



# 39<sup>th</sup> SPACE CONGRESS

Beginning A New Era - Initiatives In Space



# PROGRAM



Cape Canaveral, Florida  
April 30 - May 3, 2002



Thirty-Ninth Space Congress  
Post Office Box 245  
Cape Canaveral, FL 32920-0245



NONPROFIT  
ORGANIZATION  
U.S. POSTAGE PAID  
COCOA, FL 32922  
PERMIT NO. 138

## Chairman's Message

This year's theme is "Beginning a New Era—Initiatives in Space"

This is the 39<sup>th</sup> continuous year for the Space Congress and indications are that this will be a most excellent gathering. The International Space Station is well into construction with awesome science already taking place. The Eastern Launch Site can expect the maiden launches of two new expendable



launch vehicles in 2002: Delta IV and Atlas V. These systems are intended to increase performance and reliability at significantly reduced costs. The panel sessions we have set up, Spaceport /Infrastructures, Space Transportation, and Cutting Edge Technologies should provide significant insight into the state of these and other programs.

Our keynote speaker is Dr. Vance Coffman, the Chairman and CEO of Lockheed Martin, and our banquet speaker is Mr. Art Stephenson, Director of Marshall Space Flight Center. Our luncheon speakers are Lt Gen Brian Arnold, Commander Space and Missile Center and Michael McCully, Chief Operating Officer of United Space Alliance (USA). These and our panel and paper session chairs should provide broad insight into military and civilian space initiatives, new technologies, and stimulate discussion on all fronts. Meeting the Astronauts and touring the many space exhibits should top off a most exciting event and I anticipate this Space Congress to be an invigorating experience.

Please plan to participate in the 39<sup>th</sup> Space Congress at Cape Canaveral, Florida. I look forward to seeing you there.

Walter S. Yager,  
General Chairman,  
39th Space Congress

# Information

## Headquarters/Registration

Headquarters for the **Thirty-Ninth 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 are also available at the Convention Center lobby. Registration will be open from 12:00 - 5:00 p.m. on Monday, April 29 and 7:00 a.m. - 5:00 p.m. from Tuesday through Thursday.

PACKAGE REGISTRATION.....	\$180.00
(Includes first five items listed below)	
Registration .....	85.00
Tuesday Banquet .....	50.00
Wednesday Exhibit Reception .....	20.00
Wednesday Luncheon.....	25.00
Thursday Luncheon.....	25.00
Single Session.....	15.00
Proceedings Hard Copy (Not in Package) .....	80.00
Proceedings CD-Rom (Not in Package).....	40.00
Golf (Not in Package) .....	50.00

### **ALL SPACE CONGRESS ACTIVITIES WILL BE HELD AT THE RADISSON RESORT AT THE PORT.**

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, (321) 784-0000, or direct, (321) 799-4845.

## 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 number for the press facility is (321) 799-9771, (fax number: (321) 799-9772).

## Message/Locator Assistance

The sponsoring organization, the Canaveral Council of Technical Societies (CCTS), maintains a message locator desk in the Convention Center with telephone (321) 799-4846, 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 to the CCTS Message/Locator Desk.

## Proceedings

The Proceedings of the **Thirty-Ninth 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 \$80 each for hard copy and \$40 each for CD-Rom plus postage from: Secretary, CCTS, Post Office Box 245, Cape Canaveral, Florida 32920.

## Exhibits

The Exhibit Hall will feature displays and demonstrations from more than 60 exhibitors. It will include exhibits on Space Shuttle, International Space Station, computer graphics demonstration, and other aerospace-related topics. The Exhibit Hall will be open to the public in the Radisson Resort at the Port on the following schedules: Tuesday - 11:00 a.m. to 7:00 p.m.; Wednesday - 11:00 a.m. to 5:00 p.m.; and Thursday - 9:00 a.m. to 3:00 p.m. Admission tickets are available at the Registration Desk for the Wednesday Exhibit Reception to be held from 6:00 - 8:00 p.m.

