

Chairman's Message

"Countdown to the Millennium" is a phrase that is bound to become a familiar one in the coming months, but perhaps nowhere is the dawn of a new age being felt more strongly than in the space industry. Which is why we chose this as our theme for the 36th Annual Space Congress.

As we approach the millennium, space is opening up to us in a myriad of ways we could not have imagined just a few years ago. We've successfully launched the first components of the International Space Station, the most ambitious program in the history of manned space flight.

Ground has been broken at the Cape for facilities to accommodate the Air Force's Evolved Expendable Launch Vehicles (EELV). The next two years will see the debut of a host of commercially driven Reuseable Launch Vehicles and EELV. Space Congress will address many of these monumental projects and their effects on the commercial, military, scientific, and educational arenas.

Among the topics that will be addressed through panel and paper sessions will be the push to Mars and beyond. The ambitious launches of Mars Polar Lander and Mars Climate Orbiter will demonstrate our ability to reach a new plateau of unmanned planetary exploration. International cooperation in human space flight will also be discussed in a number of sessions.

An issue critical to all of us is commercial access to space. This topic is covered in sessions titled "Space Access in a Global Market," "Space Systems—Mars & Beyond," and "Global Competition and Cooperation."

The military's changing role in space will also be addressed, along with the future plans to advance the ability to gain access to space.

One of the primary focuses of Space Congress has always been education. Experts from the field of education will present their findings on the education of the space workforce beyond 2000, and take a look at education's contribution to international space efforts.

As we have in the realm of space exploration, the committee members of the 36th Space Congress have broken some new ground ourselves. For the first time, virtually all Space Congress activities are being held under one roof. Further, we have strengthened the focus of education by incorporating the science fair into the regular exhibit hall. We are also giving students of all ages more access to paper and panel sessions, exhibits and the popular "Meet the Astronauts" session.

On behalf of the entire Space Congress committee, I welcome you to the 36th Annual Space Congress, as we begin our "Countdown to the Millennium."



A handwritten signature in black ink, appearing to read "Rick Abramson". The signature is fluid and cursive, written over a thin horizontal line.

Rick Abramson
General Chairman
36th Space Congress

Information

Headquarters/Registration

Headquarters for the **Thirty-Sixth Space Congress** is the Radisson Resort at the Port, Bonaire Room. There you may pick up your registration packages and other Space Congress materials including copies of the Proceedings, and tickets for Panel/Paper sessions, the exhibit reception, luncheons and the banquet. Space Congress memorabilia and the various tickets are also available at the Convention Center. Registration will be open from 12:00 - 5:00 p.m. on Monday April 26, 7:00 a.m. - 5:00 p.m. from Tuesday through Thursday and 7:00 a.m. - 12:00 on Friday.

PACKAGE REGISTRATION	\$125.00
(Includes first five items listed below)	
Registration	50.00
Tuesday Luncheon	20.00
Tuesday Exhibit Reception	15.00
Wednesday Luncheon	20.00
Thursday Banquet	40.00
Proceedings Hard Copy (Not in Package)	75.00
Proceedings CD-Rom (Not in Package)	35.00
Golf (Not in Package)	40.00

ALL PANEL AND PAPER SESSIONS WILL BE HELD AT THE RADISSON RESORT AT THE PORT. THE BANQUET WILL BE HELD THIS YEAR AT THE KENNEDY SPACE CENTER VISITOR COMPLEX/APOLLO SATURN V CENTER.

Package registration will save you money; however, each item may be purchased individually at the listed price. Telephone contact during the Space Congress can be made through the Radisson Resort at the Port, (407) 784-0000, or direct, (407) 868-2147.

Press Room

The press facility is located in the Bermuda Room in the Radisson Resort at the Port. The press facility is open 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 12:00 p.m. Friday. The telephone numbers for the press facility are (407) 784-0890, (407) 784-6913, (407) 784-6455, (fax number: (407) 784-0260).

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 the 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 Radisson Resort at the Port.

Proceedings

The Proceedings of the **Thirty-Sixth Space Congress** are available at the Registration Desk in the Radisson Resort at the Port during the Space Congress. After the close of the Space Congress, additional Proceedings can be purchased for \$75 each for hard copy, and \$35 each for CD-Rom plus postage from: Secretary, CCTS, Post Office Box 245, Cape Canaveral, Florida 32920.

Exhibits

Exhibits will include a Showcase Exhibit, computer graphics demonstrations and displays of the Space Shuttle, Shuttle Payloads, Space

Station, Expendable Launch Vehicles, and other space related activities. The Exhibit Halls will be open to the public in the Radisson Resort at the Port on the following schedules: Tuesday - 10:00 a.m. to 5:00 p.m.; Wednesday - 10:00 a.m. to 7:00 p.m.; and Thursday - 10:00 a.m. to 3:00 p.m. Space Congress memorabilia is available for purchase in the Convention Center Lobby. Admission tickets are available at the Registration Desk for the Tuesday Exhibit Reception to be held from 6:00 - 8:00 p.m.

