

International Conference On Environmental Systems Technical Session Schedule

As of 07/17/2005 07:40 pm

Monday July, 11

Integrated Ground Test Facilities: Future Exploration Missions

Session Code: ICES31

Room Sala Aldobrandini

Session Time: 10:00 a.m.

Integrated ground test facilities for future exploration missions are critical for the development of exploration systems. This session will discuss the technology behind, systems within, design of, and operating experiences with ground based test facilities.

Organizers - W. Keith Splawn, Jinny Ferl, ILC Dover Inc.

Chairpersons - Phil Spampinato, ILC Dover Inc.

Time	Paper No.	Title
9:30 a.m.		BREAK
10:00 a.m.	2005-01-2756	Mars Base Zero - A Terrestrial Analog <i>Alan E. Drysdale, Boeing Co.; Ray Collins, ISECCO</i>
10:30 a.m.	2005-01-2757	The Environment Control System of the KM6 Horizontal Chamber <i>Hwei Pang; Dianfu Qie, Chunyang Li, CAST</i>
11:00 a.m.	2005-01-2759	The Combined Ground Simulation Test Technology of Thermal Vacuum for Man-Extravehicular Space Suits-Spacecraft <i>Hwei Pang; Dianfu Qie, Chunyang Li, CAST</i>

Monday July, 11

Panel: Spin-up Habitability Design: Terrestrial Design Know-How Applied to Space Projects

Session Code: ICES53

Room Sala Aldobrandini

Session Time: 3:45 p.m.

The design of vehicle interiors for other types of transportation may yield ideas for improving the interiors of future spacecraft and habitats. In this informal session, two specially invited speakers will discuss their work in aviation and marine fields. Architect and aircraft cabin designer Arturo Vittori will discuss approaches to the interior layout of aircraft such as the A380, the Boeing 777 and the Boeing Dreamliner, and naval architect and yacht designer Martin Francis will describe and illustrate his commissions for the design and outfitting of private yachts. The session will then be opened to audience participation for a general discussion on the subject.

Organizers - David Anthony Nixon, Astrocourier (Ireland), Ltd.

Time	Paper No.	Title
3:30 p.m.		BREAK

Monday July, 11

International Space Station Systems ECLSS: Systems I

Session Code: ICES25A

Room Sala Borghese

Session Time: 1:30 p.m.

Papers describe International Space Station Integrated Systems progress and current status including hardware changes, maintenance, logistics, spares and software aspects. Additionally, ISS impacts due to Shuttle retirement is discussed.

Organizers - Richard P. Reysa, Muniz Engineering Inc.; Patricia O'Donnell, Hamilton Sundstrand Power Systems

Chairpersons - David E. Williams, NASA Johnson Space Center

Time	Paper No.	Title
1:30 p.m.	2005-01-2777	International Space Station Environmental Control and Life Support System Status: 2004 - 2005 <i>David E. Williams, NASA Johnson Space Center; Gregory James Gentry, Boeing Co.</i>
2:00 p.m.	2005-01-2778	International Space Station (ISS) Environmental Control and Life Support (ECLS) System Overview of Events: February 2004 - February 2005 <i>Gregory J. Gentry, Boeing Co.; Richard P. Reysa, Muniz Engineering Inc; David E. Williams, NASA Johnson Space Center</i>
2:30 p.m.	2005-01-2779	Status of the International Space Station Regenerative ECLSS Water Recovery and Oxygen Generation Systems <i>Robert Bagdigian, NASA; Dale Cloud, Hamilton Sundstrand</i>
3:00 p.m.	2005-01-2780	Integration of Regenerative ECLSS Functions In the International Space Station U.S. Laboratory Element <i>Dwight E. Link, The Boeing Company; Robyn Carrasquillo, NASA Marshall Space Flight Center</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2836	International Space Station Water Usage Analysis <i>Cynthia L. Philistine, Boeing Co.</i>
4:15 p.m.	2005-01-2838	International Space Station (ISS) Water Balance for Contingency Shuttle Crew Support (CSCS) <i>Brienne Shkedi, NASA</i>
4:45 p.m.	2005-01-2837	Performance Qualification Test of the ISS Water Processor Assembly (WPA) Expendables <i>Donald Layne Carter, David R. Tabb, NASA Marshall Space Flight Center; James T. Tabb, NASA Marshall Space Flight Center; Qualis Corporation; Richard K. Mason, Hamilton Sundstrand</i>

Monday July, 11

Mars and Beyond - Panel

Session Code: ICES43

Room Sala Colonna

Session Time: 10:00 a.m.

Organizers - Gregory K. Schmidt, NASA Ames Research Center; Marie-Christine Desjean, Centre National D'Etudes Spatiales

Panelists - Marie-Christine Desjean, Centre National D'Etudes Spatiales; Gregory K. Schmidt, NASA Ames Research Center

Time	Paper No.	Title
9:30 a.m.		BREAK

Monday July, 11

Bio-Support Hardware for Micro-Gravity Flight

Session Code: ICES37

Room Sala Colonna

Session Time: 1:30 p.m.

This session addresses all aspects of hardware and software which have flown or which are being developed to support biological payloads ranging from cells to plants to rodents. It also addresses all elements of testing during such development for both microgravity flight and accompanying ground studies.

Organizers - Bonnie P. Dalton, NASA Ames Research Center

Chairpersons - Bonnie P. Dalton, NASA Ames Research Center

Time	Paper No.	Title
1:30 p.m.	2005-01-2783	Science Evaluation Units for the Plant Research Unit and the Advanced Animal Habitat <i>Jacqueline R. Maldonado, Orbital Technologies Corp.; Mark Lee, Robert Morrow, Orbital Technologies Corporation; Javier Morell, STAR Enterprises, Inc.; Steve Guetschow, Remiker, Orbital Technologies Corporation</i>
2:00 p.m.	2005-01-2784	AAH, The Latest Development in Microgravity Animal Research <i>Jeffery T. Iverson, Mark C. Lee, Jeffery C. Emmerich, Orbital Technologies Corporation</i>
2:30 p.m.	2005-01-2785	Liquid Waste Control in Micro-G: Designing a Capillary-Wicking Liner for the Specimen Chamber of the Advanced Animal Habitat (AAH) <i>Rod W. Ginter, Javier R. Morell, STAR Enterprises, Inc.; Steven H. Collicott, Purdue</i>
3:00 p.m.	2005-01-2788	The Mars Gravity Biosatellite: Innovations in Murine Motion Analysis and Life Support <i>Thaddeus R. F. Fulford-Jones, Harvard University; Dan Ruan, University of Michigan; M. Heafitz, Tomasz B. Mloduchowski, Walker R. Chan, Katherine Hartman, Asish Chatterjee, Massachusetts Institute of Technology</i>
3:30 p.m.		BREAK

Monday July, 11

Exploration and the Human Element

Session Code: ICES52

Room Sala Farnese

Session Time: 10:00 a.m.

This session is devoted to a review of work done and/or under development to facilitate human presence in our exploration of other planets. It addresses elements ranging from infection prevention and risk to crew activities and physiological and psychological monitoring to Modeling Microgravity Conditions.

Organizers - Bonnie P. Dalton, NASA Ames Research Center; John T. James, NASA Johnson Space Center

Chairpersons - Bonnie P. Dalton, NASA Ames Research Center

Time	Paper No.	Title
9:30 a.m.		BREAK
10:00 a.m.	2005-01-2762	Space Flight Biomedical Deterioration Prevention & Correction Using Biophotonic Technology: From Postural Deficiency Syndrome to Space Adaption Syndrome <i>Philippe A. Souvestre, Clinton Landrock, NeuroKinetics Health Services (BC) Inc.</i>
10:30 a.m.	2005-01-2763	Role of Environmental Factors in Immunity and Infectious Disease Risk <i>Duane L. Pierson, NASA Johnson Space Center; Satish Mehta, Rebekah Jean Bruce, Enterprise Advisory Services, Inc.</i>
11:00 a.m.	2005-01-2764	A Robotics Systems Design Need: A Design Standard to Provide the Systems Focus that is Required for Longterm Exploration Efforts <i>H. Charles Dischinger, Jr., NASA; Jeffrey B. Mullins, NASA Marshall Space Flight Center</i>

11:30 a.m. 2005-01-2765 **Terrestrial Microgravity Model and Threshold Gravity Simulation Using Magnetic Fields**
Fred Leslie, NASA Marshall Space Flight Center; Narayanan Ramachandran, BAE Analytical Solutions Inc.

Monday July, 11

The Astronaut as Subsystem

Session Code: ICES50

Room Sala Farnese

Session Time: 1:30 p.m.

The space exploration initiative and the implementation roadmap that is emerging from NASA's studies invite us to consider human and engineered systems as cooperative or alternative, sometimes interchangeable, elements of a total system of systems that we seek to optimize. This requires the consideration of human factors from new as well as traditional perspectives. We must be concerned not only with the human as payload and operator, but also as a multi-functional subsystem to be applied creatively in system and mission design and evaluated against other possibilities in trade studies.

Organizers - Edward W. Hodgson, Hamilton Sundstrand Power Systems; Sudhakar Rajulu, National Space Biomedical Research Inst.; Donna M. Rodman, Our Designs Inc.

Chairpersons - Edward W. Hodgson, Hamilton Sundstrand; Sudhakar Rajulu, National Space Biomedical Research Inst.; Donna M. Rodman, Our Designs Inc.

Time	Paper No.	Title
1:30 p.m.	2005-01-2789	Future Space Bioinstrumentation Systems <i>Scott Cupples, Brian Johnson, NASA</i>
2:00 p.m.	2005-01-2792	Habit Lunar Crew Size, Skill Mix and Time Model <i>Marilyn Dudley-Rowley, Thomas Gangale, OPS Alaska; Lawrence C Lemke, Marc ... NASA Ames Research Center</i>
2:30 p.m.	2005-01-2793	The Benefits of Using Aromatics in Space <i>Donna M. Rodman, Our Designs Inc.</i>
3:30 p.m.		BREAK

Monday July, 11

ECLSS Modeling and Test Correlations I

Session Code: ICES13A

Room Sala Ludovisi

Session Time: 10:00 a.m.

This session reports on applications of and advances in modeling physico-chemical and bio-chemical life support processes as well as in modeling atmospheric pressure and composition distributions in closed habitats

Organizers - Chang H. Son, Thomas J. Slavin, Boeing Co.

Chairpersons - Robert W. Goalwin, Ching-Fen Tsai, Boeing Co.

Time	Paper No.	Title
9:30 a.m.		BREAK
10:00 a.m.	2005-01-2766	Space Laboratory on a Tabletop - A Next Generation ECLSS Design and Diagnostic Tool <i>Narayanan Ramachandran, BAE Systems Analytical Solutions Inc.; Jay L. Perry, N... Marshall Space Flight Center</i>

- 10:30 a.m. 2005-01-2767 **Phases Management for Advanced Life Support Processes**
Fir Eckhard, Jos A.J. Brunink, Bouke Tuinstra, Stork Product Engineering; Jan Wille, Nick Ten Asbroek, TNO Science and Industry; Tijn Backx, Armand Klaassen, Stirling Cryogenics & Refrigeration; Geoffrey C.R. Waters, Michael Stasiak, Michael A. Dixon, University of Guelph; Luis Ordonez-Inda, ESA/ESTEC
- 11:00 a.m. 2005-01-2768 **Analysis of the Effect of Age on Shuttle Orbiter Lithium Hydroxide Canister Performance**
Peter L Mccloud, Boeing Co; Brian R. Dunaway, Boeing Co.; John C. Graf, Curtis A Stephenson, NASA Johnson Space Center

Monday July, 11

ECLSS Modeling and Test Correlations II

Session Code: ICES13B

Room Sala Ludovisi

Session Time: 1:30 p.m.