## Exhibitors

45th Space Wing  
Aerojet  
Analex Corporation  
ASME  
Astrotech Space Operations  
ATK Thiokol Propulsion  
Barry University  
Brevard Community College  
The Boeing Company  
Canaveral Port Authority  
CMC Electronics Cincinnati  
Communications Concepts, Inc.  
Comprehensive Health Services, Inc.  
Computer Sciences Raytheon (CSR)  
Embry-Riddle Aeronautical University  
Florida Solar Energy Center  
Florida Space Authority  
Florida Space Institute  
GRC International, Inc.  
Honeywell Space Systems  
InDyne, Inc.  
Jacobs Sverdrup  
Johnson Controls World Services, Inc.  
Jones, Edmunds & Associates, Inc.  
Lockheed Martin  
Marotta Scientific Controls, Inc.  
NASA/Hubble Space Telescope  
NASA, Kennedy Space Center  
Naval Ordnance Test Unit  
Orbital Sciences Corp.  
Pratt & Whitney A United Technologies Company  
Research Planning, Inc.  
Science Applications International Corp.(SAIC)  
Space Gateway Support  
Swales Aerospace  
Technological Research & Development Authority (TRDA)  
Telco Systems, A BATM Company  
United Paradyne Corp.  
United Space Alliance (USA)  
Wyle Laboratories, Inc.  
**University of Central Florida**  
**University of Florida**  
**Warner Southern College**  
**Webster University**

## 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 Thursday evening, May 2, at the beginning of the "Meet the Astronauts" panel session.

## Space Congress Golf Tournament

Golfers will be able to enjoy a tournament at the Cocoa Beach Country Club on Friday, May 3, 2002.

The tournament will be a Scramble format as in the past. Foursomes may sign-up if they provide a combined total, certifiable handicap of 58 or higher.

**NOTE: Only one player with a handicap of 10 or lower allowed per team.**

Singles that sign up will be paired with teams that are not filled. A maximum of 144 players will be registered on a first-in basis.

Entry fee is \$50 per player or \$200 per 4-person team.

Included in the entry fee: Green fees - 1/2 cart - Bar-B-Que Lunch - Prizes

Schedule of events is as follows:

10:00 a.m.	Check-in at course begins
11:00 a.m.	Lunch
12:00 p.m.	Shotgun Start

## Pioneers' Annual Banquet

The Pioneers' Banquet 2002 will be held on Friday, May 3, at the Officers' Club, Patrick Air Force Base.

*Social Hour:* 6:30 p.m.

*Dinner:* 7:30 p.m.

*Speaker:* 8:30 p.m. *Brewster Shaw*

Registration is in the Convention Center at the Radisson Resort at the Port, and 5:30 to 6:30 p.m. at the Officers' Club on May 3.

## 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  
Florida Space Research Institute  
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.

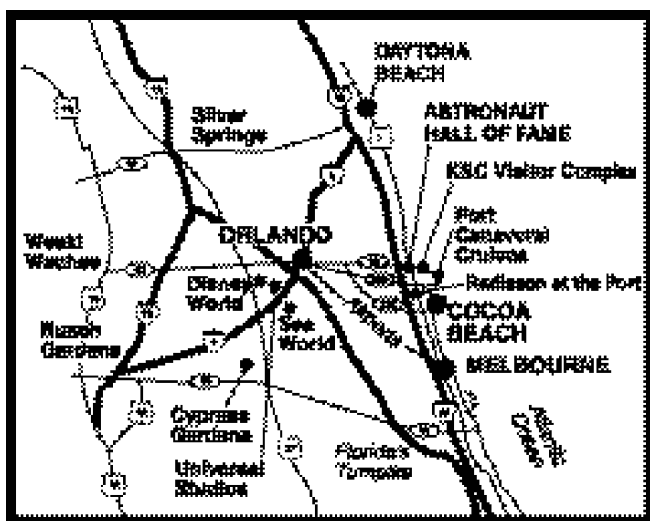
## Attraction Centers

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 insider's 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 and Carnival cruise lines. Additionally, there are daily casino cruises aboard the Sterling and SunCruz lines.