Exhibitors

ACTA, Inc.
Air Force Space & Missile Museum
AJT & Associates
Analytical Graphics, Inc.
Brevard Community College
The Boeing Company
Canaveral Council of Technical Societies
Canaveral Port Authority
Cincinnati Electronics Corporation
Computer Science Corporation
Computer Sciences Raytheon
Delaware North Parks Services, Inc.
Dynacs Engineering
Embry-Riddle Aeronautical University
Florida Institute of Technology
Florida Space Institute
GRCI, Inc.
Hewlett Packard Company
Hollaender Manufacturing
Hubble Space Telescope
Information Dynamics, Inc.
Jet Propulsion Laboratory
Johnson Controls, Inc.
Launchspace
Let's Talk Cellular Wireless
Litton PRC
Lockheed Astronautics
Lockheed Martin Technology Services
Lockheed Martin Reusable Launch
MUSE Technologies
NASA Kennedy Space Center
Naval Ordnance Test Unit
ODS Networks
Omitron, Inc.
Orbital Science Corporation
Raytheon Systems Company (T&S)
Raytheon Engineers & Constructors
Research Triangle Institute
R.E.I.D., Inc./Ringshaver/Ringlift
Science Application International Corp. (SAIC)
Space Gateway Support
Sun Microsystems
Sverdrup Technologies, Inc.
Swales Aerospace
Thiokol Propulsion
United Paradyne Corporation
United Space Alliance
University of Central Florida - Brevard
Webster University
Wyle Laboratories, Inc.
45th Space Wing

Youth Science Fair

Regional Youth Science Fair displays and demonstrations will be open to the public Tuesday through Thursday, in the Radisson Convention Center Exhibit Hall. Exhibits will be judged and awards presented on Wednesday evening, April 28, at the beginning of the "Meet the Astronauts" panel session.

Pioneers' Annual Banquet

The Pioneers' Banquet '99 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. F. Story Musgrave, M.D.
Former Astronaut

Registration is April 27, 28 and 29 in the Convention Center Lobby at the Radisson Resort at the Port, and 5:30 to 6:30 p.m. at the Officers' Club on April 30.

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 "scramble" format, as in the past. You may sign up with one partner or by yourself. The tournament committee will assign teams based on playing ability. Foursomes may sign up if they provide a combined total certifiable handicap of 55 or higher. Fill in your name and average score or handicap for 18 holes on the registration form, along with the same from your partner, and enclose \$40.00 for 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 11:30 a.m., and shotgun start at 1:00 p.m. Maps are available at the Golf Registration Desk in the Convention Center of the Radisson Resort at the Port. Registration name change will be permitted with notification up to April 29.

Canaveral Council of Technical Societies

CCTS Member Societies:

AACE International

Air Force Association (Cape Canaveral Chapter)

American Institute of Aeronautics & Astronautics

American Institute of Chemical Engineers

American Meteorological Society

American Society of Civil Engineers

American Society of Heating, Refrig. & A/C Engineers

American Society for Industrial Security

American Society of Mechanical Engineers

American Society for Quality

American Society of Safety Engineers

American Society for Training and Development

Armed Forces Communications and Electronics Association

Florida Engineering Society

Florida Space Business Roundtable

Human Factors and Ergonomics Society

Institute of Electrical & Electronic Engineers (Melbourne and Canaveral Sections)

International Council on Systems Engineering

Missile, Space & Range Pioneers, Inc.

NASA Alumni League

National Contract Management Association

National Space Club—Florida Committee

Society for Technical Communication
Society of American Military Engineers
Society of Logistics Engineers
Society of Manufacturing Engineers
Society of Women Engineers

Associate Members:

Association for Quality and Participation
Brevard Council of Teachers of Mathematics
National Management Association, Florida Space Coast Council
USAF Space & Missile Museum Foundation

Advisor Organizations

Brevard Community College
Embry-Riddle Aeronautical University
Florida Institute of Technology
University of Central Florida
Florida Solar Energy Center

Many of the societies will have educational/promotional brochures/information on display at the Radisson Resort at the Port, Convention Center. Attendees are invited to stop by and review this material.