This session reports on applications of and advances in modeling physico-chemical and bio-chemical life support processes as well as in modeling atmospheric pressure and composition distributions in closed habitats

Organizers - Thomas J. Slavin, Chang H. Son, Boeing Co.

Chairpersons - Robert W. Goalwin, Ching-Fen Tsai, Boeing Co.

Time	Paper No.	Title
1:30 p.m.	2005-01-2794	Integrated Computational Fluid Dynamics Ventilation Model for the International Space Station <i>Chang H. Son, Boeing; Evgueni M. Smirnov, Nikolay G. Ivanov, Denis S. Telnov, St. Petersburg State Polytechnic Univ.</i>
2:00 p.m.	2005-01-2795	Integrated Computational Fluid Dynamics Carbon Dioxide Concentration Study for the International Space Station <i>Chang H. Son, Edward H. Turner, Boeing; Evgueni M. Smirnov, Nikolay G. Ivanov, Telnov, St. Petersburg State Polytechnic Univ.</i>
2:30 p.m.	2005-01-2796	Improving the Columbus Integrated Overall Thermal Mathematical Model (IOTMM) Using Computational Fluid Dynamics (CFD) <i>Alexander Rodriguez, AOES ESA / ESTEC; Jan Persson, Johannes Witt, ESA / ESTEC, VACCANEO, Alenia Spazio</i>
3:00 p.m.	2005-01-2797	Computational Fluid Dynamic Analysis of Air Flow in Node 1 of the International Space Station <i>Darrah Ann Speiser, David Pines, Univ. of Hartford; Chang H. Son, Boeing</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2798	Node 1 with Advanced Resistive Exercise Device Computational Fluid Dynamics Modeling <i>Chang H. Son, The Boeing Company; Evgueni M. Smirnov, Nikolay G. Ivanov, Denis S. Telnov, St. Petersburg State Polytechnic Univ.</i>
4:15 p.m.	2005-01-2799	Analysis of Carbon Dioxide Concentration in the Shuttle Orbiter Middeck for the Launch on Need (LON) Mission <i>Chang H. Son, Brian R. Dunaway, Boeing; Evgueni M. Smirnov, Nikolay G. Ivanov, Telnov, St. Petersburg State Polytechnic Univ.</i>

4:45 p.m. 2005-01-2801 **Centrifuge Accommodation Module (CAM) Cabin Air Temperature and Humidity Control Analysis**

Ching-fen Tsai, Henry Castro, Steve Iwohara, The Boeing Company; Takeshi Kamiyama, Aerospace Exploration Agency (JAXA); Sadamu Ito, Terumasa Kohama, Ryoichi Kato, Mitsubishi Heavy Industries, Ltd.

Monday July, 11

Advances in Biomass Production

Session Code: ICES51

Room Sala Odescalchi

Session Time: 10:00 a.m.

Higher plants will play a very critical role in any bioregenerative life support. Papers in this session will focus not only on biomass production but related issues including a new approach to quantify glucose/starch in plants, nutrient solution issues, volatile and organic compounds in the environment, and plant responses to environmental factors.

Organizers - Desmond G. Mortley, Tuskegee Univ.

Chairpersons - Desmond G. Mortley, Tuskegee Univ.

Time	Paper No.	Title
9:30 a.m.		BREAK
10:00 a.m.	2005-01-2770	Scallion (<i>Allium fistulosum</i> L.) Pungency Regulated by Genetic Makeup and Environmental Conditions (Light and CO₂) <i>Lanfang H. Levine, Jan Bauer, Sharon Edney, Jeffrey Richards, Neil Yorio, Dynamac Corporation; Ray Wheeler, NASA</i>
10:30 a.m.	2005-01-2771	Volatile Organic Compound Analysis (VOCA): A System for Evaluating Atmospheric Contaminants on Plant Growth <i>Gary W. Stutte, Phil W. Fowler, Ignacio Eraso, Larry Koss, Dynamac Corp.</i>
11:00 a.m.	2005-01-2772	Potential Effects of Biogenic Compound on Human Health in Closed Life Support Systems <i>E. Paul Larrat, Univ. of Rhode Island; Gary W. Stutte, Dynamac Corp.; Raymond M. Wheeler, NASA Kennedy Space Center</i>
11:30 a.m.	2005-01-2773	Critical Aspects of Starch Determination in Plant Tissues and a New Approach Utilizing HPAEC/PAD for the Quantification of Starch-Derived Glucose <i>Lanfang H. Levine, Jan Bauer, Dynamac Corporation; Howard G. Levine, NASA Kennedy Space Center</i>
12:00 p.m.	2005-01-2774	Characterization of Nutrient Solution Changes During Flow Through Media <i>Joey M. Norikane, University of Kentucky; John C Sager, Raymond M Wheeler, NASA Kennedy Space Center; Gary W Stutte, Dynamac Corp; Hyeon-Hye Kim, NASA Kennedy Space Center</i>

Monday July, 11

Physico-Chemical Life Support: Air and Water

Session Code: ICES08B

Room Sala Odescalchi

Session Time: 1:30 p.m.

This session covers technology developments in the frame of water regeneration, human waste recycling, air renewal and air cleaning applying physico-chemical processes.

Organizers - Willigert Raatschen, EADS Space Transportation

Chairpersons - Leonid S. Bobe, NIICHIMMASH; Willigert Raatschen, EADS Space Transportation; Gijsbert B T Tan, ESA

Time	Paper No.	Title
1:30 p.m.	2005-01-2803	Offnormal Situations of the Electron-VM Oxygen Generation System Operation Aboard International Space Station <i>Edward A. Kurmazenko, Nikolaiy M. Samsonov, Lev I. Gavrilov, Nikolay S. Farafonov, Belavencev, Nadegda V. Pavlova, Vladimir J. Proshkin, NIICHIMMASH; Sergey Ju. Aleksander G. Geleznyakov, Aleksander M. Rjabkin, Gennady A. Lyubimov, Oleg V. RSC "Energija"</i>
2:00 p.m.	2005-01-2809	The FAE Electrolyser Flight Experiment FAVORITE: Final Design and Pre-flight Ground Test Results <i>Wolfram Knorr, EADS Space Transportation GmbH; Gijsbert Tan, ESA; Johannes W. Bérengère Houdou, ESA/ESTEC</i>
2:30 p.m.	2005-01-2807	Design Status of ARES Closed-Loop Air Revitalization System for Accommodation on the ISS <i>Willigert Raatschen, EADS Space Transportation GmbH; Gijsbert Tan, Johannes W. Berengere Houdou, ESA / ESTEC</i>
3:00 p.m.	2005-01-2810	Air and Water System (AWS) Design and Technology Selection for the Vision for Space Exploration <i>Harry W. Jones, Mark Kliss, NASA Ames Research Center</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2808	ECLSS Study for a European SpaceHaven <i>Matteo Lamantea, Cesare Lobascio, Alenia Spazio; Klaus Bockstahler, EADS Space Transportation GmbH; Scott Hovland, European Space Agency</i>
4:15 p.m.	2005-01-2804	Offgassing Characterization of the Columbus Laboratory Module <i>Riccardo Rampini, Cesare Lobascio, Alenia Spazio; Jay L. Perry, NASA Marshall Space Center; Stephan Hinderer, EADS Space Transportation GmbH</i>
4:45 p.m.	2005-01-2811	Applicability to Life Support and ISRU Systems of Technologies Developed by AIR LIQUIDE for Aeronautics and Submarines <i>Jerome Guichard, Jean-Michel Cazenave, Jean-Marie Gaillard, Pierre Crespi, Air LIQUIDE</i>

Monday July, 11

Biomass Production

Session Code: ICES35

Room Sala Pamphili

Session Time: 1:30 p.m.

Biomass Production addresses important issues of systems analysis and environmental and cultural conditions on growth, yield, composition, and food quality for a number of ALS candidate crop species including salad crops, sweetpotato, peanut, and others. Diet and human nutritional requirements are considered in modeling ALS cropping requirements

Organizers - Cary A. Mitchell, Purdue Univ.

Chairpersons - Cary A. Mitchell, Purdue Univ.

Time	Paper No.	Title
1:30 p.m.	2005-01-2813	Global Estimates of the Photosynthetically Active Radiation at the Mars Surface <i>James Clawson, Alexander Hoehn, University of Colorado</i>

2:00 p.m.	2005-01-2815	Determining Optimum Planting Schedule Using Diet Optimization and Advanced Crop Scheduling Models <i>Selen Aydogan, Seza Orcun, Gary Blau, Joseph Pekny, Gintaras Reklaitis, Purdue</i>
2:30 p.m.	2005-01-2816	Effects of Root-Zone Volume, Vine Pruning, and Season on Yield, Proximate Composition, and Antioxidant Capacity of Sweetpotato (<i>Ipomea batatas</i> (Lam.) L. TU-82-155) <i>Gioia D. Massa, Mercedes E. Mick, Purdue University; Ilan Weiss, FMCTI; Jill A. Moore, Cornell University; Lisa J. Mauer, Purdue University; Desmond G. Mortley, Tuskegee University; Cary A. Mitchell, Purdue University</i>
3:00 p.m.	2005-01-2817	A Crop Selection Algorithm for Closed Loop Food Systems <i>X. Vanrobaeys, D. Hagenbeek, D. Van der Straeten, L. Chaerle, Ghent University; J. Albaigès, NTE S.A.; S. Hovland, European Space Agency</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2819	Matching Between Food Supply and Human Nutritional Requirements in an Earth-Based Advanced Life Support System (ALSS) Test Bed <i>Tsuyoshi Masuda, Yasuhiro Tako, Keiji Nitta, Institute for Environmental Sciences</i>
4:15 p.m.	2005-01-2820	Effect of Light Intensity and Temperature on Yield of Salad Crops for Space Exploration <i>Jeffrey T. Richards, Sharon L. Edney, Neil C. Yorio, Gary W. Stutte, Dynamac Corp; D Sisko, Nathan Cranston, Dynamac Corp; Raymond M. Wheeler, NASA Biological</i>
4:45 p.m.	2005-01-2822	Chive Growth in Biologically Treated Early Planetary Base Wastewater <i>Bala Vairavan, Texas Tech Univ; Audra Nicole Morse, W. Andrew Jackson, Cary G. Tech. University</i>
5:15 p.m.	2005-01-2823	Application of Non-Rectangular Hyperbola Model to the Lettuce and Beet Crops <i>Mathieu Favreau, Universite Blaise Pascal; Alexander Rodriguez, ESA-ESTEC; Luis TEC-MCT; Geoffrey Waters, University of Guelph</i>
5:45 p.m.	2005-01-2824	Design Approach and Implementation of a Mars Surface Food Production Unit <i>E.G.O.N. Janssen, TNO Built Environmental and Geosciences; T.C. Tse, TNO Built Environment and Geosciences; J.L. Mas, NTE S.A.; J. Elvira, NTE SA; S. Hovland, Space Agency</i>

Monday July, 11

Physico-Chemical Life Support: Air and Water

Session Code: ICES08A

Room Sala Rospigliosi

Session Time: 10:00 a.m.

