



Space Congress Programs

4-26-1988

1988 Twenty-Fifth Space Congress Program

Canaveral Council of Technical Societies

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TWENTY-FIFTH



SPACE CONGRESS

PROGRAM

Cocoa Beach, Florida April 26, 27, 28, 29, 1988

CHAIRMAN'S MESSAGE

Welcome and thank you for your attendance and support to the silver anniversary of the Space Congress. The Space Congress, which had its beginning in the early days of manned spaceflight from the Space Coast, has become a prestigious event which has drawn national and international leaders and proponents of the exploration of space.



The program for your **Twenty-Fifth Space Congress** is unique and reflects the 1988 theme of "**Heritage – Dedication – Vision**".

You have four full days packed with panel sessions and paper presentations which represent the readiness of this nation to once again move forward into tomorrow's threshold of space exploration and exploitation as well as providing the space oriented hardware and systems for our national security.

The leaders of previous Space Congress will be recognized and honored and we will hear from top-level speakers.

Congressman Bill Nelson will be our keynote speaker at the opening session, USAF Secretary Edward C. "Pete" Aldridge, Jr. will be the banquet speaker on Tuesday and former Astronaut Gene Cernan is the luncheon speaker on Wednesday.

Scores of interesting and informative discussions are in store for the four days.



W. E. Fields
General Chairman
Twenty-Fifth Space Congress

GENERAL INFORMATION

HEADQUARTERS/REGISTRATION

Headquarters for the Twenty-Fifth 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 25, 1988. 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 \$125.00
(Includes four 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 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. Telephone contact can be made through the Holiday Inn 783-2271 (ask for Dolphin Room).

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 Leslie Neihouse 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) 799-0472, 0493 and Howard Johnson Plaza Hotel 799-0535, 0568.

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) 799-3529, 3530.

PROCEEDINGS

The proceedings of the Twenty-Fifth 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

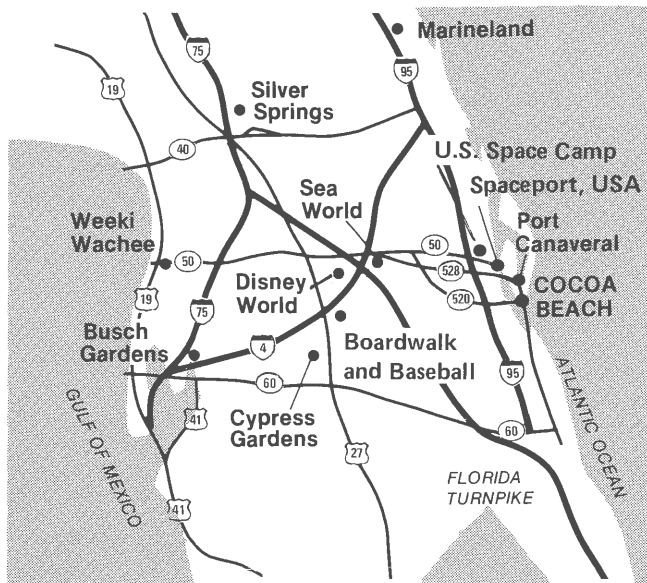
Exhibits will include displays of the Space Station, Space Shuttle, Shuttle payloads, expendable launch vehicles, and communications satellites. The exhibit hall and exhibit rooms will be open from 11:00 a.m. to 7:00 p.m. on Tuesday, from 11:00 a.m. to 8:00 p.m. on Wednesday, and from 9:00 a.m. to 3:00 p.m. on Thursday. Representatives of the exhibitors will be in attendance to assist and inform visitors. The exhibit hall and 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
BAMSI
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
Florida Institute of Technology
General Dynamics Corporation
Harris Corporation
Hercules Aerospace
Honeywell
International Business Machines Corporation
Lockheed Missiles and Space Company
Martin Marietta Corporation
MBB-ERNO
McDonnell Douglas Corporation
Morton Thiokol
Oneirus Aerospace Corporation
Pan Am World Services, Inc.
Rocketdyne
Rockwell International
Shephard Press
Space Camp
Systonetics
Teledyne Brown
TRW, Inc.
United States Air Force
United States Navy
United Technologies Corporation
University of Central Florida
University of Florida
Vitro, Inc.
Westinghouse

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 Royale** 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**.

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 27. 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 28.

PIONEERS' DAY

The Pioneers' Day Banquet '88 will be held on Friday, April 29, at the Officers Open Mess, Patrick Air Force Base.

Speakers: James M. Beggs, former NASA Administrator, currently CEO, Spacehab, Inc., Washington, D.C.

| | |
|-------------|-----------|
| Social Hour | 6:30 p.m. |
| Dinner | 7:30 p.m. |
| Speaker | 8:30 p.m. |

Registration is April 26, 27 and 28 at the Holiday Inn, Cocoa Beach, and 5:30 to 6:30 p.m. at the Officers Open Mess on April 29.