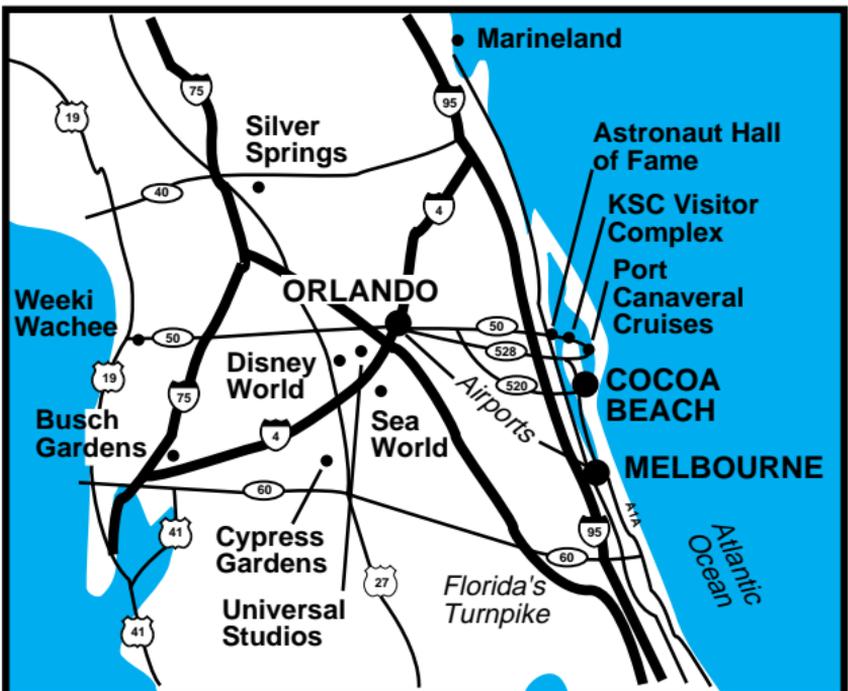
Attraction Centers

The Space Coast is among the most popular tourist destinations in the world, featuring a unique blend of high tech and natural attractions.

The **Kennedy Space Center Visitor Complex** offers visitors an unprecedented insiders view of the exciting past, present and future of our nation's space program. **The Astronaut Hall of Fame** showcases the personal side of spaceflight with astronaut artifacts and memorabilia. **Brevard Community College** is the home to one of the world's premier planetariums with a variety of public shows and presentations.

The Space Coast is home to one of the nations busiest cruise terminals featuring 3 and 4 day cruises to the Bahamas aboard Disney, Carnival, Cape Canaveral and Premier cruise lines. Additionally, there are daily casino cruises aboard the Sterling and Suncruz lines.

The area is also a natural paradise with over 72 miles of beaches and some of the best fresh and saltwater fishing in the nation. Not to mention that the Space Coast is only an hour away from some of the world's most popular tourist attractions, including Walt Disney World, Universal Studios and Sea World.



Program

TUESDAY, APRIL 27

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

Radisson Resort at the Port

Introductions: Rick Abramson, General Chairman

Speaker: T.B.D.

PANEL SESSION I (8:30 a.m. to 11:00 a.m.)

Radisson Resort at the Port, Convention Center

THE FUTURE IS HERE—GLOBAL PERSONAL COMMUNICATIONS

Panel Chairman: Thomas S. Tycz, Chief, Satellite and Radio Communication Division, International Division, Federal Communications Commission

Panel Members:

Charlene King
Michael Williams
Richard Dalbello
Marc Newman
R.T. Gregg
Richard D. Parlow
Lawrence Williams
John Keathly

EXHIBITS & SCIENCE FAIR (10:00 a.m. to 5:00 p.m.)

Radisson Resort at the Port, Convention Center Exhibit Hall

LUNCHEON (12:00 noon to 1:30 p.m.)

Radisson Resort at the Port, Convention Center

Introductions: Rick Abramson, General Chairman

Speaker: Mark P. Saunders
Head of Space Science Support Office

Topic: Discovery Program

In 1994, Mark Saunders joined NASA's Office of Space Science and assumed responsibility for the Discovery Program—NASA's new low-cost planetary science program. In this position, he led the development of the Agency's new science acquisition approach. He managed the first successful competitive acquisition of the third and fourth planetary missions, Lunar Prospector, and Stardust, and has overseen their development.

In 1996, as part of the NASA Headquarters' reorganization, he transferred to Langley Research Center, where he works today. As Head of the Space

Science Support Office, Mark supports the Office of Space Science's solicitation and selection of Discovery and Explorer missions.



Mark joined the NASA team in 1989 as Manager of the Space Station's Logistics Program. He ensured that resources and facilities were in place to support the station for its lifetime. He later served as the Aide de Campe for the Space Station Program Manager.

He also worked for the U.S. Navy in both military and civilian positions. From 1970-1974, he served as Repair Officer on the nuclear submarine repair tender, USS Canopus, in Holy Loch, Scotland. After completing active duty, he returned to the Washington, D.C. area to begin his civilian career as an engineer working on the Navy's Poseidon/Trident missile submarine program. In 1979, he transferred to the Navy's Strategic Systems Programs as Manager of the two Strategic Weapons Missile Centers, responsible for providing the nuclear missiles to the Navy's submarine fleet.