This session covers technology developments in the frame of water regeneration, human waste recycling, air renewal and air cleaning applying physico-chemical processes.

Organizers - Willigert Raatschen, EADS Space Transportation GmbH

Chairpersons - Willigert Raatschen, EADS Space Transportation GmbH; Leonid S. Bobe, NIICHIMMASH; Gijsbert Tan, ESA

Time	Paper No.	Title
9:30 a.m.		BREAK

10:00 a.m.	2005-01-2812	Conceptual Design of a Condensing Heat Exchanger for Space Systems Using Porous Media <i>Mohammad M. Hasan, NASA John Glenn Research Center; Lutful Khan, Cleveland University; Vedha Nayagam, Ramaswamy Balasubramaniam, National Center for Manufacturing Research</i>
10:30 a.m.	2005-01-2806	Water Supply of the Crew of a Space Station Through Water Recovery and Water Delivery: SRV-K and SPK-U System Operation on ISS <i>Leonid Bobe, Nikolay Samsonov, Nikolay Farafonov, Victor Soloukhin, NIICHIMMA Romanov, Peter Andrejchuk, RSC "Energia"; Jury Synjak, IMBP</i>
11:00 a.m.	2005-01-2802	Reverse Osmosis Filtration for Ersatz Space Mission Wastewaters <i>Yeomin Yoon, Richard M. Lueptow, Northwestern University</i>
11:30 a.m.	2005-01-2805	Advanced Stainless Steel Condensing Heat Exchanger <i>Klaus Bockstahler, Helmut Westermann, EADS Space Transportation GmbH; Johanna European Space Agency</i>

Monday July, 11

Interplanetary Spacecraft and Lunar/ Planetary Thermal Control

Session Code: ICES02

Room Sala Rospigliosi

Session Time: 1:30 p.m.

This session describes advances in the thermal control for interplanetary spacecraft. Passive and active thermal control technologies are used in a variety of orbiting and surface vehicles in the exploration of the planets, the Moon and interplanetary space. New thermal control technologies such as louvres, heat pipes, thermal control paints and integrated thermal control structures are discussed for these missions.

Organizers - Paul M. McElroy, MS&E Inc.; Gaj Birur, Jet Propulsion Laboratory

Chairpersons - Gaj Birur, Jet Propulsion Laboratory; Paul M. McElroy, MS&E Inc.

Time	Paper No.	Title
1:30 p.m.	2005-01-2826	Thermal Design Considerations for a Mars Rover <i>Andrew Robson, Elizabeth Seward, EADS Astrium, Ltd.</i>
2:00 p.m.	2005-01-2827	Mars Exploration Rover Surface Mission Flight Thermal Performance <i>Keith S. Novak, Eric T. Sunada, Charles J. Phillips, Gary M. Kinsella, Jet Propulsion Laboratory</i>
2:30 p.m.	2005-01-2828	Mars Science Laboratory Thermal Control Architecture <i>Pradeep Bhandari, Gajanana C. Birur, Michael Pauken, Anthony D. Paris, Keith Novak, Prina, Brenda Ramirez, David Bame, Jet Propulsion Laboratory</i>
3:30 p.m.		BREAK

Monday July, 11

Lightweight Space Structures and In-Situ Resource Utilization for Exploration

Session Code: ICES29

Room Sala Rospigliosi

Session Time: 3:45 p.m.

This session will address the efficient use of available in-situ resources as well as the application of reduced mass stowable/deployable structures to space and planetary exploration. Environmental robustness, effective storage, and the use/transformation of native resources will be considered as integral parts of these technologies that can range from materials and components to full-scale structures.

Organizers - Richard G. Helms, Jet Propulsion Laboratory

Chairpersons - Gregory L. Davis, Richard G. Helms, Jet Propulsion Laboratory

Time	Paper No.	Title
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9:30 a.m.		BREAK
3:45 p.m.	2005-01-2775	Stress-Accelerated Photodegradation of Space-Rated Flexible Transparent Films Exposed to Mars Surface UV <i>James Clawson, Alexander Hoehn, University of Colorado</i>
4:15 p.m.	2005-01-2776	In Situ Production of High Density Polyethylene and Other Useful Materials on Mars <i>Michael Flynn, NASA Ames Research Center</i>

Tuesday July, 12

Radiation Issues for Spaceflight

Session Code: ICES45

Room Sala Aldobrandini

Session Time: 8:00 a.m.

This session will include important radiation issue topics for the moon, Mars, and Jupiter. Additional topics will include solar particle events, passive shielding materials, and spacesuit shielding components.

Organizers - Bill Atwell, Boeing Co.; Lawrence W. Townsend, Univ. of Tennessee-Knoxville

Chairpersons - Bill Atwell, Boeing Co.; Lawrence W. Townsend, Univ. of Tennessee-Knoxville

Time	Paper No.	Title
8:00 a.m.	2005-01-2830	Sensitivity of Solar Energetic Particle Event Doses to Spectral Hardness <i>Christina Erin Campbell, Thomas M. Miller, Theodore F. Nichols, John R. Edwards, Moussa, Lawrence W. Townsend, The University of Tennessee</i>
8:30 a.m.	2005-01-2831	A Time Dependent Model for the Lunar Radiation Environment <i>Giovanni De Angelis, Old Dominion University</i>
9:00 a.m.	2005-01-2832	Radiation Environment Modeling for the Planet Mars <i>G. De Angelis, NASA Langley Research Center; F.F. Badavi, Christopher Newport University; Blattnig, M.S. Cloudsley, G.D. Qualls, R.C. Singleterry, J.W. Wilson, NASA Langley Research Center</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2833	Nuclear Radiation Fields on the Mars Surface: Risk Analysis for Long-term Living Environment <i>Brooke M. Anderson, Martha S. Cloudsley, Garry Qualls, NASA Langley Research Center; John E. Nealy, Old Dominion University</i>
10:15 a.m.	2005-01-2834	Parametric Shielding Strategies for Jupiter Magnetospheric Missions <i>Bill Atwell, Bill Bartholet, Brandon Reddell, The Boeing Company; John Nealy, Old Dominion University; Martha Cloudsley, Brooke M. Anderson, NASA Langley Research Center; Thomas M. Miller, Lawrence W. Townsend, University of Tennessee</i>
10:45 a.m.	2005-01-2835	Radiation Passive Shield Analysis and Design for Space Applications <i>Horia Mihail Teodorescu, National College "C. Negruzzi" Iasi; Al Globus, NASA Ames Research Center</i>

Tuesday July, 12

Spacecraft Water/Air Quality: Maintenance and Monitoring I

Session Code: ICES32A

Room Sala Aldobrandini

Session Time: 1:30 p.m.

This session focuses primarily on recent developments in spacecraft water quality monitoring technology. Also included are papers on the results of in-flight microbial and ground-based chemical water quality analyses for ISS.

Organizers - John R. Schultz, John E. Straub, Wyle Laboratories

Chairpersons - John R. Schultz, John E. Straub, Wyle Laboratories

Time	Paper No.	Title
1:30 p.m.	2005-01-2885	Chemical Analysis of ISS Potable Water from Expeditions 8 and 9 <i>John E. Straub II, Debrah K. Plumlee, John R. Schultz, Wyle Laboratories</i>
2:00 p.m.	2005-01-2886	Microbial Surveillance of Potable Water Sources of the International Space Station <i>Rebekah Jean Bruce, Enterprise Advisory Services Inc. c/o Wyle Laboratories; C. M. Enterprise Advisory Services, Inc. c/o Wyle Laboratories; Vladimir M. Skuratov, Institute of Biomedical Problems; Duane L. Pierson, NASA Johnson Space Center</i>
2:30 p.m.	2005-01-2888	Diamond Thin-Film Electrodes for Monitoring Heavy Metal Ions in Water Supplies Using Anodic Stripping Voltammetry <i>Elizabeth A McGraw, Greg Swain, Prerna Sonthalia, Michigan State University</i>
3:00 p.m.	2005-01-2889	Trace Level Determination of Lead (II) in Water by Colorimetric-Solid Phase Extraction <i>Neil C. Dias, James S. Fritz, Marc D. Porter, Iowa State University</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2890	Detection of Cadmium (II) in Water Using Colorimetric-Solid Phase Extraction <i>Chien-Ju Shih, Neil C Dias, Marc D. Porter, Iowa State University</i>
4:15 p.m.	2005-01-2891	Development of Streamlined Methods for Integration into Multiplexed Colorimetric Solid Phase Extraction (MC-SPE) Analysis of Spacecraft Water <i>John Nordling, Robert J. Lipert, Marc D. Porter, Iowa State University; Daniel B. G. Wyle Laboratories</i>

Tuesday July, 12

Thermal Control Technology

Session Code: ICES07

Room Sala Borghese

Session Time: 8:00 a.m.

This session addresses advanced technologies and development activities pertaining to heat acquisition, transport, rejection and storage as well as cryogenic cooling and thermal protection systems for spacecraft and space vehicles.

Organizers - Burkhard Behrens, EADS Space Transportation GmbH; Jeffery T. Farmer, NASA Marshall Space Flight Center; Heiko Ritter, ESA

Chairpersons - Burkhard Behrens, EADS Space Transportation GmbH; Jeffery T. Farmer, NASA Marshall Space Flight Center; Wes Ousley, NASA Goddard Space Flight Center; Heiko Ritter, ESA

Time	Paper No.	Title
8:00 a.m.	2005-01-2899	Screening Tests on Cryogenic Insulations for Reusable Launchers <i>Angelo Denaro, ALENIA SPAZIO; Heiko Ritter, ESA/ESTEC; Brach Prever Elena, M. Nebiolo, ALENIA SPAZIO</i>
8:30 a.m.	2005-01-2900	Expert Thermal Management Architecture and Aerothermal Aspects <i>Angelo Denaro, Brach Prever Elena, Cosimo Chiarelli, Massimo Antonacci, ALENIA SPAZIO</i>

9:00 a.m.	2005-01-2904	Trade-Off Study of Heat Rejection Systems for Two-Stage Stirling Cooler <i>Masao Furukawa, Japan Aerospace Exploration Agency</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2902	The Refrigerator/Freezer Rack (RFR) <i>M.P. Hess, J. Winter, B. Hummelsberger, EADS Space Transportation; P. di Palermo, ESTEC</i>
10:15 a.m.	2005-01-2903	A -180°C Cryogenic Freezer for the International Space Station <i>Christophe Aubry, Air Liquide</i>
10:45 a.m.	2005-01-2901	Smart Thermal Protection Systems <i>Karl Keller, HPS GmbH (Munich Office); Ernst K. Pfeiffer, HPS GmbH; Paolo Gaudenzi, Lampani, University of Roma "La Sapienza"; Thomas Ullmann, DLR German Aerospace Center Stuttgart; Heiko Ritter, ESA/ESTEC</i>
11:15 a.m.	2005-01-2905	The Use of Room Temperature Plasma to Produce and Enhance Engineered Fluid-Handling Surfaces <i>Matthew J. Mischnick, Jay J. Maas, Orbital Technologies Corporation; Ferencz S. D. Yonghui Ma, UW-Madison Center for Plasma Aided Manufacturing</i>
11:45 a.m.	2005-01-2906	Thin-film Smart Radiator Tiles with Dynamically Tuneable Thermal Emittance <i>Roman Volodymyr Kruzelecky, MPB Communications Inc.; Emile Haddad, MPB Technologies Inc.; Wes Jamroz, MPB Communications Inc.; Mohamed Soltani, Mohammed Chakir, Énergie et Matériaux; Giovanni Colangelo, European Space Agency</i>

Tuesday July, 12

International Space Station Systems ECLSS: Air II

Session Code: ICES25B

Room Sala Borghese

Session Time: 1:30 p.m.