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, Refrigeration & 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
Florida Engineering Society
Institute of Electrical & Electronic Engineers
Instrument Society of America
Missile, Space & Range Pioneers, Inc.
National Contract Management Association
National Association of Accountants
Society of Manufacturing Engineers
Society for the Advancement of Materials & Process Engineering
Society of Logistics Engineers
Society of Photo-Optical Instrumentation Engineers
Society for Technical Communication
Space Business Roundtable of East Central Florida

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 at the Patrick Air Force Base Golf Course on Friday, April 29. Map available at Space Congress Registration Desk.

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. Fill in your name and average score for 18 holes on the registration form, along with the same for your partner, and enclose \$25, each person, for the fee. A maximum of 128 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 12:30 p.m. will allow completion in time for Pioneers' Banquet attendance.

Transfer of golf registration will be permitted with notification by April 15. No refunds will be made after April 1.

TWENTY-FIFTH SPACE CONGRESS PROGRAM

TUESDAY, APRIL 26, 1988

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

Introduction: Mr. Wendy Fields
Speaker: Congressman Bill Nelson

Bill was elected to the U.S. Congress in 1978 and was re-elected to his fifth term in 1986. 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 11, and Nan Ellen, age 10. 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

SPACE SHUTTLE RETURN TO FLIGHT

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

MEMBERS:

- Mr. Gerald W. Smith, Manager, Solid Rocket Booster Project, George C. Marshall Space Flight Center, Marshall Space Flight Center, AL
- Mr. Joseph A. Lombardo, Manager, Space Shuttle Main Engine Project, George C. Marshall Space Flight Center, Marshall Space Flight Center, AL
- Mr. Thomas E. Utsman, Director of Space Transportation System Management and Operations, John F. Kennedy Space Center, Kennedy Space Center, FL
- Col. Bryan D. O'Connor, Chairman, Space Flight Safety Panel, Lyndon B. Johnson Space Center, Houston, TX
- Mr. Leonard S. Nicholson, Manager, NSTS Integration and Operations, Lyndon B. Johnson Space Center, Houston, TX

MEET THE PRESS LUNCHEON (12:00 noon) Holiday Inn, Manatee Rooms

Session Chairman: William B. Harwood, Vice President, Public Relations, Martin Marietta Corporation, Bethesda, MD

MEMBERS:

- Mr. Howard Benedict, AP Aerospace Writer
- Mr. Bruce Hall, CBS-TV Correspondent, Atlanta, GA
- Mr. Edward H. Kolcum, Senior Editor Aviation Week & Space Technology
- Rob Navias, Correspondent UPI-Radio, Miami
- George Alexander, Former Los Angeles Science Writer

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

A. COMMERCIAL ASPECTS OF SPACE RESEARCH AND TECHNOLOGY Howard Johnson Plaza Hotel, Discovery Room

Session Chairman: Mr. Ronald Thornton, Director of the Southern Technology and Applications Center
Session Organizer: Mr. Thomas M. Hammond, Technology Utilization Officer, NASA, KSC

1. COMMERCIAL SPACE POTENTIAL FOR SMALL BUSINESS INNOVATION RESEARCH (SBIR)
Mr. Harry W. Johnson, Director of SBLR, Office of Commercial Programs, NASA Headquarters
2. LESSONS LEARNED FROM KSC'S GROUND PROCESSING OF SCIENTIFIC AND APPLICATIONS EXPERIMENTS
Mr. P. R. Elfrey, Payload Management and Operations, NASA, KSC

3. THE COMMERCIAL ATLAS/CENTAUR; GOVERNMENT PROCUREMENT OF LAUNCH SERVICES
Dr. L. R. Scherer, Director of Commercial Programs, General Dynamics Corporation
4. DEVELOPMENT OF A COMMERCIAL EXPENDABLE LAUNCH VEHICLE INDUSTRY
Dr. Barbara A. Stone, Director of Plans and Policy, Office of Commercial Programs, NASA Headquarters
5. DESIGN OF A SMALL, GENERAL PURPOSE, LOW EARTH ORBIT SATELLITE BUS
Mr. Marty R. Mosier, Space Station Academic Group, Department of Navy