A 1970 Georgia Institute of Technology graduate with a degree in Industrial Engineering, he is a retired Captain in the U.S. Navy Reserves.

He was recognized by NASA in 1998 with the agency's Mars Pathfinder Outstanding Leadership Medal.

Mark lives with his wife, Beth, and their two children, Kathleen and Kyle, in Seaford, Virginia.

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

A. GLOBAL COMPETITION AND COOPERATION Radisson Resort at the Port, Convention Center Salon I

Session Chairman: Jean-Michel Desobeau, Director of Engineering, Arianespace, Inc.

Session Organizer: Craig McAlister, Lockheed Martin Space Operations

1. VALUE CHAIN ANALYSIS OF THE ARIANE-4 LAUNCH CAMPAIGN

Hector Hartman

2. BENCHMARKING: A TOOL FOR SHARING AND COOPERATION

Denise Devito
Sara Morrison

3. ATLAS V—LOCKHEED MARTIN'S NEXT GENERATION LAUNCH

Roger A. Chamberlain

4. BOEING SEA LAUNCH PROGRAM

Amy Buhrig

5. SATELLITE LAUNCH SOLUTION FOR THE 21ST CENTURY

Don Collins

6. STARSEM, EURO-RUSSIAN VENTURE FOR SPACE TRANSPORTATION

Bernard Luciani

7. ORBITAL LAUNCH SYSTEMS

Cary Pao

B. GLOBAL BENEFITS FROM SPACE
Radisson Resort at the Port, Jamaica Room

Session Chairman: Dr. Robert Norwood, Office of the Chief Technologist, NASA Headquarters, Code RW

Session Organizer: Dr. James T. Brown, NASA Kennedy Space Center

1. THE INVENTION, DEVELOPMENT AND COMMERCIALIZATION OF A NON-INVASIVE INTRACRANIAL PRESSURE MONITOR
Frank Farmer
2. ROBUST, LOW COST AEROSPIKE/RLV COMBUSTION CHAMBER BY ADVANCED VACUUM PLASMA PROCESS
Richard Holmes
3. REVERSE ENGINEERING OF BIOLOGICAL GRAVITY-SENSING ORGANS: NEUROCOMPUTATIONAL AND BIOMEDICAL IMPLICATIONS
John Love
4. CHARACTERIZING SPACE-GROWN DEGENERATE NARROW GAP SEMICONDUCTORS BY SCANNING TUNNELING OPTICAL SPECTROSCOPY
James Patterson
5. PASSIVE ORBITAL RADIATION DOSIMETRY ON STS-91 USING DNA: INITIAL RESULTS FROM ASPR-GRaDEx-1
Joe Ritter
6. AEROGEL COMPOSITES
Susan White

C. BEYOND 2000
Radisson Resort at the Port, Martinique Room

Session Chairman: Lt. Col. Wayne Eleazer, Chief of Advanced Planning, 45th SW/XPE, Patrick Air Force Base

Session Organizer: Lori Weller, JPMO, Kennedy Space Center

1. MISSILES, MYTHOLOGIES AND MISSES
Lt. Col. Wayne Eleazer
2. THE PATH TO DELTA IV
Gary Dahlke
3. MAIN THREE CONTAMINATION MONITORING CART FOR SUPPORT OF HIGHLY CONTAMINATION-SENSITIVE PAYLOADS
Jean Abernathy
4. SPACE OPERATIONS MANAGEMENT TRAINING—EDUCATING THE FUTURE SPACE WORKFORCE FOR 2000 AND BEYOND
William Hoffman
5. LAUNCH SAFETY PRINCIPLES FOR REUSABLE LAUNCH VEHICLES
Lt. Col. Dan Berlinrut

6. VENTURESTAR OPERATIONS OPTIONS AT CAPE CANAVERAL AIR STATION AND THE KENNEDY SPACE CENTER

Lt. Col. Wayne Eleazer

D. EDUCATING THE WORLD

Radisson Resort at the Port, Antigua Room

Session Chairman: Rolando Branly, Broward Community College

Session Organizer: Helen (Cindy) Coddington, NASA Kennedy Space Center

1. A STUDY OF ALTERNATIVE TECHNOLOGIES TO COMPRESSED AIR SELF-CONTAINED BREATHING APPARATUS

Timothy Moore

2. PASSIVE ORBITAL RADIATION DOSIMETRY ON STS-91 USING DNA: INITIAL RESULTS FROM ASPR-GRaDEx-1 (EDUCATION VIEWPOINT)

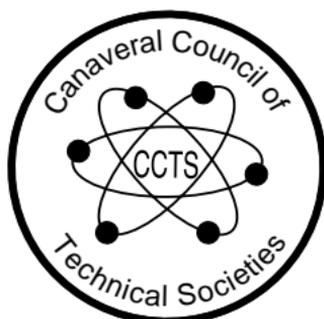
Rolando Branly

3. PC'S IN SPACE: EXPANDING EARTH AND SPACE SCIENCE INTO EXISTING CURRICULA AROUND THE WORLD

Tom Devlin

EXHIBITS RECEPTION (6:00 p.m. TO 8:00 p.m.)