Papers cover ISS carbon dioxide removal, major constituent analysis, cabin leakage, manual oxygen management, airlock depressurization, atmosphere contamination, cabin thermal control and a resource summary. EVA oxygen and nitrogen usage, recharging airlock oxygen and nitrogen tanks and gas usage analyses are also described in this session.

Organizers - Patricia O'Donnell, Hamilton Sundstrand Power Systems; Richard P. Reysa, Muniz Engineering Inc.

Chairpersons - Gregory J. Gentry, Boeing Co.

Time	Paper No.	Title
1:30 p.m.	2005-01-2892	International Space Station Carbon Dioxide Removal Assembly (ISS CDRA) Concepts and Advancements <i>Dina Elsherif, Honeywell Aerospace; James C. Knox, NASA Marshall Space Flight Center</i>
2:00 p.m.	2005-01-2893	Accuracy Assessment of the Major Constituent Analyzer <i>George Steiner, Richard W. McHard, Hamilton Sundstrand; Richard P. Reysa, Muniz Engineering, Inc.; John Granahan, The Boeing Company</i>
2:30 p.m.	2005-01-2894	International Space Station (ISS) Cabin Air Loss Event <i>Elias Gonzalez, Daniel J. Leonard, Boeing NASA Systems Division</i>
3:00 p.m.	2005-01-2895	International Space Station (ISS) Environmental Controls & Life Support System (ECLSS) Manual Oxygen Management <i>John F. Lewis, NASA; John E. Granahan, Matt Russell, John Lumpkin, Boeing</i>
3:30 p.m.		BREAK

3:45 p.m.	2005-01-2896	International Space Station (ISS) Nitrogen and Oxygen Logistics: Predictions Verses Actuals <i>Daniel J. Leonard, The Boeing Company</i>
4:15 p.m.	2005-01-2897	International Space Station (ISS) Extravehicular Activity (EVA) Gas Usage <i>Ryan N. Schaezler, Muniz Engineering Inc.; Daniel J. Leonard, Saniel Suri, The Boeing Company</i>

Tuesday July, 12

Plant Flight Hardware: Technologies and Research I

Session Code: ICES38A

Room Sala Colonna

Session Time: 8:00 a.m.

The session will cover topics in research and technology development needed for plant hardware systems to support planetary exploration, including habitation and life support applications and exploration biology support. The session will also include the plant flight hardware systems needed for manned and unmanned exploration systems.

Organizers - Cynthia M. Martin-Brennan, Bionetics Corp.; Robert C. Morrow, Orbital Technologies Corp.

Chairpersons - Cynthia M. Martin-Brennan, Bionetics Corp.; Robert C. Morrow, Orbital Technologies Corp.

Time	Paper No.	Title
8:00 a.m.	2005-01-2840	Advanced ASTROCULTURE Plant Growth Unit: Capabilities and Performances <i>Weijia Zhou, Univ. of Wisconsin-Madison; Tom Corbin, Pioneer Hi-Bred, International DuPont</i>
8:30 a.m.	2005-01-2841	Testing the European Modular Cultivation System (EMCS) for ISS Plant and Cell Research <i>Knut Robert Fossum, Ann-Iren Kittang, Tor-Henning Iversen, NTNU; Enno Brinckmann Schiller, ESA / ESTEC</i>
9:00 a.m.	2005-01-2842	Development and Operation of a Space-Oriented Salad Machine "Phytoconveyer" <i>Yuliy A. Berkovich, Nicolay M. Krivobok, Svetlana O. Smolianina, Alexey N. Erokhin, Biomedical Problems; Howard G. Levine, NASA Kennedy Space Center</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2843	A Low Equivalent System Mass Plant Growth Unit for Space Exploration <i>R.C. Morrow, R.W. Remiker, M.J. Mischnick, L.K. Tuominen, Orbital Technologies Corp; M.C. Lee, Orbital Technologies Corp; T.M. Crabb, Orbital Technologies Corporation</i>
10:15 a.m.	2005-01-2844	The Performance of a Miniature Plant Cultivation System Designed for Space Flight Application <i>Anthony G. Heyenga, Mark Kliss, NASA Ames Research Center; Cameron Blackford, Bioengineering Technologies</i>
10:45 a.m.	2005-01-2845	Temperature and Humidity Control Capabilities and Limitations of a Spaceflight Plant Growth Chamber <i>Alex Hoehn, James Clawson, Jake Freeman, Colleen Higgins, Chris Madsen, Louisville University of Colorado</i>
11:15 a.m.	2005-01-2846	Inflatable Transparent Structures for Mars Greenhouse Applications <i>James Clawson, Alexander Hoehn, University of Colorado; Raymond M Wheeler, NASA Kennedy Space Center</i>

11:45 a.m. 2005-01-2955 **Development of a Reconfigurable LED Plant-Growth Lighting System for Equivalent System Mass Reduction in an ALS**

Gioia D. Massa, Cary A. Mitchell, Purdue University; Jeffery C. Emmerich, Robert C. Orbital Technologies Corporation

Tuesday July, 12

Research and Analysis

Session Code: ICES42

Room Sala Farnese

Session Time: 8:00 a.m.

This session focuses on research and analysis of work done as well as on preparatory studies, developing design tools for AeroSpace Architecture. Projects include parametric design studies on habitat configurations, analogue habitats and cover problems of inflatable structures.

Organizers - Andreas Vogler, Architecture and Vision

Chairpersons - Annalisa Dominoni, Facoltà del Design

Time	Paper No.	Title
8:00 a.m.	2005-01-2847	Variants on the TransHab Paradigm (2): The Surface Endoskeletal Inflatable Module (SEIM) <i>Constance Adams, Futron; Georgi Petrov, Laguarda Low Architects</i>
8:30 a.m.	2005-01-2850	[Interior] Configuration Options, Habitability and Architectural Aspects for ESA's AURORA Human Mission to Mars Study <i>Barbara Imhof, Liquifier</i>
9:00 a.m.	2005-01-2853	A Permanent Settlement on Mars: The Architecture of the Mars Homestead Project <i>Georgi Petrov, Laguarda.Low Architects; Bruce Mackenzie, Mark Homnick, Mars Fc Joseph E. Palaia, Massachusetts Institute of Technology</i>
9:30 a.m.		BREAK

Tuesday July, 12

Theory and Principles

Session Code: ICES40

Room Sala Farnese

Session Time: 1:30 p.m.

This session covers theoretical approaches to AeroSpace Architecture and design principles and strategies. It encompasses a broad range from space colonisation to space urban design principles to space habitat design principles and morphologic studies.

Organizers - Andreas Vogler, Architecture and Vision

Chairpersons - Annalisa Dominoni, Facoltà del Design

Time	Paper No.	Title
1:30 p.m.	2005-01-2907	Impacts of System Decisions at the Life Support, EVA, and Habitability Interfaces <i>Molly Anderson, Gretchen Thomas, Joe Chambliss, NASA Johnson Space Center; Conger, Hamilton Sundstrand</i>
2:00 p.m.	2005-01-2909	Autonomous Architecture: Summit Station in Greenland Design Proposal as a Test-Bed for Future Planetary Exploration <i>Olga Bannova, University of Houston; Antje Landschulz, Ian F.C. Smith, Ecole Poly Fédérale de Lausanne</i>

2:30 p.m.	2005-01-2911	Cassette Factories and Robotic Bricks: A Roadmap for Establishing Deep Space Infrastructures <i>A. Scott Howe, Plug in Creations</i>
3:00 p.m.	2005-01-2912	Sensory Deprivation - a Challenge for Space Architecture? <i>Jesper Jorgensen, SpaceArch</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2914	Lunar Architecture and Urbanism, 2nd ed. <i>Brent Sherwood, Jet Propulsion Laboratory</i>

Tuesday July, 12

Thermal and Environmental Control Simulation Software I

Session Code: ICES05A

Room Sala Ludovisi

Session Time: 8:00 a.m.

Advances in analytical modeling have been achieved as a result of enhancements in existing software, new methodologies and algorithms, software integration and improvements in data exchange and standards.

Organizers - Olivier Pin, European Space Agency; William Ducas, Orbital Sciences Corp.; Nicholas M. Teti, Swales Aerospace; Julian S. Thomas, Alstom Power, Ltd.

Chairpersons - William Ducas, Orbital Sciences Corp.; Julian S. Thomas, Alstom Power, Ltd.

Time	Paper No.	Title
8:00 a.m.	2005-01-2855	Thermal Test Correlation with Stochastic Technique <i>Vincenzo Mareschi, Valter Perotto, Alenia Spazio; Matteo Gorlani, BLUE Engineering</i>
8:30 a.m.	2005-01-2856	Surface Recession Simulations with ESATAN/ABLAT During a Re-Entry Trajectory <i>Christian Chauvet, Engineering Solutions International, Ltd.; Henri Brouquet, ALSTOM</i>
9:00 a.m.	2005-01-2857	Aerothermal/Ablation Analysis of a Projectile in High Speed Flow Conditions <i>Christian Ruel, Maya Heat Transfer Technologies, Ltd.; Nicolas Hamel, Francois Le DRDC Valcartier</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2858	Combining CFD and 1-D Duct Flow Models for Heat Transfer Simulation <i>Christopher Pye, Vincent De Henau, Maya Heat Transfer Technologies, Ltd.</i>
10:15 a.m.	2005-01-2859	Simulation of ESA's MSL Furnace Inserts and Sample-Cartridge Assemblies: Model Development and Correlation with Experimental Data <i>Johannes Dagner, Marc Hainke, Jochen Friedrich, Fraunhofer Institute IISB</i>
10:45 a.m.	2005-01-2860	Simulation Model of the Air Revitalisation System for ISS <i>Raul Avezuela Rodriguez, IBERESPACIO; Helmut Funke, EADS Space Transportation; Johannes Witt, ESA/ESTEC</i>
11:15 a.m.	2005-01-2861	Trace Contaminant Dynamics Simulation Model for TCRS Design Concept <i>Edward A. Kurmazenko, Nikolay M. Samsonov, Lev I. Gavrilov, Nikolay S. Farafonov, Dokunin, Tatjana N. Pavlova, Jury I. Shumyatsky, NIICHIMMASH</i>

Tuesday July, 12

Advanced Life Support Systems Control Application and Integration

Session Code: ICES15

1:30 p.m.