B. THE BUSINESS OF SPACE BUSINESS

Howard Johnson Plaza Hotel, Atlantis Room

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

Session Organizer: Ms. Barbara Y. Powell, Industry Assistance Office, NASA, KSC

1. ADVOCATING THE DEVELOPMENT OF SPACE ENTERPRISE: THE SPACE BUSINESS ROUNDTABLE MOVEMENT NATIONWIDE
Mr. Stephen L. Morgan, Synergistics Aerospace Company, Inc.
Mr. Freddie "Chick" Garcia, Jr., Grumman Corporation
2. CONSIDERATIONS FOR A TEAMING AGREEMENT TO PROPOSE ON GOVERNMENT PRIME CONTRACTS
Mr. Lawrence J. Costello, Avco Research Laboratory TEXTRON
3. INSIGHTS INTO THE NEGOTIATION STRATEGIES AND TACTICS EMPLOYED BY U.S. AIR FORCE CONTRACT NEGOTIATORS
Lt. Col. Gary L. Delaney, Air Force Institute Technology, Wright Patterson AFB
4. LET'S MAKE IT SIMPLE
Mr. George T. Nickolas, Headquarters, U.S. Army Armament, Munitions and Chemical Command
5. THE FLORIDA GOVERNOR'S COMMISSION ON SPACE: ITS IMPACT ON SPACE ENTERPRISE
Mr. Stephen L. Morgan, Center for Space Enterprise Research, Space Research Institute, Florida Institute of Technology

C. ROBOTICS

Holiday Inn, Manatee Room

Session Chairman: Lt. Col. Gerald Haynes, U.S. Air Force, Space Division, Project Management

Session Organizer: Mr. V. Leon Davis, NASA, KSC

1. ROBOTICS REFURBISH SPACE SHUTTLE HARDWARE
Mr. Tony S. Humble, United Technologies, USBI
Mr. Alan R. Fertig, United Technologies, USBI
2. TELEROBOTIC SPACE STATION APPLICATIONS
Mr. Scott A. Hofacker, United Technologies-Space Flight Systems
Mr. Bernard J. Schroer, University of Alabama in Huntsville
Mr. Arthur Herkert, University of Alabama in Huntsville

3. THE USE OF FORCE FEEDBACK CONTROL FOR ROBOTIC MATING OF UMBILICAL FUEL LINES
Dr. R. Fullmer, Iowa State University
Dr. Dilpare, Florida Institute of Technology
Mr. V. Leon Davis, Robotics Section, NASA, KSC
4. COMPLIANCE STRATEGIES FOR THE ROBOTIC GROUND SERVICING OF THE SHUTTLE
Dr. Robert Podlasek, Bradley University
5. AUTOMATION AND ROBOTICS FOR EXPERIMENT OPERATIONS IN AN ENHANCED MAN TENDED FREE FLYER
Mr. Eike Schmidt, Manager Orbital Systems Technology, MBB/ERNO, Bremen, Federal Republic of Germany
6. ALGORITHM DEVELOPMENT AND COMPUTER GRAPHIC SIMULATION OF AN ARTICULATED TRANSPORTER/MANIPULATOR SYSTEM
Mr. Shih-chien Chiang, Center for Intelligent Machines and Robotics, University of Florida
Mr. Carl D. Crane III, Center for Intelligent Machines and Robotics, University of Florida
Mr. James S. Tulenko, Department of Nuclear Engineering, University of Florida
Mr. Robert Carlton, Odetics, Inc.

SPACE CONGRESS BANQUET

Howard Johnson Plaza Hotel

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

Introductions: Mr. Wendy Fields
Mr. Jim Phillips

Speaker: Honorable Edward C. Aldridge, Jr., Secretary of the Air Force

Mr. Aldridge was born August 18, 1938, in Houston and spent his youth in Shreveport, La. He received a bachelor of science degree in aeronautical engineering from Texas Agricultural and Mechanical University in 1960, and a master of science degree, also in aeronautical engineering, from the Georgia Institute of Technology in 1962.

Prior to joining the Department of Defense in 1967, Mr. Aldridge held various staff and management positions with the Douglas Aircraft Co., Missile and Space Division, in Santa Monica, Calif., and in Washington, D.C.



In 1967 he joined the staff of the assistant secretary of defense for systems analysis as an operations research analyst and then served as director of the Strategic Defense Division until July 1972. He also served as an adviser to the Strategic Arms Limitation Talks in Helsinki and Vienna.

He re-entered private industry in 1972 as a senior manager with LTV Aerospace Corp. in Dallas for a year until he was named senior management associate in the Office of Management and Budget, Executive Office of the President, Washington, D. C.

Returning to the Department of Defense in February 1974, Mr. Aldridge served as deputy assistant secretary of defense for strategic programs until March 1976. He was then selected to be the director of planning and evaluation, a principal adviser to the secretary of defense in the planning and program evaluation of U.S. military forces and support structure.

He was named vice president, National Policy and Strategic Systems Group for the Systems Planning Corp., Arlington, Va., in March 1977. Mr. Aldridge was responsible for the corporation's study and analysis activities in the areas of strategic and conventional forces and long-range strategic planning.