Radisson Resort at the Port (Ticket Required)



WEDNESDAY, APRIL 28

PANEL SESSION II (8:00 a.m. to 11:00 a.m.)

Radisson Resort at the Port, Convention Center

MILITARY SPACE FOR A NEW CENTURY

Panel Chairman: Brig. Gen. F. Randall Starbuck, USAF, Commander 45th Space Wing

Panel Members:

Col. Brian E. Carron
Col. D. Tom Clark
Mr. George W. "Skip" Bradley, III

EXHIBITS AND SCIENCE FAIR (10:00 a.m. to 7:00 p.m.)

Radisson Resort at the Port, Convention Center Exhibit Hall

LUNCHEON (12:00 noon to 1:30 p.m.)

Radisson Resort at the Port, Convention Center

Introductions: Rick Abramson, General Chairman

Speaker: Dr. Firouz M. Naderi
Origins Program Manager
Jet Propulsion Laboratory

Firouz Naderi is the JPL Manager for the Origins Program. Prior to that he was the program manager for the Space Science Flight Experiments Program responsible for development of space science instruments at JPL. Before that, he was the project manager for the NASA Scatterometer and SeaWinds Projects. Dr. Naderi has also served as the program manager at NASA Headquarters for the Advanced Communications Technology Satellites Program, and at JPL as a project manager for mobile satellite experiments. He received a B.S. from Iowa State in 1969, a Master and Ph.D. from USC in 1972 and 1976, all in electrical engineering. Dr. Naderi has been with JPL for the past 20 years.



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

A. SPACE ACCESS IN A GLOBAL MARKET

Radisson Resort at the Port, Jamaica Room

Session Chairman: Edward A. O'Connor, Jr., Executive Director, Spaceport Florida Authority

Session Organizer: Ellen Prince Brown, United Space Alliance, Kennedy Space Center

1. UTILIZING ADVANCED VIBRATION TECHNOLOGY TO ENABLE MICROGRAVITY SCIENCE OPERATIONS

Dean Alhorn

2. HELIUM PIPELINE FOR EVOLVED EXPENDABLE LAUNCH VEHICLE (EELV) PROGRAM
Jerry Jorgensen
3. JOINT INFORMATION TECHNOLOGY ASSESSMENT AND RESOLUTION—A STRATEGY FOR ACHIEVING SYSTEMS INTEROPERABILITY AT KSC/CCAS
Fiorin Zeviar
4. NUTS AND BOLTS
Charles Debelius
5. A PROCESS TO HELP ASSURE SUCCESSFUL COMMERCIAL SPACE VENTURES
Sam Mihara

B. UNITY IN SPACE

Radisson Resort at the Port, Convention Center, Salon I

Session Chairman: J. J. Talone, Jr., Director, NASA ISS Hardware Integration Office, Kennedy Space Center

Session Organizer: Marilou Richardson, United Space Alliance, Kennedy Space Center

1. PHASE I LESSONS FOR THE NEW ERA
James Van Laak
2. WORKING TOGETHER WITH RUSSIAN PARTNERS TO LAUNCH THE FIRST ELEMENT OF THE INTERNATIONAL SPACE STATION
Virginia E. Barnes
3. ISS INTERNATIONAL PARTNERS STATUS
Dan Jacobs
4. JOINT US/RUSSIA FLIGHT OPERATIONS: FIRST AND NEXT SIX MONTHS
Robert Castle
5. OVERVIEW OF SPACE STATION RESEARCH CAPABILITIES
Michael Suffredini
6. COMBINING TOOLS, TASKS, FLIGHT HARDWARE & ASTRONAUTS IN PRE-FLIGHT GROUND FIT CHECKS FOR ON-ORBIT SUCCESS
Michael Haddad
7. INTERNATIONAL SPACE STATION MULTIPLE ELEMENT INTEGRATED TESTING
Scott Chandler
8. UNITY IN BOEING ISS
Brewster Shaw