The area is also a natural paradise with more than 72 miles of beaches and some of the best fresh and saltwater fishing in the nation. 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 30**

**KEYNOTE ADDRESS**

**(8:00 A.M. TO 9:00 A.M.)**

Radisson Resort at the Port, Convention Center

*Introductions:* Walter S. Yager, General Chairman

*Speaker:* Dr. Vance Coffman, Chairman and CEO Lockheed Martin Corporation

Dr. Coffman was elected to his current position in April 1998 having served as CEO and Vice Chairman since August 1997. He has served in a series of elected Corporate leadership positions including President and Chief Operating Officer, and Executive Vice President. He previously was President and Chief Operating Officer of Lockheed Martin's Space & Strategic Missiles Sector. Prior to the merger of Lockheed and Martin Marietta Corporations in 1995, he served as Executive Vice President of Lockheed Corporation. Earlier, he was President of the Space Systems Division of Lockheed Missiles & Space Company and a Vice President of the corporation.



**PANEL SESSION I**

**(9:30 A.M. TO NOON)**

Radisson Resort at the Port, Convention Center

**SPACEPORT/INFRASTRUCTURES**

*Panel Chair:* Jim Heald, Director Spaceport Engineering & Technology, Kennedy Space Center

**EXHIBITS & SCIENCE FAIR**

**(11:00 A.M. TO 7:00 P.M.)**

Radisson Resort at the Port, Convention Center Exhibit Hall

## **PAPER SESSION I (1:00 P.M. TO 4:00 P.M.)**

### **A. ADVANCEMENTS IN TECHNOLOGY**

Martinique Room

*Session Chair:* David Bartine, Chief Technologist  
Kennedy Space Center

*Session Organizer:* Barry Meneghelli, Dynacs Corporation

1. ROBUST LOW COST LIQUID ROCKET COMBUSTION CHAMBER BY ADVANCED VACUUM PLASMA PROCESS  
*Richard R. Holmes, NASA/MSFC*  
*Sandra Elam, NASA/MSFC*  
*Timothy McKechenie, Plasma Processess, Inc.*  
*Robert Hickman, Plasma Processess, Inc.*
2. DEVELOPMENT AND TESTING OF SCANNING PROBE MICROSCOPY FOR THE ZERO-G ENVIRONMENT AND ISS  
*R.M. Branly, Broward Community College*  
*R. Friedfeld, E. Howard, S. Parker, R. Williams*
3. NON-OHMIC DISCHARGE CHARACTERISTICS OF THE JSC MARS-1 MARTIAN REGOLITH SIMULANT  
*C.R. Buhler, Swales Aerospace*  
*C.I. Calle, NASA/KSC*  
*A.W. Nowicki, Dynacs Inc*  
*A. Hirschmann, Florida Institute of Technology*  
*D. Denning, Embry Riddle Aeronautical University*
4. ELECTROSTATIC CHARGING OF POLYMERS BY PARTICLE IMPACT AT LOW PRESSURES  
*C.I. Calle, NASA/KSC*  
*J.G. Mantovani, FL Tech*  
*E.E. Groop, NASA/KSC*  
*C.R. Buhler, Swales Aerospace*  
*A.W. Nowicki, Dynacs Inc.*  
*M.G. Buehler, JPL*  
*M.D. Hogue, NASA/KSC*
5. A MECHANICAL CRYOGENIC COOLER FOR THE HUBBLE SPACE TELESCOPE  
*Nicholas Jedrich, Jackson & Tull*  
*Darell Zimbelman, NASA/GSFC*  
*Walter Swift, Create Inc.*  
*Francis Dolan, Create, Inc.*