Room Sala Ludovisi

Session Time:

This session includes advanced life support system and subsystem control topics such as: control theory and its application; autonomous control; integrated system control; control software; and modeling, simulation and emulation for control development.

Organizers - Thomas J. Slavin, Kimberly Curry, Boeing Co.

Chairpersons - James M. Crawford, NASA Ames Research Center; David Kortenkamp, Metrica Inc.

Time	Paper No.	Title
1:30 p.m.	2005-01-2961	Planner-Based Control of Advanced Life Support Systems <i>Nicola Muscettola, NASA Ames Research Center; David Kortenkamp, Metrica Inc.; QSS Group Inc; Scott Bell, S&K Technologies</i>
2:00 p.m.	2005-01-2962	Multi-Scale Modeling of Advanced Life Support Systems <i>Eric-Jan Manders, Vanderbilt University; Scott Bell, S&K Technologies; Gautam Biswas, Vanderbilt University; David Kortenkamp, Metrica Inc.</i>
2:30 p.m.	2005-01-2963	Modeling and Control Studies of an Integrated Biological Wastewater Treatment System <i>Xi Zhang, Karlene A. Hoo, Texas Tech. Univ.; David Overland, NASA Johnson Space Center</i>
3:00 p.m.	2005-01-2964	A Dynamically Reconfigurable Software Control Architecture for Advanced Life Support <i>Pete Bonasso, Metrica, Inc.; Cheryl Martin, Univ of Texas-Austin</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2965	Hierarchical Online Control Design for Autonomous Resource Management in Advanced Life Support Systems <i>Sherif Abdelwahed, Jian Wu, Gautam Biswas, Eric Manders, Vanderbilt University</i>
4:15 p.m.	2005-01-2966	Application of Intelligent Control to Material Circulation in Advanced Life Support Systems <i>Hiroyuki Miyajima, Tokyo Jogakkan College; Tomofumi Hiroasaki, Fujitsu Ltd.; Yoshihiro Nishida, Nihon Univ.</i>
4:45 p.m.	2005-01-2967	Aiding Supervision of Automated Life Support Systems <i>Debra Schreckenghost, Peter Bonasso, Metrica / TRAC Labs; Mary Beth Hudson, TRAC Labs; Scott Bell, S&K Technologies; Cheryl Martin, Univ of Texas-Austin</i>

Tuesday July, 12

Regenerable Life Support Processes and Systems

Session Code: ICES27

Room Sala Odescalchi

Session Time: 8:00 a.m.

This session covers development of Regenerable Life Support Processes and Systems for Spacecraft

Organizers - Loel Goldblatt, Hamilton Sundstrand Space Systems Intl.; Frederick D. Smith, NASA Johnson Space Center

Chairpersons - Loel Goldblatt, Tim A. Nalette, Hamilton Sundstrand Space Systems Intl.; Frederick D. Smith, NASA Johnson Space Center

Time	Paper No.	Title
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8:00 a.m.	2005-01-2862	Prototype Demonstration of the Advanced CO2 Removal and Reduction System <i>Gökhan O. Alptekin, Brad Hitch, Margarita Dubovik, Jeff Lind, TDA Research, Inc.; Smith, NASA</i>
8:30 a.m.	2005-01-2863	Rotary Drum Separator and Pump for the Sabatier Carbon Dioxide Reduction System <i>Karen E. Murdoch, James H. Fort, Michael R. Barone, Hamilton Sundstrand Space International, Inc.; Donald W. Holder, NASA Marshall Space Flight Center</i>
9:00 a.m.	2005-01-2864	Integrated Test and Evaluation of a 4-Bed Molecular Sieve (4BMS) Carbon Dioxide Removal System (CDRA), Mechanical Compressor Engineering Development Unit (EDU), and Sabatier Engineering Development Unit (EDU) <i>James C. Knox, NASA Marshall Space Flight Center; Melissa L. Campbell, Karen E. Hamilton Sundstrand; Lee A. Miller, Frank Jeng, JE Sverdrup</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2865	Development of an Amine-Based System for Combined Carbon Dioxide, Humidity, and Trace Contaminant Control <i>Tim Nalette, Julie Reiss, Hamilton Sundstrand; Tom Filburn, Univ. of Hartford; Eric M. Univ of Hartford; Thomas Seery, Bob Weiss, Univ. of Connecticut; Fred Smith, Jay L. NASA</i>
10:15 a.m.	2005-01-2866	Resistively-Heated Microlith-Based Adsorber for Carbon Dioxide and Trace Contaminant Removal <i>Subir Roychoudhury, Dennis Walsh, Precision Combustion Inc.; Jay L. Perry, NASA Space Flight Center</i>
10:45 a.m.	2005-01-2868	Performance Characterization of a Prototype Ultra-Short Channel Monolith Catalytic Reactor for Air Quality Control Applications <i>Jay L. Perry, Kristin M. Tomes, NASA Marshall Space Flight Center; Subir Roychoudhury, Precision Combustion, Inc.; James D. Tata, Qualis Corp.</i>
11:15 a.m.	2005-01-2869	Evaluation of Cryofreezer Technology Through Simulation and Testing <i>Molly Anderson, Su Curley, NASA Johnson Space Center</i>
11:45 a.m.	2005-01-2870	Flight Hydrogen Sensor for Use in the ISS Oxygen Generation Assembly <i>George M'Sadoques, Hamilton Sundstrand Space Systems International, Inc; Darby Makel Engineering, Inc.</i>
12:15 p.m.	2005-01-2871	Design of an On Ground Experimental Growth Unit (OGEGU) for Space Applications <i>E.G.O.N. Janssen, T.C. Tse, TNO Built Environment and Geosciences; X. Vanrobaeyen, Hagenbeek, Ghent University; L. Chaerle, University of Ghent; D. Van der Straeten, Ghent University; J.L. Mas, NTE S.A.; J. Elvira, NTE SA; S. Hovland, European Space Agency</i>

Tuesday July, 12

Food Processing

Session Code: ICES36

Room Sala Odescalchi

Session Time: 1:30 p.m.

In this session, the speakers will discuss the challenges involved in the development of a food system for a future long duration stay on the lunar or Martian surface.

Organizers - Michele Perchonok, NASA Johnson Space Center

Chairpersons - Michele Perchonok, NASA Johnson Space Center

Time	Paper No.	Title
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1:30 p.m.	2005-01-2923	Development of Antioxydant-Rich Fruit-Based Snacks as Food Space Prototype <i>Elena Vittadini, Università degli Studi di Parma; Yael Vodovotz, The Ohio State Univ Elena Curti, Università degli Studi di Parma</i>
2:00 p.m.	2005-01-2924	Hydrogen Peroxide Treatment of Vegetable Crops <i>Michele Perchonok, NSBRI; Stephen French, Lockheed Martin Corporation</i>
2:30 p.m.	2005-01-2925	Use of Irradiation as a HACCP, CCP Step for Bulk Soybeans Prior to Their Transit to Mars: Influence on Microbial Load, Functional Properties, and Yield of Soymilk and Tofu <i>Lester A. Wilson, Iowa State Univ.; Michele Perchonok, NASA Johnson Space Cen J. French, Lockheed Martin</i>
3:00 p.m.	2005-01-2926	Reheating and Sterilization Technology for Food, Waste and Water: Design and Development Considerations for Package and Enclosure <i>Soojin Jun, Brian Heskitt, Sudhir Sastry, The Ohio State University; Ritesh Mahna, J Marcy, Virginia Tech; Michele Perchonok, NASA Johnson Space Center</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2927	Bio-Regenerative Food Production and Solid Waste System for Long-Term Space Missions to Mars <i>Arthur Teixeira, Jason L. Myhre, Bruce A. Welt, Univ. of Florida</i>
4:15 p.m.	2005-01-2929	Paper Production in an Advanced Life Support System (ALSS) <i>Tsuyoshi Masuda, Yasuhiro Tako, Keiji Nitta, Institute for Environmental Sciences; T Ogasawara, ScienTec Co., Ltd.</i>

Tuesday July, 12

Advanced Life Support Sensor and Control Technology I

Session Code: ICES14A

Room Sala Pamphili

Session Time: 8:00 a.m.

The sessions on Advanced Life Support, Sensor and Control Technology include papers describing approaches to monitoring water and air in enclosed habitats, chemical sensors and sensing devices for detection of contaminants in water and air, and on systems and system concepts for environmental monitoring and control. Session 14A focuses on systems and system concepts for environmental monitoring and control and on description of research into development of chemical sensing technologies.

Organizers - Margaret A. Ryan, Darrell L. Jan, Jet Propulsion Laboratory; Timo Stuffer, Kayser-Threde GmbH; John Crawford Nelson, Indyne Inc.

Chairpersons - Darrell L. Jan, Jet Propulsion Laboratory; John Crawford Nelson, Indyne Inc.; Margaret A. Ryan, Jet Propulsion Laboratory; Timo Stuffer, Kayser-Threde GmbH

Time	Paper No.	Title
8:00 a.m.	2005-01-2872	An Environmental Sensor Technology Selection Process for Exploration <i>Paul D. Mudgett, Nigel Packham, NASA/JSC; Darrell L. Jan, Jet Propulsion Laborat</i>
8:30 a.m.	2005-01-2874	An Integrated Architecture for Advanced Environmental and Physiological Monitoring <i>Kevin K. Gifford, BioServe Space Technologies; Sebastian Kuzminsky, Shea William Bioserve Space Technologies</i>
9:00 a.m.	2005-01-2875	Intelligent Sensor, Monitoring and Control Systems Based on Nonlinear Dynamics for Spatial Environments <i>Horia-Nicolai Teodorescu, Ciprian Zamfir, Technical University of Iasi</i>
9:30 a.m.		BREAK

9:45 a.m.	2005-01-2876	<p>Preliminary Results for an Ultrasonic Gas Monitoring System</p> <p><i>Andi G. Petculescu, Northwestern University; Brian Hall, Scott Phillips, Commercial Richard M. Lueptow, Northwestern University</i></p>
10:15 a.m.	2005-01-2877	<p>Advanced Fiber-Optic Monitoring System for Space-flight Applications</p> <p><i>M.S. Hull, Luna Innovations Inc.; R.L. Van Tassell, C.D. Pennington, Luna Innovations Roman, NASA Marshall Space Flight Center</i></p>
10:45 a.m.	2005-01-2878	<p>Advanced Integrated-Optic and MNT Technologies for the Infrared Spectral Monitoring of Spacecraft Vital Life-Support Systems and Remote Astronaut Health Diagnostics</p> <p><i>Roman V. Kruzelecky, Brian Wong, Jing Zou, Wes Jamroz, MPB Communications Inc. Mohamed Soltani, Mohammed Chaker, INRS Énergie et Matériaux; Wanping Zheng Ngo-Phong, Canadian Space Agency</i></p>

Tuesday July, 12

Advanced Life Support Sensor and Control Technology II

Session Code: ICES14B

Room Sala Pamphili

Session Time: 1:30 p.m.