C. BEYOND 2000 CONTINUED

Radisson Resort at the Port, Martinique Room

Session Chairman: Lt. Col. Scott Swanson, Det 8/CLC, Patrick Air Force Base

Session Organizer: John Fablinger, JPMO, Kennedy Space Center

1. ALTERNATIVE LAUNCH SITE SELECTION

Richard Schooff

2. THE ASTRAL HIGHWAY: A NATIONAL SPACE INFRASTRUCTURE

Mike Snead

3. A MODEL FOR SATELLITE SYSTEM SUSTAINMENT SERVICE

Capt. Ronald P. Garrett

4. THE NEXT GENERATION MOBILE USER OBJECTIVE SYSTEM (MUOS)

Lt. Cmdr. Jack Nicholson

5. TRACKING AND IDENTIFICATION OF SURFACE MOVING VEHICLES FROM SPACE USING ADVANCED SAR/MTI CONCEPTS

Dr. Robert Williams

D. THE NEXT 100 YEARS

Radisson Resort at the Port, Antigua Room

Session Chairman: Gregg Buckingham, University Programs Manager, NASA Kennedy Space Center

Session Organizer: Dr. Gale Allen, NASA Kennedy Space Center

1. SCIENCE COMMUNICATION FOR THE LIFE SCIENCES AT KENNEDY SPACE CENTER

Gus Koerner

2. SPACE WORKFORCE EDUCATION IN THE YEAR 2000: KNOWLEDGE MANAGEMENT CONCEPTS AND ISSUES

Patrick Simpkins

3. ESTABLISHING A REAL-TIME MULTIMEDIA LINK TO THE ARCTIC

Mark Leon

4. KSC SPACE FLIGHT OPERATIONS CURRICULUM

Lance Erickson

5. NASA/FMIEP PROGRAM'S IMPACT ON NASA, MINORITY STUDENTS AND THE BUSINESS COMMUNITY

Irma Becerra-Fernandez

6. PROJECT VISION: A MODEL PROGRAM TO EDUCATE THE NEXT GENERATION OF ENGINEERS, SCIENTISTS, AND MATHEMATICIANS

Gustavo Roig

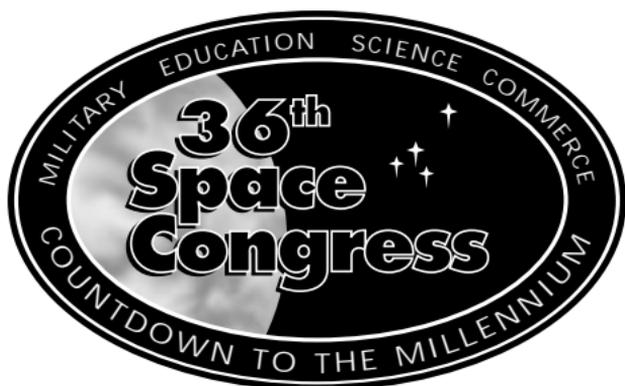
SPACE CONGRESS RECEPTION (7:00 p.m. to 9:00 p.m.)
Radisson Resort at the Port (Poolside)

PANEL SESSION III (7:00 p.m. to 9:00 p.m.)
Radisson Resort at the Port, Convention Center

MEET THE ASTRONAUTS

Panel Chairman: Roy D. Bridges, Jr., Center Director
NASA Kennedy Space Center

Astronauts: As available between Training Commitments



THURSDAY, APRIL 29

PANEL SESSION IV (8:00 a.m. to 11:00 a.m.)

Radisson Resort at the Port, Convention Center

BEYOND SHUTTLE—CONTINUED HUMAN ACCESS TO SPACE

Panel Chairman: Rick Stephens, Vice President and General Manager, Boeing Reusable Space Systems

Panel Members :

Mr. Russ Turner
Mr. Jerry Rising
Mr. Gary Hudson

EXHIBITS AND SCIENCE FAIR (10:00 a.m. to 3:00 p.m.)

Radisson Resort at the Port, Convention Center Exhibit Hall

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

A. SPACE SYSTEMS—MARS AND BEYOND

Radisson Resort at the Port, Jamaica Room

Session Chairman: Sy Baker, Director, Atlas Programs—Cape, Lockheed Martin Complex 36 Ready Room, CCAS

Session Organizer: Elaine Deremer Cook, Boeing/Rocketdyne ROC-LSS

1. SPACE TRANSPORTATION OPTIONS FOR THE 21ST CENTURY
Michael Houts
2. EXPLORATION IN THE NEW MILLENNIUM: THE EDUCATIONAL EXPERIENCE AT THE KSC VISITOR COMPLEX
James Ball
3. ATLAS AND BEYOND: EVOLVING COMMERCIAL SPACE TRANSPORTATION
Vernon L. Thorp
4. THE DELTA LAUNCH VEHICLE FAMILY
Tom Parkinson
5. NASA HUMAN MISSION TO MARS INITIATIVE—CONCEPTS AND SCENARIOS
T. Howard Smith