## **B. SPACE BUSINESS INITIATIVES**

Jamaica Room

*Session Chair:* Tim Franta, Director  
Business Development,  
Florida Space Authority

*Session Organizer:* Vicki Miletello, NASA/KSC

1. CAPE CANAVERAL SPACEPORT MASTER PLAN  
Renee Ponik, NASA/KSC
2. MAKING STATE SPACEPORTS ECONOMIC CHANGE AGENTS  
*Roger Handberg, University of Central Florida*
3. SPACE ALLIANCE TECHNOLOGY OUTREACH PROGRAM  
*Paul Secor, Technological Research and Development Authority*  
*Robert N. McGrath, Embry Riddle; Saad Laraqui, Embry Riddle*
4. A GROUND FLOOR OPPORTUNITY — THE INTERNATIONAL SPACE RESEARCH PARK™ AT NASA'S KENNEDY SPACE CENTER  
*Jim Ball, NASA/KSC*  
*Tim Franta, Florida Space Authority*
5. THE REAL SPACE TOURISM INDUSTRY  
*Robert Wayne Eleazer III, ACTA, Inc.*

## **C. HUBBLE DISCOVERIES**

Salon 1

*Session Chairs:* Mr. Frank Cepollina, Manager,  
HST Servicing Project  
Dr. David Leckrone, HST Senior Program  
Scientist, Goddard Space Flight Center

*Session Organizer:* Linda Bradley, United Space Alliance

1. RESULTS OF 12 YEARS OF ASTRONOMY FROM HST  
*Dr. David Leckrone, Goddard Space Flight Center, NASA*
2. THE GREATEST HST DISCOVERIES AND SCIENCE TO COME  
*Dr. Steve Beckwith, Director, Space Telescope Science Institute*
3. THE DARK UNIVERSE  
*Dr. Mario Livio, Space Telescope Science Institute*
4. THE DISCOVERY POTENTIAL FOR THE NEW ADVANCED CAMERAS FOR SURVEYS  
*Dr. Holland Ford, Director of Astronomy, John Hopkins University*
5. NEAR INFRARED CAMERA DISCOVERY POTENTIALS WITH THE NEW CLOSED LOOP CRYOGENIC COOLER  
*Dr. Rodger Thompson, Director of Astronomy, University of Arizona*
6. THE HUBBLE SERVICING MISSION 3B AND THE BENEFITS OF SATELLITE SERVICING  
*Frank Cepollina, Goddard Space Flight Center, NASA*

## **SPACE CONGRESS BANQUET**

Radisson Resort at the Port, Convention Center

Social Hour (7:00 p.m.)

Dinner/Program(8:00 p.m.)

*Introductions:* **Walter S. Yager, General Chairman**

*Speaker:* **Art Stephenson, Director of Marshall Space Flight Center, NASA**

Art Stephenson is director of NASA's Marshall Space Flight Center in Huntsville, Alabama. He heads one of NASA's largest field installations, with more than 6,500 civil service and contract employees and an annual budget of \$2.3 billion. Stephenson manages a broad range of research and development activities for the U.S. space program at the Marshall Center.

Since joining Marshall in September 1998, Stephenson has led the Center during a period highlighted by the launch and successful operation of the Chandra X-ray Observatory -- the world's most powerful X-ray telescope. He oversees Marshall's work on critical NASA initiatives such as the development of new reusable launch vehicles, microgravity research, various Earth and space science projects, and operations support to all science payloads aboard the International Space Station.



# WEDNESDAY, MAY 1

## PANEL SESSION II

**(8:30 A.M. to 11:00 A.M.)**

Radisson Resort at the Port, Convention Center

## SPACE TRANSPORTATION: NEW PLACES, NEW WAYS?

*Panel Chair:* Jean-Michel Desobeau, ATV Director,  
Arianespace

## EXHIBITS AND SCIENCE FAIR

**(11:00 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:* Walter S. Yager, General Chairman

*Speaker:* Lt. Gen. Brian A. Arnold, Commander, Space and Missile Systems Center, Air Force Space Command, Los Angeles Air Force Base, Ca.