In August 1981 he became under secretary of the Air Force with additional responsibility for providing overall direction, guidance and supervision for Air Force space programs, including launch and on-orbit operations, and planning for future space capabilities. Prior to the space shuttle Challenger accident in January 1986, Mr. Aldridge was in astronaut training in preparation for his participation as a payload specialist on the first shuttle mission from Vandenberg Air Force Base, Calif. He assumed his present duties in June 1986.

His work in various assignments has earned him numerous awards. Among these are the Secretary of Defense Meritorious Civilian Service Award, Department of Defense Distinguished Civilian Service Award and Department of Defense Distinguished Public Service Award. He has been named a distinguished college of engineering alumnus from Texas A&M University and was the 1985 recipient of the American Astronautical Society Military Astronautics Award.

Mr. Aldridge is married to the former Joanne Knotts of Italy, Texas. They have four children.

WEDNESDAY, APRIL 27, 1988

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

DOD PANEL

Session Chairman: Lt. Gen. Aloysius Casey, Commander, Space Division, AFSC, Los Angeles, CA
Session Organizer: Lt. Pete Silvero, Eastern Test Range, PAFB, FL

MEMBERS:

Lt. Gen. Donald J. Kutyna, Commander, Air Force Space Command, Peterson AFB, CO

Maj. Gen. Donald L. Cromer, Commander, Space & Missile Test Organization, Vandenberg AFB, CA

Maj. Gen. Eugene Fox, Strategic Defense Initiative Organization, The Pentagon, Washington, D.C.

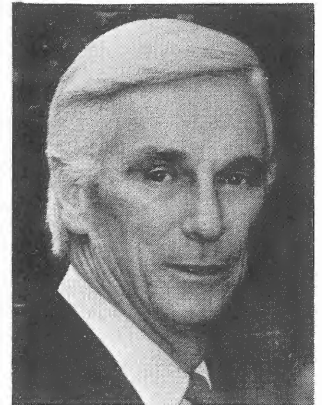
Brig. Gen. Robert L. Stewart, DC, Army Strategic Defense Command, Huntsville, AL

LUNCHEON (11:45 a.m.) Holiday Inn, Manatee Rooms

Introductions: Mr. Wendy Fields
Mr. Jim Phillips

Speaker: Eugene A. Cernan, Captain, USN (Retired)

Captain Cernan has recently joined Digital Equipment Corporation as Director, Marketing Development — Government/Aerospace. Captain Cernan is Chairman of the Board and President of The Cernan Group, Inc. and The Cernan Corporation, space-related technology and marketing consulting firms. Since its founding in 1981, The Cernan Group has been involved with consumer applications of current technology. Additionally, Captain Cernan acts as a Technical Consultant with the ABC Television network in support of ABC News and Special Events programming.



He appears with regularity as a news commentator and covers space and related documentary activities.

From 1976 to 1981, Captain Cernan served as the Executive Vice President, International for Coral Petroleum, Inc. He was charged with the corporate development of a worldwide supply and marketing strategy. During this period, Captain Cernan continued his education at the Wharton School of Finance and Northwestern University.

After serving twenty years as a Naval Aviator, Captain Cernan retired from the United States Navy in 1976. Thirteen of these years were dedicated to direct involvement with the National Aeronautics and Space Administration (NASA) United Space Program as an Astronaut. During his years with NASA, Captain Cernan carried out three separate space flights. He was the second man to walk in space as the pilot of Gemini IX, one of a crew of three to venture to the moon on Apollo X, and as Commander of Apollo XVII, he holds the distinction of being the last man to leave his footprints on the surface of the moon. Captain Cernan also actively participated in the design, engineering, and development testing of spacecraft hardware and systems. He was a member of the NASA senior management team and reviewed decisions which directly affected operations and mission planning. From 1973 through 1975, Captain Cernan served as a Senior United States Negotiator during discussions with the USSR concerning the joint United States and Soviet Apollo/Soyuz project.

Captain Cernan received a Bachelor of Science degree in Electrical Engineering from Perdue University in Lafayette, Indiana, in 1956.

He was awarded a Master of Science degree in Astronautical Engineering in 1963 from the United States Naval Post Graduate School in Monterey, California. Captain Cernan was also awarded Honorary Doctorates of Engineering from Perdue, Drexel and Gonzaga Universities, and an Honorary Doctorate degree from Western State College of Law. His honors include the Navy Distinguished Flying Cross, the Distinguished Service Medal with Star, the NASA Distinguished Service Medal, the FAI International Gold Medal for Space, and the VFW Gold Space Award.

Captain Cernan is an active member of several professional societies. Representative among them are the Society of Experimental Test Pilots, Association of Naval Aviators, Tail Hook Association, American Space Institute, American Institute of Aeronautics and Astronautics, and the American Astronautical Society and Explorers Club. He is a corporate board member of Allied Bank Memorial (Houston), American Investors Corporation, Asamera Inc., and Up With People, an international educational foundation for young men and women. In addition, he is a Trustee of the Naval Aviation Museum Foundation, Inc. and serves on the President's Committee of Perdue University.