The sessions on Advanced Life Support, Sensor and Control Technology include papers describing approaches to monitoring water and air in enclosed habitats, sensors and sensing devices for detection of contaminants in water and air, and systems and system concepts for environmental monitoring and control. Session 14B focuses on sensors and sensing devices for detection of contaminants in water and air.

Organizers - Darrell L. Jan, Jet Propulsion Laboratory; John Crawford Nelson, Indyne Inc.; Margaret A. Ryan, Jet Propulsion Laboratory; Timo Stuffer, Kayser-Threde GmbH

Chairpersons - Margaret A. Ryan, Darrell L. Jan, Jet Propulsion Laboratory; Timo Stuffer, Kayser-Threde GmbH; John Crawford Nelson, Indyne Inc.

Time	Paper No.	Title
1:30 p.m.	2005-01-2879	<p>Electronic Nose for Toxic Vapor Detection, Identification, and Quantification</p> <p><i>B.V. Peterson, B.R. Linnell, K.B. Brooks, Artic Slope Research; T.P. Griffin, NASA</i></p>
2:00 p.m.	2005-01-2880	<p>Expanding the Analyte Set of the JPL Electronic Nose to Include Inorganic Species</p> <p><i>M.A. Ryan, M.L. Homer, H. Zhou, K. Manatt, A. Manfreda, A. Kisor, A. Shevade, S.I. Lee, Jet Propulsion Laboratory</i></p>
2:30 p.m.	2005-01-2930	<p>Detection of Smoke from Microgravity Fires</p> <p><i>David Urban, De Von Griffin, Gary Ruff, NASA Glenn Research Center; Thomas Clavin, NASA Johnson Space Center; Yang, George Mulholland, National Institute Standards & Tech.; Zeng-guang Yuan, Center for Microgravity Research</i></p>
3:00 p.m.	2005-01-2931	<p>ANITA - Preparing for Automatic Air Analyses on the ISS</p> <p><i>A. Honne, H. Odegard, H. Scumann-Olsen, SINTEF; H. Mosebach, D. Kampf, T. Stuffer, Kayser-Threde GmbH; G. Tan, ESA</i></p>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2932	<p>Q-PCR Based Bioburden Assessment of Drinking Water Throughout Treatment and Delivery to the International Space Station</p> <p><i>David Newcombe, Tara Stuecker, Myron La Duc, Kasthuri Venkateswaran, Jet Propulsion Laboratory</i></p>

4:15 p.m. 2005-01-2933 **Implications of the VBNC State of B. Cepacia and S. Maltophilia on Bioreduction and Microbial Monitoring of ISS Potable Waters**

Tara Stuecker, David Newcombe, Eva Murdock, Jet Propulsion Laboratory; Randall The Bionetics Corp.; Kasthuri Venkateswaran, Jet Propulsion Laboratory

Tuesday July, 12

Two-Phase Thermal Control Technology I

Session Code: ICES09A

Room Sala Rospigliosi

Session Time: 8:00 a.m.

The session discusses new developments in two-phase loop heat pipes and includes in particular devices with multiple evaporators, influences of environmental effects and problems for loop start-up.

Organizers - Reinhard Schlitt, OHB System GmbH; Ad Delil, Advanced Aerospace Thermal Control Systems; Konstantin A. Goncharov, Lavochkin Association; Darius Nikanpour, Canadian Space Agency; Wolfgang Supper, European Space Agency

Chairpersons - Darius Nikanpour, Canadian Space Agency; Reinhard Schlitt, OHB System GmbH

Time	Paper No.	Title
8:00 a.m.	2005-01-2881	Heat Load Sharing in a Capillary Pumped Loop With Multiple Evaporators and Multiple Condensers <i>Jentung Ku, NASA Goddard Space Flight Center</i>
8:30 a.m.	2005-01-2882	Evaluating Loop Heat Pipes Performances Regarding Their Geometric Characteristics <i>Roger R. Riehl, National Institute For Space Research; Tulio C.P.A. Siqueira, Universidade Federal de Ouro Preto</i>
9:00 a.m.	2005-01-2883	Advances in Two-Phase Loop with Capillary Pump Technology and Space Applications <i>Donatas Mishkinis, Guanghan Wang, Darius Nikanpour, Canadian Space Agency; L MacDonald, Tarik Kaya, Carleton Univ.</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3122	High-Temperature (600-1200K) Heat Rejection System Trades <i>Michael N. Nikitkin, Swales Aerospace; Graydon Yoder, Oak Ridge National Laboratory</i>
10:15 a.m.	2005-01-2884	Characterization of a Multiple-Evaporator Capillary Pumped Loop <i>Jones Muller, Jay Ochterbeck, Clemson University; Jeffrey Perez, Paul D Rogers, Lockheed Martin RDECOM-TARDEC</i>

Tuesday July, 12

Two-Phase Thermal Control Technology II

Session Code: ICES09B

Room Sala Rospigliosi

Session Time: 1:30 p.m.

The session focuses on recent advances in modeling and performance validation of conventional heat pipes and capillary pumped loops. In addition, emphasis is given to two-phase loop testing and in-flight applications.

Organizers - Reinhard Schlitt, OHB System GmbH; Adrianus A. Delil, Advanced Aerospace Thermal Control Systems; Konstantin A. Goncharov, Lavochkin Association; Darius Nikanpour, Canadian Space Agency; Wolfgang Supper, European Space Agency

Chairpersons - Adrianus A. Delil, Advanced Aerospace Thermal Control Systems; Wolfgang Supper, European Space Agency

Time	Paper No.	Title
1:30 p.m.	2005-01-2934	LHP Modeling with EcosimPro and Experimental Validation <i>Carmen Gregori, Alejandro Torres, Ramón Pérez, IBERESPACIO; Tarik Kaya, Carl University</i>
2:00 p.m.	2005-01-2935	Modeling of a Loop Heat Pipe for Ground and Space Conditions <i>Valeri V. Vlassov, Roger R. Riehl, National Institute for Space Research (INPE)</i>
2:30 p.m.	2005-01-2936	Transient Model of a Grooved Heat Pipe Embedded in the Honeycomb Structural Panel <i>Valeri V. Vlassov, National Institute for Space Research (INPE)</i>
3:00 p.m.	2005-01-2938	Precision Temperature Control with a Loop Heat Pipe <i>Frank Bodendieck, Reinhard Schlitt, Oliver Romberg, OHB-System AG; Konstantin Goncharov, TAIS Ltd.; Ulrich Hildebrand, Tesat-Spacecom GmbH & Co. KG; Vasily Odessa Mechnicov's National University</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2939	Performance Evaluation of Double-Condenser Loop Heat Pipe onboard Monitor of All-sky X-ray Image (MAXI) in Thermal Vacuum Testing <i>Hiroki Nagai, Tohoku Univ.; Shiro Ueno, Japan Aerospace Exploration Agency</i>
4:15 p.m.	2005-01-2940	The Scheme Design and Experimental Study About the Two Phase Fluid Loop on China's Spacelab <i>Zhang Jiaxun, Hou Zengqi, Liu Qingzhi, Miao Jianyin, Chinese Academy of Space Technology</i>

Wednesday July, 13

Physico-Chemical Life Support Process Development I

Session Code: ICES16A

Room Sala Aldobrandini

Session Time: 8:00 a.m.

This session will address research issues and development of physico-chemical technology for processing of solid wastes in space habitats. The emphasis will be on control, monitoring and technology for ensuring that the cabin air for astronauts will be of good quality during waste processing activities to ensure safety and health of the astronauts.

Organizers - Jean M. Andino, Univ. of Florida

Chairpersons - Jean M. Andino, Univ. of Florida

Time	Paper No.	Title
8:00 a.m.	2005-01-2941	Development and Testing of a Temperature-Swing Adsorption Compressor for Carbon Dioxide in Closed-Loop Air Revitalization Systems <i>Micha S. Rosen, Lila M. Mulloth, Dave L. Affleck, Science Applications International Corporation; M. Douglas Le Van, Yuan Wang, Vanderbilt University</i>
8:30 a.m.	2005-01-2942	Long-Duration Testing of a Temperature-Swing Adsorption Compressor for Carbon Dioxide for Closed-Loop Air Revitalization Systems <i>Lila M. Mulloth, Micha Rosen, Science Applications International Corporation; Mini Enterprise Advisory Services Inc.</i>
9:00 a.m.	2005-01-2943	Advanced Studies of Supported Amine Sorbents for CO₂ Removal <i>Matthew Schladt, Joseph Helble, University of Connecticut; Thomas Filburn, University of Hartford</i>

9:30 a.m.		BREAK
9:45 a.m.	2005-01-2945	Water Electrolysis Cells Designed for Microgravity Conditions in Order to Establish Air Revitalization System <i>Masato Sakurai, Mitsuo Oguchi, Takeshi Hoshino, Shoichi Yoshihara, Katsunori Ohnishi, Mitsuru Ohnishi, Japan Aerospace Exploration Agency (JAXA)</i>
10:15 a.m.	2005-01-2946	Control of Effluent Gases from Solid Waste Processing Using Impregnated Carbon Nanotubes <i>Jing Li, John W. Fisher, Kanapathipillai Wignarajah, NASA Ames Research Center; Cinke, ELORET Corp.</i>

Wednesday July, 13

Physico-Chemical Life Support Process Development II

Session Code: ICES16B

Room Sala Aldobrandini

Session Time: 1:30 p.m.

This session will address research issues and development of physico-chemical technology for processing of wastes in space habitats. The emphasis will be on control, monitoring and processing technologies of waste water and ensuring that the water quality for astronauts will be of hygiene and/or potable quality to ensure safety and health of the astronauts.

Organizers - Kanapathipillai Wignarajah, NASA Ames Research Center

Chairpersons - John W. Fisher, Kanapathipillai Wignarajah, NASA Ames Research Center

Time	Paper No.	Title
1:30 p.m.	2005-01-2991	Photocatalytic Oxidation of Selected Organic Contaminants and Inactivation of Microorganisms in a Continuous Flow Reactor Packed with Titania-Doped Silica <i>M. Joanne Garton, Paul A. Chadik, Samuel R. Farrah, David W. Mazyck, Angela S. University of Florida</i>
2:00 p.m.	2005-01-2992	Preparation of Nanostructured Photocatalytic TiO₂ Films and Membranes Using Sol-Gel Methods Modified with Surfactant Micelles for Wastewater Treatment and Reuse in Space <i>Hyeok Choi, Dionysios D. Dionysiou, Univ. of Cincinnati; Elias Stathatos, Univ. of P</i>
2:30 p.m.	2005-01-2993	High Performance TiO₂ Photocatalytic Coatings and Reactors for the Purification, Disinfection and Recycle of Water in Space Applications <i>Yongjun Chen, University of Cincinnati; D. Dionysiou, University of Cincinnati</i>
3:00 p.m.	2005-01-2994	A Slurry-Based Photocatalytic Reactor with Slurry Separation for Water Recovery <i>William L. Kostedt IV, Mikal A. Witwer, David W. Mazyck, University of Florida; Tom Brian Butters, Purifics ES, Inc.</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-2995	Optimization of a Magnetically Agitated Photocatalytic Reactor for Water Recovery <i>William L. Kostedt IV, David W. Mazyck, Chang-Yu Wu, Paul Chadik, Univ. of Florida</i>
4:15 p.m.	2005-01-2944	Development of a Low-Power CO₂ Removal and Compression System for Closed-Loop Air Revitalization in Future Spacecraft <i>Lila M. Mulloth, Dave L. Affleck, Micha Rosen, Science Applications International Corp.; Mini Varghese, Enterprise Advisory Services, Inc.; James C Knox, NASA Marshall Space Center; M. Douglas Le Van, Joe Moate, Vanderbilt University</i>

Wednesday July, 13

Panel: Emerging Private Space Enterprise Sector: Procurement of Environmental Systems, Hardware, and Services

Session Code: ICES21

Room Sala Borghese

Session Time: 8:00 a.m.