B. SCIENTIFIC ENLIGHTENMENT

Radisson Resort at the Port, Convention Center, Salon I

Session Chairman: Dr. H. John Wood, Optics Lead Engineer, Hubble Space Telescope Project, NASA/Goddard Space Flight Center

Session Organizer: Linda Bradley, United Space Alliance, Kennedy Space Center

1. COMPUTERIZED TOMOGRAPHY (CT) INSPECTION OF MECHANICS OF GRANULAR MATERIALS (MGM) MODULES FOR THE STUDY AND ANALYSIS OF PHENOMENA SUCH AS EARTHQUAKES

H. Peter Engel

2. DEVELOPMENT OF BIOMOLECULAR TECHNIQUES FOR THE ANALYSIS OF GRAVITY-SENSING MECHANISMS IN SPACE FLIGHT SPECIMENS: APPLICATIONS IN BIOMEDICINE AND GRAVITATIONAL BIOLOGY

Kathleen Johnson

3. THE UNIVERSE AS VIEWED BY THE HUBBLE SPACE TELESCOPE

Dr. Mario Livio

4. STELLAR EVOLUTION TODAY AND IN THE EARLY UNIVERSE

H. John Wood

5. EARTH, CONTINUING TO BE A BETTER PLACE TO LIVE FROM INTERNATIONAL ENDEAVORS IN SPACE

Ron Caswell

6. DEVELOPMENT OF A MICROGRAVITY-RATED HYDROPONIC PLANT CULTURE APPARATUS

Howard G. Levine

C. REACHING FOR THE STARS

Radisson Resort at the Port, Martinique Room

Session Chairman: Tim Kotnour, University of Central Florida

Session Organizer: Jane Mosconi, NASA Kennedy Space Center

1. THE WORLD WIDE WEB AS A SCIENCE AND ENGINEERING EDUCATIONAL TOOL

Paul Curto

2. IMPROVING PUBLIC EDUCATION BEYOND 2001

Dian Hardison

3. PARTNERSHIPS FOR LEARNING: U.S. SPACE CAMP AND THE UNIVERSITY OF CENTRAL FLORIDA

Mary Kalen Romjue, Ph.D.

4. STUDENTS DESCRIBE HOW EDUCATION SHOULD PREPARE THEM FOR THE FUTURE

Betty Preece

**SPACE CONGRESS BANQUET
KENNEDY SPACE CENTER VISITOR COMPLEX, APOLLO/SAT-
URN V CENTER**

Social Hour: 6:30 p.m.

Dinner/Program: 7:30 p.m.

Introductions: Rick Abramson, General Chairman

Speaker: Jerry J. Rising
President, VentureStar LLC
A Lockheed Martin Company

As Vice President/Program Manager of the X-33/RLV Program Jerry led the team to develop Lockheed Martin's innovative X-33 design concept and win the X-33 Advanced Technology Demonstrator program. He was responsible for overall technical and financial performance of the multi-corporation Lockheed Martin X-33/RLV team. (June 1995 to present)



As Program Manager of Lockheed's portion of Tier II+ long endurance, high altitude reconnaissance program he led

the team to develop the winning Phase I Raytheon/Lockheed Air Vehicle concept. Also, as Program Manager of classified Lockheed Martin Skunk Works programs he successfully led programs to achieve all goals on time and under budget. (7 years)

Jerry was Flight Sciences Division Chief for Lockheed Martin Skunk Works and responsible for Aerodynamics, Propulsion and Thermodynamics development and staffing (1984 - 1988). He was the Aerodynamics Department Manager for Lockheed Martin Skunk Works. (1983 - 1984)

As Group Engineer, Stability and Control for Lockheed California Company he was responsible for Advanced Concept Development and led Lockheed's active controls development for NASA's commercial transport Aircraft Energy Efficient program flight dynamics, configuration, and stability and control design and development of L-1011, S-3 and, P-3 aircraft (9 years) and Lockheed California Company advanced concepts. (7 years)

Jerry received a Master of Science, Aerospace Engineering, University of Southern California, and a Bachelor of Science, Aeronautical Engineering, University of Washington.

In 1977 he was a recipient of Skunk Works Gold Leadership Award, and the Distinguished Engineering Achievement Award from the Engineers' Council, Inc. In 1996 he received the Popular Science Aviation and Space Award for Development of the X-33 Design.

FRIDAY, APRIL 30

PANEL SESSION V (8:00 a.m. to 11:00 a.m.)

Radisson Resort at the Port, Convention Center

TARGET MILLENIUM—TECHNOLOGY FOR A NEW ERA

Panel Chairman: Dr. Fuk K. Li, New Millenium Program Manager
Jet Propulsion Lab

Panel Members: Mr. Gordon Johnson
Mr. John Mankins
Dr. Stuart Kerridge
Mr. Nicholas Speciale
Dr. Timothy Krabach

CLOSING REMARKS: Rick Abramson, General Chairman

SPACE CONGRESS GOLF TOURNAMENT

(11:30 a.m. to 6:00 p.m.) (Approximately)

Patrick AFB Golf Course

Buffet Lunch: 11:30 a.m.