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

A. HUMAN EXPANSION INTO THE SOLAR SYSTEM

Howard Johnson Plaza Hotel, Discovery Room

Session Chairman: Mr. Jimmy Underwood, Director of Mission Studies, Office of Exploration, NASA Headquarters, Washington, D.C.

Session Coordinator: Mr. Charles Bachstein, Payloads Management and Operations, NASA, KSC

1. THEMES IN HUMAN EXPLORATION
Mr. Alan Ladwig, Director of Program Support, Office of Exploration, NASA Headquarters
2. STRATEGIES AND OPTIONS FOR HUMAN EXPLORATION PROGRAMS
Mr. Barney Roberts, Lunar and Mars Exploration Office, Johnson Space Center
3. THE TECHNOLOGY CHALLENGE OF POST SPACE-STATION EXPLORATION MISSIONS
Mr. Ed Gabris, Office of Exploration, NASA Headquarters
4. SCIENCE OPPORTUNITIES IN THE HUMAN EXPLORATION OF MOON AND MARS
Dr. Michael Duke, Office of Exploration, NASA Headquarters
5. EXPLORATION STRATEGIES
Authors' names not available at time of publication.

B. SPACE STATION TECHNOLOGIES

Howard Johnson Plaza Hotel, Atlantis Room

Session Chairman: Dr. James W. Johnson, Deputy Project Manager, Space Station Project Office, NASA, KSC

Session Organizer: Ms. Susan N. Campbell, Space Station Project Office, NASA, KSC

1. TECHNOLOGIES FOR PROTECTION OF THE SPACE STATION POWER SYSTEMS POLYMERIC SURFACES IN ATOMIC OXYGEN ENVIRONMENT
Mr. Henry K. Nahra, Solar Array Branch, NASA, Lewis Research Center
Ms. Sharon K. Rutledge, Electro-physics Office, NASA, Lewis Research Center
2. TECHNOLOGY DEVELOPMENT MISSIONS CONCEPT DEFINITION STUDY TDMX 2066 LARGE INFLATABLE/RIGIDIZED STRUCTURES
Dr. Karen M. Seiser, Space Engineering and Hardware, Wyle Laboratories
Dr. Ronald E. Giuntini, Space Engineering and Hardware, Wyle Laboratories
3. SPACE STATION PHOTOVOLTAIC POWER MODULES
Mr. Charles A. Tatro, Space Station Solar Array Branch, NASA, Lewis Research Center
4. USER ASSEMBLY AND SERVICING SYSTEM FOR SPACE STATION - AN EVOLVING ARCHITECTURE APPROACH
Mr. Thomas A. LaVigna, Project Manager for the Space Station Servicing System, NASA, Goddard Space Flight Center
Mr. Helmut P. Cline, Space Station Servicing System Electrical Manager, NASA, Goddard Space Flight Center
5. WELDING OF THE SPACE STATION COMMON MODULE PROTOTYPE
Mr. Thomas J. Bosworth, Ballistic Systems Division, Boeing Aerospace Company
Ms. Clara M. Miller, Ballistic Systems Division, Boeing Aerospace Company
Mr. Clinton C. Griffee, Manufacturing Research and Development Division, Boeing Aerospace Company
6. MODELING OF MICROGRAVITY ENVIRONMENT OF THE MAN TENDED FREE FLYER (MTFF)
Dr. Wilfried Wohlke, System Engineer for Columbus Program, MBB/ERNO, Bremen, Federal Republic of Germany
- 1B. SPACE STATION GAS-GRAIN SIMULATION FACILITY: MICROGRAVITY PARTICLE RESEARCH
Mr. Glenn C. Carle, Chief Solar System Exploration Branch, NASA, Ames Research Center
Dr. Guy Fogleman, Program Scientist, RCA Government Services, Moffett Field, CA
Ms. Judith L. Huntington, Research Scientist, SETI Institute, NASA, Ames Research Center

C. ARTIFICIAL INTELLIGENCE APPLICATIONS

Holiday Inn, Manatee Room

Session Co-chairmen: Dr. Robert E. Dalton, Vitro Corporation, Silver Spring, MD

E. Rachovitsky, Air Force Wright Aeronautical Laboratory, Wright Patterson AFB

Session Organizer: Arthur E. Beller, NASA Artificial Intelligence Laboratory, NASA, KSC