Organizers - Barry W. Finger, Hamilton Sundstrand

Chairpersons - Barry W. Finger, Hamilton Sundstrand

Panelists - Grant A. Anderson, Paragon Space Development; Fred Fagan, Honeywell; Gregory J. Gentry, Boeing Co.; Willigert Raatschen, EADS Space Transportation GmbH; Leslie J. A. Rogers, Lockheed Martin Space Systems Co.; Stephen E. Tongue, Hamilton Sundstrand Power Systems

Time	Paper No.	Title
9:30 a.m.		BREAK

Wednesday July, 13

Thermal, Environmental, Human Engineering, and Crew Systems for the Crew Transfer Vehicles

Session Code: ICES22

Room Sala Borghese

Session Time: 1:30 p.m.

Crew Transfer Vehicles carry space flight crews to and from ISS, earth orbits and the lunar vicinity. This session covers technical status and development of Thermal Control System, Environmental Control and Life Support System, Human Engineering, and Crew Systems. Presenters may discuss alternate and innovative technologies that show potential to be used to better the systems. Topics also include improved practices in engineering, procurement, ground and flight tests, operations, etc.

Organizers - Richard R. Chu, Meggitt; Barry W. Finger, Hamilton Sundstrand; Leslie J. A. Rogers, Lockheed Martin Astronautics

Chairpersons - Richard R. Chu, Meggitt; Barry W. Finger, Hamilton Sundstrand; Leslie J. A. Rogers, Lockheed Martin Astronautics

Time	Paper No.	Title
1:30 p.m.	2005-01-2996	A Survey of Crew Systems for the Crew Exploration Vehicle <i>Leslie J. A. Rogers, Lockheed Martin</i>
2:00 p.m.	2005-01-2998	Designing a Complete Ingress-Egress Environment - A Reflection on the Design Process of the Crew Return Vehicle <i>Kristian von Bengtson, SpaceArch</i>
2:30 p.m.	2005-01-2999	Thermal Regulation and Heat Tolerance by Men in Heat Before and After Head-Down Tile <i>Yu Xue-Jun, Yang Tiande, Pang Cheng, Chang Shaoyong, Institute of Space Medicine, Wu Jianmin, Institute of Space Sensor Technology</i>
3:00 p.m.	2005-01-3000	An Approach to Evaluate Precision and Inter-Laboratory Variability of Flammability Test Methods for Aerospace Materials <i>David B. Hirsch, Honeywell Aerospace; Harold Beeson, NASA</i>
3:30 p.m.		BREAK

Wednesday July, 13

Plant Flight Hardware: Technologies and Research II

Session Code: ICES38B

8:00 a.m.

Room Sala Colonna

Session Time:

Organizers - Cynthia M. Martin-Brennan, Bionetics Corp.; Robert C. Morrow, Orbital Technologies Corp.

Chairpersons - Cynthia M. Martin-Brennan, Bionetics Corp.; Robert C. Morrow, Orbital Technologies Corp.

Time	Paper No.	Title
8:00 a.m.	2005-01-2947	Challenges to Understanding Fluid Behavior in Plant Growth Media Under Microgravity <i>Susan L. Steinberg, Universities Space Research Association; Scott B. Jones, Utah State University; Ming Xiao, Kansas State University; Dani Or, University of Connecticut; J. Reddi, Kansas State University; J. Iwan D. Alexander, Case Western Reserve University; Gerard Kluitenberg, Kansas State University; Nihad Daidzic, NASA Glenn Research Center; Markus Tuller, University of Idaho</i>
8:30 a.m.	2005-01-2948	Examining Dehydration and Hypoxic Stress in Wheat Plants Using a Porous Tube Plant Nutrient Delivery System Developed for Microgravity <i>Thomas W. Dreschel, NASA Kennedy Space Center; Carlton Hall, Tammy Foster, Lockheed Martin Corp.; Max Salganic, Leslie Warren, Mary Corbett, NASA Kennedy Space Center</i>
9:00 a.m.	2005-01-2949	Modeling and Design of Optimal Growth Media from Plant-Based Gas and Liquid Fluxes <i>Scott B. Jones, Robert Heinse, Utah State University; Gail E. Bingham, Space Dynamics Laboratory; Dani Or, University of Connecticut</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2950	Measurement of Porous Media Hydraulic Properties during Parabolic Flight Induced Microgravity <i>Robert Heinse, Seth D. Humphries, R. William Mace, Scott B. Jones, Utah State University; Susan L. Steinberg, Universities Space Research Association; Markus Tuller, University of Idaho; Rebecca M. Newman, Kansas State University; Dani Or, University of Connecticut</i>
10:15 a.m.	2005-01-2951	Evaluation of the Dual-Probe Heat-Pulse Method for Measuring Water Content in Spaceflight Plant Growth Systems <i>Rebecca M. Newman, Gerard J. Kluitenberg, Kansas State Univ.; Susan L. Steinberg, Johnson Space Center</i>
10:45 a.m.	2005-01-2952	Feed-Back Moisture Sensor Control for the Delivery of Water to Plants Cultivated in Space <i>Howard G. Levine, NASA Biological Sciences; Jessica J. Prenger, Donna T. Rouzal, Lockheed Martin Corp.; April C. Spinale, Trevor Murdoch, Kevin A. Burtness, Bionetics Corp.</i>
11:15 a.m.	2005-01-2953	Designing a Reusable Ethylene Filter Cartridge for Plant Flight Hardware: Characterization of Thermally Desorbing Compounds <i>Oscar Monje, Jeffrey T. Richards, Ignacio Eraso, Dynamac Corp.; Timothy P. Griffin, NASA Kennedy Space Center; Kimberly C. Anderson, Bionetics; John C. Sager, NASA Kennedy Space Center</i>
11:45 a.m.	2005-01-2954	Carbon Dioxide Scrubbers for Controlling the Gaseous Composition of Spaceflight Plant Growth Chambers - Design Trades and Test Results <i>Alexander Hoehn, James Clawson, Colleen Higgins, Juniper Jairala, Peter Journey, Lockheed Martin Corp.; Jackson Lee, Louis Stodieck, University of Colorado</i>

Wednesday July, 13

Human Factors I

Session Code: ICES47A

Room Sala Farnese**Session Time: 8:00 a.m.**

The Space Human Factors session focuses on cognitive, physical or social performance by the human and / or the human interaction with the system(s). Topics cover requirements, design, or mission operations. Papers presented in the Space Human Factors session have a focus on human factors and some direct or tangential application to terrestrial or space scenarios where humans live and work in extreme and constrained environments.

Organizers - Jennifer L. Blume, NASA Marshall Space Flight Center; Frances E. Mount, NASA Johnson Space Center

Chairpersons - Jennifer L. Blume, Raytheon Integrated Defense Systems; Frances E. Mount, NASA Johnson Space Center

Time	Paper No.	Title
8:00 a.m.	2005-01-2956	Protecting the ISS Crew from Biological Hazards: The Advanced Animal Habitat (AAH) Containment Approach <i>Jacob J. Stadler, Ross W. Remiker, Corinne M. Westrich, Orbital Technologies Corp Javier Morell, STAR Enterprises Inc.</i>
8:30 a.m.	2005-01-2957	Working Activity in Space: Preparation of the Scientific Experiments' Performance <i>Silvia Ferraris, Politecnico di Milano</i>
9:00 a.m.	2005-01-2958	An Investigation of the Combined Effect of Stress, Fatigue and Workload on Human Performance: Position Paper <i>Jessica Mock, NASA Johnson Space Center; Lesia Crumpton-Young, University of Florida</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2959	Self Contained Atmospheric Protective Ensemble (SCAPE) Suits Redesign and Implementation at Kennedy Space Center <i>Jessica Mock, NASA Johnson Space Center; Darcy Miller, NASA Kennedy Space C</i>
10:15 a.m.	2005-01-2960	Musculoskeletal Loading via Running with Loads during Simulated Gravitational Transitions: Improvements in a Precision Stepping Postural Control Task <i>Jeffrey D. Brewer, Sandia National Laboratories; Simon M. Hsiang, Texas Tech Uni</i>

Wednesday July, 13**Human Factors II****Session Code: ICES47B****Room Sala Farnese****Session Time: 1:30 p.m.**

The Space Human Factors session focuses on cognitive, physical or social performance by the human and / or the human interaction with the system(s). Topics cover requirements, design, or mission operations. Papers presented in the Space Human Factors session have a focus on human factors and some direct or tangential application to terrestrial or space scenarios where humans live and work in extreme and constrained environments.

Organizers - Jennifer L. Blume, Raytheon Integrated Defense Systems; Frances E. Mount, NASA Johnson Space Center

Chairpersons - Jennifer L. Blume, Raytheon Integrated Defense Systems; Frances E. Mount, NASA Johnson Space Center

Time	Paper No.	Title
1:30 p.m.	2005-01-3002	We Have the Spaceship; But Where's the Start Button: Human Engineering Issues in the Age of Long Duration Space Exploration <i>Chris Adams, George Hamilton, NASA Marshall Space Flight Center</i>

2:00 p.m.	2005-01-3004	Estimation of Energy Requirements of Eco-nauts in the Closed Ecology Experiment Facilities (CEEF) <i>Osamu Komatsubara, Yoichi Aibe, Masanori Shinohara, Yasuhiro Tako, Keiji Nitta, Environmental Sciences; Toshitada Yoshioka, Hirosaki Gakuin University</i>
2:30 p.m.	2005-01-3005	Workloads and Environment of Closed Habitation Experiments in CEEF (Closed Ecology Experiment Facilities) and Physio-Psychological Changes in Habitants (Eco-Nauts) During the Experiments <i>Masanori Shinohara, Osamu Komatsubara, Youichi Aibe, Susumu Nozoe, Go Honda, Tako, Keiji Nitta, Institute for Environmental Sciences</i>
3:30 p.m.		BREAK

Wednesday July, 13

Advanced Life Support and Systems Analysis

Session Code: ICES39

Room Sala Ludovisi

Session Time: 8:00 a.m.

This session will address advanced life support technologies and approaches and evaluate systems impacts of life support options.