Shotgun Start: 1:00 p.m.

Map available at registration desk.

MISSILE, SPACE & RANGE PIONEERS' ANNUAL BANQUET

Patrick AFB, Officers' Club

Social Hour: 6:30

Dinner: 7:30

Speaker: 8:30 F. Story Musgrave, M.D.
Former Astronaut

PROGRAM SUMMARY

MONDAY, APRIL 26

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

REGISTRATION DESK OPEN, Radisson Resort at the Port

TUESDAY, APRIL 27

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

REGISTRATION DESK OPEN, Radisson Resort at the Port

8:00 a.m.

KEYNOTE ADDRESS

Radisson Resort at the Port, Convention Center

8:30 a.m. to 11:00 a.m.

PANEL SESSION I: THE FUTURE IS HERE—GLOBAL PERSONAL COMMUNICATIONS

Radisson Resort at the Port, Convention Center

10:00 a.m. to 5:00 p.m.

EXHIBITS AND SCIENCE FAIR

Radisson Resort at the Port, Convention Center Exhibit Hall

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

LUNCHEON, Radisson Resort at the Port, Convention Center

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

PAPER SESSION I:

- A. GLOBAL COMPETITION AND COOPERATION, Radisson Resort at the Port, Convention Center, Salon I
- B. GLOBAL BENEFITS FROM SPACE, Radisson Resort at the Port, Jamaica Room
- C. BEYOND 2000, Radisson Resort at the Port, Martinique Room
- D. EDUCATING THE WORLD, Radisson Resort at the Port, Antigua Room

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

EXHIBIT RECEPTION (Ticket Required)

Radisson Resort at the Port, Convention Center Exhibit Hall

WEDNESDAY, APRIL 28

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

REGISTRATION DESK OPEN, Radisson Resort at the Port

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

PANEL SESSION II: MILITARY SPACE FOR A NEW CENTURY

Radisson Resort at the Port, Convention Center

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

EXHIBITS AND SCIENCE FAIR

Radisson Resort at the Port, Convention Center Exhibit Hall

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

LUNCHEON, Radisson Resort at the Port, Convention Center

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

PAPER SESSION II:

- A. SPACE ACCESS IN A GLOBAL MARKET, Radisson Resort at the Port, Jamaica Room
- B. UNITY IN SPACE, Radisson Resort at the Port, Convention Center, Salon I
- C. BEYOND 2000 CONTINUED, Radisson Resort at the Port, Martinique Room
- D. THE NEXT 100 YEARS, Radisson Resort at the Port, Antigua Room

7:00 p.m. to 9:00 p.m.

SPACE CONGRESS RECEPTION

Radisson Resort at the Port (Poolside)

7:00 p.m. 9:00 p.m.

PANEL SESSION III: MEET THE ASTRONAUTS, Radisson Resort at the Port, Convention Center

THURSDAY, APRIL 29

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

REGISTRATION DESK OPEN, Radisson Resort at the Port

8:00 a.m. 11:00 a.m.

PANEL SESSION IV: BEYOND SHUTTLE—CONTINUED HUMAN ACCESS TO SPACE

Radisson Resort at the Port, Convention Center

10:00 a.m. to 3:00 p.m.

EXHIBITS AND SCIENCE FAIR

Radisson Resort at the Port, Convention Center Exhibit Hall

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

PAPER SESSION III:

- A. SPACE SYSTEMS—MARS AND BEYOND, Radisson Resort at the Port, Jamaica Room
- B. SCIENTIFIC ENLIGHTENMENT, Radisson Resort at the Port, Convention Center, Salon I
- C. REACHING FOR THE STARS, Radisson Resort at the Port, Martinique Room

6:30 p.m. to 10:00 p.m.

SPACE CONGRESS BANQUET, Kennedy Space Center Visitor Complex/Apollo Saturn V Center

FRIDAY, APRIL 30

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

REGISTRATION DESK OPEN, Radisson Resort at the Port

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

PANEL SESSION V: TARGET MILLENIUM—TECHNOLOGY FOR A NEW ERA

Radisson Resort at the Port, Convention Center

11:30 a.m. to 6:00 p.m. (Approximately)

SPACE CONGRESS GOLF TOURNAMENT, Patrick AFB, Golf Course

6:30 p.m. to 10:00 p.m.

MISSILE, SPACE & RANGE PIONEERS' ANNUAL BANQUET, Patrick AFB, Officers' Club

ACKNOWLEDGMENTS

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

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