1. GROUND OPERATIONS SUPPORT BY ARTIFICIAL INTELLIGENCE
Mr. Rainer Gruen, ERNO, Bremen, Federal Republic of Germany

2. EXPERT SYSTEM PROTOTYPE DEVELOPMENTS FOR NASA-KSC BUSINESS AND ENGINEERING APPLICATIONS
Dr. James M. Ragusa, College of Business, University of Central Florida
Dr. Avelino J. Gonzalez, College of Engineering, University of Central Florida
3. LRS-II: LAUNCH RESOURCE SCHEDULING
Captain James E. Crawford Jr., Foreign Technology Division, Wright Patterson AFB
Lt. Col. Gregory S. Parnell, Ph.D., Air Force Institute Technology, Wright Patterson AFB
4. NAVARES: A PROTOTYPE EXPERT SYSTEM FOR NAVSTAR ANOMALY RESOLUTION
Captain Michael A. Rampino, Headquarters Base ESC/SX
Lt. Col. Gregory S. Parnell, Ph.D., Air Force Institute Technology, Wright Patterson AFB
5. AI AND ADA - A PROTOTYPE COMBINING THE BEST OF BOTH WORLDS
Mr. Patrick P. Roach, DEC European Technical Center, France
6. DESIGN KNOWLEDGE CAPTURE: PRESERVING ENGINEERING KNOWLEDGE FOR FUTURE APPLICATIONS
Mr. R. B. Purves, Boeing Aerospace Company
Mr. James R. Carnes, Boeing Computer Services

EXHIBIT CENTER COCKTAIL RECEPTION
(5:45 p.m. to 7:00 p.m.)
Hilton, Cocoa Beach

THURSDAY, APRIL 28

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

DEPARTMENT OF DEFENSE SPACE PROJECTS

Session Chairman: Col. Victor W. Whitehead, Asst. Deputy Commander for Launch Systems, Los Angeles AFB, CA
Session Organizer: Lt. Rick Acosta, Eastern Test Range, PAFB, FL

MEMBERS:

Col. Lester L. Lyles, Director, MLV Systems (SD/CLVM), Los Angeles AFB, CA
Col. John R. Wormington, Director, Advanced Launch Systems, (SD/CLVH), Los Angeles AFB, CA
Col. Sebastian F. Cogliatore, Director, Titan IV Program Office (SD/CLVD), Los Angeles AFB, CA
Col. Robert T. Cote, Director, Space Systems (AFSC/SS), Andrews AFB, MD
Col. Roger G. DeKok, NSC, Washington, D.C.
Lt. Col. Michael R. Callaway, Titan II Program Manager (SD/CLVT), Los Angeles AFB, CA
Mr. Richard E. Brackeen, President, Martin Marietta Commercial Titan Inc., Denver, CO

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

A. LUNAR AND MARS EXPLORATION CONCEPTS
Howard Johnson Plaza Hotel, Discovery Room

- Session Chairman: Dr. Michael Duke, Office of Exploration, NASA Headquarters
Session Organizer: Dennis Matthews, Advanced Projects, Technology and Commercialization, NASA, KSC
1. MANNED MARS MISSION PROGRAM CONCEPTS
Mr. E. C. Hamilton et al, SRS Technologies
 2. MARS MISSION PROFILE OPTIONS AND OPPORTUNITIES
Mr. Archie Young, NASA, Marshall Space Flight Center
 3. A SPACE-BASED COMMUNICATIONS CONCEPT TO SUPPORT MARS EXPLORATION MISSIONS
Mr. Stanley Poreda, Air Force Weapons Laboratory, Kirtland AFB
Mr. Lawrence Cooper, Air Force Weapons Laboratory, Kirtland AFB
 4. SP-100 POWERED MARS EXPLORATION MISSIONS
Mr. Jack Heller, NASA, Lewis Research Center
 5. TECHNOLOGIES FOR ON-ORBIT FUELS DEPOT
Mr. R. Stubbs et al, NASA, Lewis Research Center
 6. SPACE-BASED OPERATIONAL ERGONOMICS
Mr. Jim Stramler, Selected Operations and Research, Inc.

B. LAUNCH VEHICLES OF THE FUTURE
Howard Johnson Plaza Hotel, Atlantis Room

- Session Chairman: Lt. Col. Cort Durocher, Deputy Director, Advanced Launch System, U.S. Air Force, Space Division
Session Organizer: Mr. Ray Evans, Advanced Projects, Technology and Commercialization, NASA, KSC
1. SPACE LAUNCH SYSTEMS RESILIENCY
Mr. Harry Bernstein, Aerospace Corporation
 2. LAUNCH VEHICLE OPERATIONS ANALYSIS
Dr. Bryan P. Leonard, L Systems Inc.
 3. ADVANCED LAUNCH SYSTEM ISSUES
Mr. Vince Calvor, Boeing Aerospace Company
 4. PRODUCIBILITY OF ADVANCED LAUNCH SYSTEMS
Mr. Fred West, General Dynamics Space Systems Division
 5. OCEAN LAUNCH ALTERNATIVES
Dr. Chuck Rubin, Hughes Aircraft Company
 6. TAKING THE HIGH COST OUT OF ROCKET ENGINES
Mr. James R. Brown, Pratt & Whitney
 7. STATUS OF THE ADVANCED LAUNCH SYSTEM
Major Michael P. Uecker, Air Force Space Division