Lt. Gen. Brian A. Arnold is responsible for managing the research, design, development and acquisition of space launch, command and control, and satellite systems. With more than 3,200 employees nationwide and an annual total obligation authority in excess of \$5 billion, SMC is the nation's center of excellence for military space acquisition. The general is the Air Force's designated acquisition commander for the Air Force Satellite Control Network, the Space Lift Ranges, the Defense Meteorological Satellite Program, the Space-Based Laser Program, and the Atlas, Delta, Titan and inertial upper stage families of launch vehicles that provide assured access to space.



The general was commissioned through Officer Training School at Lackland Air Force Base, Texas, in 1971. Prior to his current assignment, he served as the director of space and nuclear deterrence for the assistant secretary of the Air Force for acquisition. In this role, he was responsible for space and missile systems. The general spent the majority of his career as a pilot in FB-111 and B-52 aircraft. He has served as a squadron commander, wing commander and subunified commander.

## **PAPER SESSION II (2:00 P.M. TO 5:00 P.M.)**

### **A. A NEW ERA IN ACCESS TO SPACE**

Salon I

*Session Chair: Jean-Michel Desobeau, ATV Director,  
Ariane Space*

*Session Organizer: Cindy (Helen) Gooden, NASA/KSC*

1. OPERATIONS AND MAINTENANCE REQUIREMENTS SPECIFICATION - AUTOMATED BUY-OFF SYSTEM  
*Todd Flato and Barry Rubel, Riptide Software Incorporated*
2. RANGE TRACKING: CURRENT CAPABILITIES AND FUTURE CHALLENGES  
*M. Maier, S. Vaughn, M. Ignacek, D. Davis, G. Davis,  
R. VonNiederhausen, and L. Hulme,  
Computer Sciences Raytheon*
3. LAUNCH SITE PAYLOAD OPERATIONS IN THE COMING SPACEPORT ERA  
*Roelof L. Schuiling, NASA/KSC*
4. U.S. COMMERCIAL SPACE LAUNCH IN THE 21<sup>ST</sup> CENTURY  
*Sidney Kimhan, Practical Innovations International  
Rick Manley, MAMCO Assoc.  
Jimmey Morrel, Ryan Morrell, MAMCO Assoc.  
Barry Zilin, Practical Innovations International, Inc.*

### **B. EXPLORATION INITIATIVES**

Jamaica Room

*Session Chair: Dr. Benton C. Clark, Lockheed Martin*

*Session Organizer: Marilou Richardson, United Space Alliance*

1. UP CLOSE AT COMET BORRELLY WITH DEEP SPACE ONE  
*Dr. L. Soderblom*
2. EARLY RESULTS FROM MARS ODYSSEY, NEWEST SPACE-CRAFT AT THE RED PLANET  
*Dr. S. Saunders*
3. NASA INNOVATIVE MISSIONS FOR EXPLORATION OF THE SOLAR SYSTEM AND BEYOND: THE DISCOVERY, SCOUT, AND NEW FRONTIERS PROGRAMS  
*Dr. J. Bergstralh*
4. ULTRASENSITIVE SENSING OF PLANETARY ATMOSPHERES USING HIGH FREQUENCY RADIOMETRY  
*Dr. G. Chin*
5. A REVOLUTION IN MARS TOPOGRAPHY AND GRAVITY AND MAGNETIC FIELDS  
*Dr. D. Smith*

6. RECENT DISCOVERIES AND NEW VISTAS FOR HUMAN EXPLORATION OF MARS

*D. Cooke*

**C. FLORIDA'S ROLE IN SPACE RESEARCH**

Martinique Room

*Session Chairs: John-David Bartoe, Research Manager,  
Space Station Program, NASA/JSC  
Dr. Sam Durrance, Director,  
Florida Space Research Institute*

