESDAY, APRIL 28
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: SPACE OPERATIONS, Howard Johnson Plaza-Hotel, Challenger Main Ballroom
9:00 a.m. to 5:00 p.m.
SPACE VIDEOS, Howard Johnson Plaza-Hotel, Skylab Room
11:00 a.m. to 8:00 p.m.
EXHIBITS, Cocoa Beach Hilton and Comfort Inn & Suite Resort
12:00 noon to 8:00 p.m.
YOUTH SCIENCE FAIR, Holiday Inn, Dolphin Room
12:00 noon to 1:30 p.m.
LUNCHEON, Holiday Inn, Manatee Room

FRIDAY, APRIL 30
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: YESTERDAY'S VISION IS TOMORROW'S REALITY, Howard Johnson Plaza-Hotel, Challenger Main Ballroom
11:00 a.m. to 5:30 p.m.
SPACE CONGRESS GOLF TOURNAMENT, Patrick AFB, Golf Course
6:30 p.m. to 10:00 p.m.
PIONEERS' ANNUAL BANQUET, Patrick AFB, Officers' Club
ACKNOWLEDGEMENTS

The Thirtieth Space Congress gratefully acknowledges the special support of the following organizations:

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