C. SYSTEMS AUTOMATION
Holiday Inn, Manatee Room

Session Chairman: William H. Rock, Manager, Advanced Projects, Technology and Commercialization Office, NASA, KSC

Session Organizer: Mrs. Tina Phillips, Advanced Projects, NASA, KSC

1. CONCEPTUAL MODEL-BASED REASONING FOR KNOWLEDGE-BASED SOFTWARE PROJECT MANAGEMENT
Mr. Kent D. Bimson, Lockheed Software Technology Center
Ms. Linda Boehm Burris, Lockheed Artificial Intelligence Center
2. KSC BASE OPERATIONS CONTRACTOR LAUNCH READINESS ASSESSMENT SYSTEM
Mr. W. D. Geaslen, Integrated Operations, EG&G Florida, Inc.
3. THE GENERIC CHECKOUT SYSTEM APPROACH TO GROUND CHECKOUT SYSTEMS
Mr. Peter C. Simons, McDonnell Douglas Astronautics Company
4. AUTOMATION OF SHUTTLE TILE INSPECTION: ENGINEERING METHODOLOGY FOR SPACE STATION
Dr. M. J. Wiskerchen, Stanford University
Ms. C. L. Mollakarimi, Lockheed Space Operations Company
5. LAUNCH TEAM TRAINING SYSTEM
Mr. J. T. Webb, Launch Control Center Operations, Lockheed Space Operations Company
6. REAL-TIME FAULT MANAGEMENT FOR LARGE-SCALE SYSTEMS
Mr. H. Biglari, Boeing Aerospace Company
Mr. C. Cheng, School of Electrical Engineering
Mr. G. Vachtsevanos, School of Electrical Engineering

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, 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.

Astronauts Daniel Brandenstein and Steve Hawley are expected to be present.

FRIDAY, APRIL 29

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

SPACE STATION

Session Chairman: Daniel H. Herman, Senior Engineer, Office of Space Station, NASA Headquarters, Washington, D.C.

Session Organizer: Mr. Keith B. Chandler, Aerospace Consultant, Merritt Island, FL

MEMBERS:

- Mr. Angelo (Gus) Guastaferrro, Vice President, Space Station Programs, Lockheed Missiles and Space, Sunnyvale, CA
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. William C. Schneider, Vice President, Development Computer Sciences, Silver Spring, MD
Ms. Marcia Smith, Specialist in Aerospace Policy, Library of Congress, Congressional Research Service/SDR, Washington, D.C.

PAPER SESSION IV (12:45 p.m. to 3:15 p.m.)

A. SPECIAL SUBJECTS SESSION
Howard Johnson Plaza Hotel, Discovery Room

Session Co-chairmen: Mr. L. P. (Bud) Evans Jr., President, Center for Space and Advanced Technology, Arlington, VA
Mr. Samuel T. Beddingfield, Beddingfield Aerospace Consultants, Titusville, FL

Session Organizer: Mr. L. E. Wagnon, Data Systems Division, NASA, KSC

1. ORBITER MANEUVERING VEHICLE SUPPORT TO THE SPACE STATION
Mr. William E. Galloway, OMV Project Engineering Office, George C. Marshall Space Flight Center
2. STS 30, 34, AND 44 - A REBIRTH OF PLANETARY MISSIONS
Mr. Ed Bangsund, Director of Space Systems Planning, Boeing Aerospace Company
Mr. Robert Knutson, Planning Staff Administrator, Boeing Aerospace Company
3. GROUND BASED SCIENCE EXPERIMENTS AT LEWIS RESEARCH CENTER
Ms. Maryjo Meyer, Microgravity Materials Science Laboratory, NASA, Lewis Research Center
Mr. James C. Johnston, Microgravity Materials Science Laboratory, NASA, Lewis Research Center
Mr. Thomas K. Glasgow, Microgravity Materials Science Laboratory, NASA, Lewis Research Center

4. MODEL SHUTTLE VEHICLE DEVELOPED TO SUPPORT VANDENBERG HYDROGEN DISPOSAL INVESTIGATION
Mr. Charles L. Heckart, SIS Test Project Engineer, Lockheed Space Operations Company, Vandenberg AFB
Mr. Jack D. Rhonda, Group Engineer, Lockheed Missiles & Space Company
5. HYDROGEN-AIR-STEAM COMBUSTION REGIMES IN LARGE VOLUMES
Mr. Marty P. Sherman, Sandia National Laboratories
Mr. Scott E. Slezak, Sandia National Laboratories
6. PEACEKEEPER MISSILES
Mr. John Wiles, Systems Analysis Department, TRW, Inc.