*Session Organizer: Wayne Beaulieu, USAF/CCSMO*

1. THE FUTURE OF FLORIDA'S ROLE IN SPACE RESEARCH

*Dr. Sam Durrance, Florida Space Research Institute*

2. SPACE BIOLOGY AND AGRICULTURE RESEARCH INITIATIVES AT THE UNIVERSITY OF FLORIDA

*Dr. Rob Ferl, University of Florida*

3. MICROGRAVITY MODEL OF HUMAN OVARIAN TUMOR CELL GROWTH

*Dr. Jeanne Becker, University of South Florida*

4. CSTARTS: A NEW SATELLITE RECEIVING FACILITY IN SOUTH FLORIDA

*Dr. Hans Graber, University of Miami*

5. HYDROGEN RESEARCH FOR NASA

*Dr. David Block, University of Central Florida*

**EXHIBITS RECEPTION**

**(6:00 P.M. TO 8:00 P.M.)**

Exhibit Hall (Tickets Required)

## **THURSDAY, MAY 2**

### **PANEL SESSION III**

**(8:30 A.M. TO 11:00 A.M.)**

Radisson Resort at the Port, Convention Center

### **CUTTING EDGE TECHNOLOGIES**

Panel Chair: Dan Dumbacher, NASA/Marshall Space Flight Center

### **EXHIBITS AND SCIENCE FAIR**

**(9:00 A.M. to 3:00 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:* Walter S. Yager, General Chairman

*Speaker:* Michael J. (Mike) McCulley is Chief Operating Officer of United Space Alliance (USA)

Michael J. (Mike) McCulley is Chief Operating Officer of United Space Alliance (USA) and has primary responsibility for the day-to-day operations and overall management of USA, the prime contractor for the Space Shuttle Program. Mr. McCulley, a former astronaut, was named to this position in November, 1999.

Prior to being named COO, Mr. McCulley was Vice President and Deputy Program Manager for the Space Flight Operations Contract (SFOC), where he assisted USA's Vice President and Program manager in the management of the Space Shuttle Program.



Mr. McCulley previously served as the Vice President and Associate Program Manager for USA's Ground Operations at the Kennedy Space Center in Florida. Named to this position on June 1, 1996, he was responsible for directing the integration of all processing activities associated with America's Space Shuttle program to ensure safe and successful fulfillment of all company contractual commitments to NASA.

A retired U.S. Navy captain and a former NASA astronaut who logged more than 119 hours in space, Mr. McCulley piloted the highly successful STS-34 Shuttle mission in October 1989. The crew deployed the Galileo spacecraft on its ten-year journey to explore Jupiter and its moons.

## **PAPER SESSION III (2:00 P.M. to 5:00 P.M.)**

### **A. EDUCATION**

Martinique Room

*Session Chair: Rick Fisher, Director, Challenger Learning Center, Florida A&M - Florida State University*

*Session Organizer: Jane Mosconi, NASA/KSC*

1. BRASSICAS AND BUTTERFLIES: HANDS-ON ACTIVITIES WITH POTENTIAL FOR DEVELOPING SPACE FLIGHT EXPERIMENTS FOR STUDENTS  
*T. Dreschel, Dynamac Corporation  
P. Williams, University of Wisconsin  
C. Williams, University of Wisconsin  
D. Lauffer, University of Wisconsin*
2. THE INTERNATIONAL SPACE STATION SIMULATOR, ENGAGE  
*Roy P. Norris, Boeing*
3. ENDEAVOR ACADEMY  
*Michelle Peters, Technological Research & Development Authority*
4. EVOLUTION OF THE AEROSPACE TECHNICIAN  
*Dr. Thomas Steffen, Palm Beach Community College  
Dr. Albert Koller, Brevard Community College*
5. INTERNATIONAL HIGH SCHOOL SPACE SETTLEMENT DESIGN COMPETITION: HOW SECME IS PREPARING ME FOR A SPACE AGE EDUCATION  
*John P. Holmquist, University of Central Florida  
John S. Barnett, U.S. Army Research Institute  
Betty Preece, Missile, Space and Range Pioneers*

### **B. ISS-A NEW ERA IN HUMAN PRESENCE IN SPACE**

Salon 1

*Session Chairs: Dave Bethay, Boeing Corporation  
Mark Sorenson, Boeing Space Coast Operations, MPLM Ground Processing and Cargo Stowage*

*Session Organizer: Susan Hutchison, NASA/KSC*

1. CHARACTERIZATION OF POTENTIAL ISS/SPACE SHUTTLE ENVIRONMENTAL CONDITIONS ON GROWTH AND DEVELOPMENT OF *R. SATIVUS*: GROUND STUDIES FOR THE RASTA SPACE FLIGHT EXPERIMENT.  
*E. Stryjewski, I. Eraso and G. Stutte, Dynamac Corporation*
2. KNOWLEDGE MANAGEMENT (KM) IN A SPACE RELATED ENVIRONMENT: A GROUND PROCESSING INITIATIVE  
*Jose Nunez, P.E., NASA/KSC,  
Tim Kotnour, PhD., University of Central Florida*

3. ISS ELECTROMAGNETIC EFFECTS (EME) PROGRAM  
*Mark Reiber, et al, Boeing Space and Communications Group*
4. THE FIRST CELLULAR BIOTECHNOLOGY EXPERIMENTS  
ABOARD THE ISS  
*John Love, NASA/JSC*

## **C. PREPARING FOR THE FUTURE BY LOOKING AT OUR PAST**

Jamaica Room

*Session Chairs: Dr. Calvin Fowler, U.S. Space Walk of Fame  
Dr. Robert Adcock, U.S. Space Walk of Fame*

*Session Organizer: Connie McFadden, Boeing Corporation*

1. RUSSIAN-US COOPERATION IN SPACE: HISTORICAL INSIGHT  
AND FUTURE CHALLENGES.  
*Jason P. Kring, Stephen M. Fiore, and Eduardo Sala, University  
of Central Florida*
2. **PEGASUS®** – HISTORY OF THE FIRST SUCCESSFUL  
AIR-LAUNCHED SPACE VEHICLE  
*Warren Frick, Orbital Sciences Corporation*
3. TRANSFORMING TECHNICAL EDUCATION  
*Albert Koller, Executive Director, Community Colleges for  
Innovative Technology Transfer, and Thomas Steffen,  
Palm Beach Community College*
4. A NEW “OLD WAY” TO SPACE: TAKING THE BEST FROM THE  
PAST TO FORGE AHEAD INTO THE FUTURE  
*George R. Tyson, Space Frontier Operations*
5. CORROSION PROTECTION OF LAUNCH INFRASTRUCTURE  
AND FLIGHT HARDWARE AT THE KENNEDY SPACE CENTER  
*L.M. Calle and L.G. MacDowell, NASA/KSC*
6. SOLAR POWER IN SPACE  
*John Perlin*

**PANEL SESSION IV**  
**(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 /KSC*

*Astronauts: As available between training commitments*

## **FRIDAY, MAY 3**

### **PANEL SESSION V**

**(9:15 A.M. - 11:30 A.M.)**

Radisson Resort at the Port, Convention Center

*Panel Chair: Jane Mosconi, NASA/KSC*

### **Student Educational Program for Invited Students**

9:15 - 10:00	Astronauts
10:00 - 10:20	Hubble Program
10:30 - 11:25	Robert Krampf
11:25 - 11:30	Thrill Ride Video
11:30 -	Students Depart

### **SPACE CONGRESS GOLF TOURNAMENT**

Check-in:	10:00 a.m. - 11:00 a.m.
Golf Lunch:	11:00 a.m. - 12:00 noon
Golf Tournament:	12:00 noon - 4:30 p.m.