B. COMMERCIAL SPACE ENTERPRISES
Howard Johnson Plaza Hotel, Atlantis Room

Session Chairman: Dr. Joseph A. Angelo, Jr., Director of Advanced Technology, EG&G, Inc., Rockledge, FL
Session Organizer: Ms. Karin K. Biega, STS Management and Operations, NASA, KSC

1. ORION: DESIGN OF A SMALL, GENERAL PURPOSE, LOW EARTH ORBIT SATELLITE BUS
Mr. M. Mosier, Space Systems Academic Group, Department of Navy
2. MULTIMEGAWATT POWER SOURCES FOR COMMERCIALIZED SPACE OPERATIONS
Dr. John A. Dearin, EG&G
Mr. J. Martinelli, EG&G
3. CONESTOGA LAUNCH VEHICLES
Mr. Mark H. Daniels, Space Services, Inc. of America
Mr. James E. Davidson, Space Services, Inc. of America
4. SPACE ULTRA VACUUM: A NEW IDEA FOR TECHNOLOGICAL AND COMMERCIAL DEVELOPMENT
Mr. A. Ignatiev
Mr. C. W. Chu
5. LOCALIZED COATING REMOVAL USING PLASTIC MEDIA BLASTING
Mr. Howard L. Novak, USBI, Division of United Technologies
Mr. Michael G. Wyckoff, USBI, Division of United Technologies
Mr. Lee M. Zook, USBI, Division of United Technologies
6. LOFT-1 MISSION: A NEW CONCEPT FOR EDUCATIONAL AND COMMERCIAL SPACEFLIGHT
Mr. J. Wayne McCain, University of Alabama
Dr. Jack R. Walker, University of Alabama
Mr. Scott Dixon, University of Alabama
Mr. Matt Steele, University of Alabama
7. HEAT PIPES FOR TERRESTRIAL APPLICATIONS IN DEHUMIDIFICATION SYSTEMS
Mr. Mukesh K. Khattar, Florida Solar Energy Center

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

Patrick Air Force Base Golf Course — Map available at registration desk.

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

Speaker: Mr. James M. Beggs

6:30 Social Hour

7:30 Dinner

8:30 Speaker

PROGRAM SUMMARY

MONDAY, April 25

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

TUESDAY, April 26

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 — SPACE SHUTTLE RETURN TO FLIGHT
Howard Johnson Plaza Hotel

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

12:00 noon to 2:00 p.m. MEET THE PRESS PANEL

2:00 p.m. to 5:00 p.m. PAPER SESSION I:
A. COMMERCIAL ASPECTS OF SPACE
Howard Johnson Plaza Hotel

B. BUSINESS OF SPACE BUSINESS
Howard Johnson Plaza Hotel

C. ROBOTICS
Howard Johnson Plaza Hotel

7:00 p.m. BANQUET SOCIAL HOUR
Howard Johnson Plaza Hotel

8:00 p.m. BANQUET
Howard Johnson Plaza Hotel

WEDNESDAY, April 27

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 PROJECTS
Howard Johnson Plaza Hotel

12:00 noon 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

2:00 p.m. to 5:00 p.m. PAPER SESSION II:
A. HUMAN EXPANSION INTO THE SOLAR SYSTEM
Howard Johnson Plaza Hotel

B. SPACE STATION TECHNOLOGIES
Howard Johnson Plaza Hotel

C. ARTIFICIAL INTELLIGENCE
Holiday Inn Manatee Room

5:45 p.m. to 7:00 p.m. EXHIBIT CENTER COCKTAIL RECEPTION
Hilton Convention Center

THURSDAY, 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 III — EXPENDABLE LAUNCH VEHICLES
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. LUNAR AND MARS EXPLORATION CONCEPTS
Howard Johnson Plaza Hotel

B. LAUNCH VEHICLES OF THE FUTURE
Howard Johnson Plaza Hotel

C. SYSTEMS AUTOMATION
Howard Johnson Plaza Hotel

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 ASTRONAUTS
Howard Johnson Plaza Hotel

FRIDAY, April 29

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 — SPACE STATION
Howard Johnson Plaza Hotel

11:30 a.m. to 5:00 p.m. SPACE CONGRESS GOLF TOURNAMENT
Patrick Air Force Base Golf Course

12:45 p.m. to 3:15 p.m. PAPER SESSION IV:
A. SPECIAL SUBJECTS
Howard Johnson Plaza Hotel

B. COMMERCIAL SPACE ENTERPRISES
Howard Johnson Plaza Hotel

7:00 p.m. to 10:00 p.m. MISSILE, SPACE AND RANGE PIONEERS' ANNUAL BANQUET
Patrick Air Force Base, Officers Open Mess

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