### **MISSILE, SPACE & RANGE PIONEERS' ANNUAL BANQUET, PATRICK AFB, OFFICERS' CLUB**

Social Hour:	6:30 p.m.
Dinner:	7:30 p.m.
Speaker:	8:30 p.m. Brewster Shaw

# **PROGRAM SUMMARY**

## **MONDAY, APRIL 29**

**REGISTRATION DESK OPEN (12:00 NOON TO 5:00 P.M.)**  
Radisson Resort at the Port

## **TUESDAY, APRIL 30**

**REGISTRATION DESK OPEN (7:00 A.M. TO 5:00 P.M.)**  
Radisson Resort at the Port

**KEYNOTE ADDRESS (8:00 A.M. TO 9:00 A.M.)**  
Radisson Resort at the Port, Convention Center

**PANEL SESSION I (9:30 A.M. TO 12:00 P.M.)**  
Radisson Resort at the Port, Convention Center

**EXHIBITS & SCIENCE FAIR (11:00 A.M. TO 7:00 P.M.)**  
Radisson Resort at the Port, Convention Center Exhibit Hall

**PAPER SESSION I (1:00 P.M. TO 4:00 P.M.)**

- A. ADVANCEMENTS IN TECHNOLOGY
- B. SPACE BUSINESS INITIATIVES
- C. HUBBLE DISCOVERIES

**SPACE CONGRESS BANQUET**  
Radisson Resort at the Port, Convention Center  
Social Hour (7:00 p.m.)  
Dinner Program (8:00 p.m.)

## **WEDNESDAY, MAY 1**

**REGISTRATION DESK OPEN (7:00 A.M. TO 5:00 P.M.)**  
Radisson Resort at the Port

**PANEL SESSION II (8:30 A.M. TO 11:00 A.M.)**  
Radisson Resort at the Port, Convention Center

**EXHIBITS AND SCIENCE FAIR (11:00 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

**PAPER SESSION II (2:00 P.M. TO 5:00 P.M.)**

Radisson Resort at the Port, Convention Center

- A. A NEW ERA IN ACCESS TO SPACE
- B. EXPLORATION INITIATIVES
- C. FLORIDA'S ROLE IN SPACE RESEARCH

**EXHIBITS RECEPTION (6:00 P.M. TO 8:00 P.M.)**

Exhibit Hall (Tickets Required)

**THURSDAY, MAY 2**

**REGISTRATION DESK OPEN (7:00 A.M. TO 5:00 P.M.)**

Radisson Resort at the Port

**PANEL SESSION III (8:30 A.M. TO 11:00 A.M.)**

Radisson Resort at the Port, Convention Center

**EXHIBITS AND SCIENCE FAIR (9:00 A.M. TO 3:00 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

**PAPER SESSION III (2:00 P.M. TO 5:00 P.M.)**

- A. EDUCATION
- B. ISS-A NEW ERA IN HUMAN PRESENCE IN SPACE
- C. PREPARING FOR THE FUTURE BY LOOKING AT OUR PAST

**PANEL SESSION IV (7:00 P.M. TO 9:00 P.M.)**

**MEET THE ASTRONAUTS**

Radisson Resort at the Port, Convention Center

**FRIDAY, MAY 3**

**PANEL SESSION V (9:15 A.M. TO 11:30 A.M.)**

**STUDENT EDUCATIONAL PROGRAM FOR INVITED STUDENTS**

**SPACE CONGRESS GOLF TOURNAMENT**

(10:00 A.M. TO 4:30 P.M.)

**MISSILE, SPACE & RANGE PIONEERS' ANNUAL BANQUET**

(6:30 P.M. TO 10:00 P.M.)

Patrick AFB, Officers' Club

## **ACKNOWLEDGMENTS**

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

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## **ALL EXHIBITORS (SEE PROGRAM)**

### **AND A VERY SPECIAL THANKS TO:**

City Officials of Cape Canaveral and especially the  
Cape Canaveral Police Department

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