Organizers - Alan E. Drysdale, Boeing Co.; Harry W. Jones, NASA Ames Research Center

Chairpersons - Alan E. Drysdale, Boeing Co.; Harry W. Jones, NASA Ames Research Center

Time	Paper No.	Title
8:00 a.m.	2005-01-2915	Equivalencies and Applicability of Advanced Life Support Technologies to Exploration Missions <i>Alan E. Drysdale, Boeing Co.</i>
8:30 a.m.	2005-01-2916	Project Selection for NASA's R&TD Programs <i>Harry W. Jones, NASA Ames Research Center</i>
9:00 a.m.	2005-01-2917	Retention Capabilities of Nile Tilapia (<i>Oreochromis niloticus</i>) Fed Potential Advanced Life Support (ALS) Waste Residues <i>John Manuel Gonzales, Paul B. Brown, Purdue Univ.</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2918	Impact of Crewmember Schedule on System Performance <i>Chit Hui Ang, Tze Chao Chiam, Yuehwern Yih, Purdue Univ.</i>
10:15 a.m.	2005-01-2919	The Watery Greenhouse: A Closed System for Solar Thermal Energy Collection, Water Treatment and Advanced Horticulture <i>Guillermo Zaragoza, Estación Experimental de Cajamar "Las Palmerillas", Spain; M Buchholz, Technische Universität Berlin, Germany</i>
10:45 a.m.	2005-01-2920	Design Approach of Closed Loop Food Systems in Space <i>Joan L. Mas-Albaigès, NTE S.A.; Dominique Van der Straeten, Laury Chaerle, Xavier Vanrobaeys, Dik Hagenbeek, Ghent University; Egon Janssen, TNO Environmental Geosciences; Ronald Kassel, Verhaert Design and Development; Scott Hovland, ESA Space Agency</i>
11:15 a.m.	2005-01-2921	Forecasting of Life Support Systems Functional Condition <i>Eugeniy Trushliakov, National University of Shipbuilding</i>
11:45 a.m.	2005-01-2922	Evolution of Advanced Life Support Architectures Throughout the Exploration Spirals: A Midterm Review <i>Jeff R. Johnson, Thomas M. Crabb, Matthew J. Mischnick, Robert C. Morrow, Orbital Technologies Corporation</i>

Wednesday July, 13

Advanced Life Support Missions, Requirements, Metrics, and Decision Tools

Session Code: ICES18

Room Sala Ludovisi

Session Time: 1:30 p.m.

This session includes topics such as: the impact of mission characteristics on life support system selection, life support system/mission requirements and drivers, and measures and tools for evaluating life support system designs.

Organizers - Julie A. Levri, NASA Ames Research Center; Kevin E. Lange, Lockheed Martin Space Operations Co.

Chairpersons - David W. Mazyck, Univ. of Florida

Time	Paper No.	Title
1:30 p.m.	2005-01-3006	Systems Engineering in NASA's R&TD Programs <i>Harry W. Jones, NASA Ames Research Center</i>
2:00 p.m.	2005-01-3007	Development Approach of the Advanced Life Support On-Line Project Information System <i>Julie A. Levri, NASA Ames Research Center; John A. Hogan, National Space Grant Foundation; Rich Morrow, Michael C. Ho, Bob Kaehms, Lockheed Martin Space Operations; Jim Cavazzoni, Rutgers, The State University of New Jersey; Christina A. Brodbeck, San Francisco State University; Dawn R. Whitaker, Purdue University/ALS NSCORT</i>
2:30 p.m.	2005-01-3008	Spacecraft Life Support System Design Guidelines for Human Exploration of the Moon and Mars <i>David M. Klaus, Heather Howard, Univ. of Colorado; Matthew M. Vellone, Erin Anne Adams, Andrea C. Adams, Univ. Of Colorado; Colleen Higgins, Univ. of Colorado; Matthew J. McFarland, Michael Cragg, Wendy Krauser, Univ. Of Colorado; Teresa Ellis, Jairala, Univ. of Colorado</i>
3:00 p.m.	2005-01-3009	Risk Management for Human Support Research and Technology Development <i>Harry W. Jones, NASA Ames Research Center</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3010	Requirements for an Autonomous Control Architecture for Advanced Life Support Systems <i>G. Biswas, S. Abdelwahed, Dept. of EECS and ISIS, Vanderbilt University; J. Wu, E. Manders, Dept of EECS and ISIS, Vanderbilt University; D. Kortenkamp, Metrica Inc.; Johnson Space Center; S. Bell, S&K Technologies Inc. at NASA Johnson Space Center</i>
4:15 p.m.	2005-01-3011	Using Dynamic Simulations and Automated Decision Tools to Design Lunar Habitats <i>Scott Bell, NASA Johnson Space Center-SKT Inc.; David Kortenkamp, NASA Johnson Space Center-Metrica Inc.; Luis Rodriguez, NASA Johnson Space Center-Universities Space Research Assn.</i>

Wednesday July, 13

Extravehicular Activity: Exploration, Space Suits, Operations I

Session Code: ICES28A

Room Sala Odescalchi

Session Time: 8:00 a.m.

This session includes topics describing aspects of EVA technologies and research related to exploration, space suits, and in-space and planetary surface operations. Modeling of human thermal systems, human performance in extreme environments, and testing and applications of EVA-related materials and systems is also included.

Organizers - Robert C. Trevino, NASA Johnson Space Center

Chairpersons - Robert C. Trevino, NASA Johnson Space Center

Time	Paper No.	Title
8:00 a.m.	2005-01-2968	Implementation and Testing of a Mechanical Counterpressure Bio-Suit System <i>Liang Sim, Kristen Bethke, Nichole Jordan, Cameron Dube, Jeffrey Hoffman, Massachusetts Institute of Technology; Cam Brensinger, NEMO Equipment, Inc.; Guillermo Trotti, T Associates, Inc.; Dava Newman, Massachusetts Institute of Technology</i>
8:30 a.m.	2005-01-2969	Human and Robotic Enabling Performance System Development and Testing <i>David Graziosi, Jinny Ferl, W. Keith Splawn, ILC Dover LP; David L. Akin, Emily Tie Maryland; Joseph J Kosmo, Amy J Ross, NASA Johnson Space Center</i>
9:00 a.m.	2005-01-2970	When is Running More Efficient than Walking in a Space Suit? <i>Christopher E. Carr, Dava J. Newman, Massachusetts Institute of Technology</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2971	Using a Sweating Manikin, Controlled by a Human Physiological Model, to Evaluate Liquid Cooling Garments <i>Robert B. Farrington, National Renewable Energy Laboratory</i>
10:15 a.m.	2005-01-2972	Thermal Analysis of Lightweight Liquid Cooling Garments Using Highly Conductive Materials <i>Grant Crane Bue, NASA Johnson Space Center</i>
10:45 a.m.	2005-01-2974	Zero-Venting, Regenerable, Lightweight Heat Rejection for EVA Suits <i>Michael Gary Izenson, Weibo Chen, Creare Inc.; Luis A. Trevino, NASA Johnson Sp</i>
11:15 a.m.	2005-01-2977	Effect of Local Hand Thermal Insulation on Total and Local Comfort Under Different Levels of Body Heat Deficit <i>Victor Koscheyev, Univ. of Minnesota; Aitor Coca, Gloria R. Leon, Univ of Minnesota Trevino, NASA Johnson Space Center</i>
11:45 a.m.	2005-01-2976	Evaluation of a Rear Entry System for an Advanced Spacesuit <i>David Graziosi, ILC Dover Inc.</i>

Wednesday July, 13

Extravehicular Activity: Exploration, Space Suits, Operations II

Session Code: ICES28B

Room Sala Odescalchi

Session Time: 1:30 p.m.

EVA: Past and Future. This session begins with a review of aspects of EVA from training to execution in the current human space flight programs. These presentations then serve as a baseline of comparison for the subsequent discussion of future EVA systems requirements and hardware development.

Organizers - Amy J. Ross, NASA Johnson Space Center

Chairpersons - Robert C. Trevino, NASA Johnson Space Center

Time	Paper No.	Title
1:30 p.m.	2005-01-3012	Development and Implementation of an Extravehicular Activity Skills Program for Astronauts <i>Zane A. Ney, Chris A. Looper, United Space Alliance</i>
2:00 p.m.	2005-01-3013	Lessons Learned Operating and Maintaining the Extravehicular Mobility Unit (EMU) <i>Brian J. Johnson, Scott Cupples, NASA / Johnson Space Center</i>

2:30 p.m.	2005-01-3014	Extravehicular Activity Task Work Efficiency <i>Christopher A. Looper, Zane A. Ney, United Space Alliance</i>
3:00 p.m.	2005-01-3015	Desert Research and Technology Study 2004 Field Trip Report: EVA System Results <i>Amy J. Ross, Joseph J. Kosmo, NASA - Johnson Space Center; Barbara Janoiko, Johnson Space Center; Dean Bener Eppler, SAIC</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3016	Evaluation of a Full-Body Scanning Technique for the Purpose of Extracting Anthropometrical Measurements <i>Richard Morency, Muniz Engineering Inc.; Sudhakar Rajulu, NSBRI/ NASA; L. Javier Luis Eduardo Velasquez, Lockheed Martin/ NASA; Mike Ferrer, Marcos Jaramillo, Muniz Engineering Inc./ NASA; Sarah Margerum, Lockheed Martin/ NASA</i>
4:15 p.m.	2005-01-3017	Quality Function Deployment for the Shoulder Section of the Space Suit <i>Ronald Adrezin, Univ. of Hartford; Robert C. Trevino, NASA Johnson Space Center; W. Hodgson, Hamilton Sundstrand; Lauren Zaccaro, Univ. of Hartford</i>

Wednesday July, 13

Biological Waste Processing & Microbial Processes I

Session Code: ICES33A

Room Sala Pamphili

Session Time: 8:00 a.m.

This session focuses on the development, application, and testing of microbial-based processes for use in advanced life support systems. Paper topics this year include evaluation of various reactor types/approaches for processing solid, liquid, and air streams.

Organizers - Barry W. Finger, Hamilton Sundstrand; Jay L. Garland, Dynamac Corp.; Kathy Banks, Cummins Inc.; Art Teixeira, Univ. of Florida; Jean B. Hunter, Cornell University

Chairpersons - Kathy Banks, Cummins Inc.; Jay L. Garland, Dynamac Corp.; Jean B. Hunter, Cornell University; Art Teixeira, Univ. of Florida

Time	Paper No.	Title
8:00 a.m.	2005-01-2979	Optimum Loading Rates and Design Limitations of Biological Reactors for Long-Term Space Habitation Waste Streams <i>W. Andrew Jackson, Audra Morse, Texas Tech University</i>
8:30 a.m.	2005-01-2980	The Effects of Alternative Biological Primary Processing Approaches on the Efficiency of an Integrated Water Processing System <i>Jay L. Garland, Dynamac Corp.</i>
9:00 a.m.	2005-01-2981	Evaluation of Possibility of Using Human and Plant Wastes in Bioregenerative Life Support Systems <i>Alexander A. Tikhomirov</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2982	Loading Balance and Influent pH in a Solids Thermophilic Aerobic Reactor <i>Dawn R. Whitaker, Kevin L. Staton, James E. Alleman, John W. Lane, Purdue Univ.</i>
10:15 a.m.	2005-01-2983	System Level Design and Initial Equivalent System Mass Analysis of a Solid-Phase Thermophilic Aerobic Reactor for Advanced Life Support Systems <i>Yan-Fu Kuo, Dawn R. Whitaker, George T. Chiu, James E. Alleman, Purdue Univ.</i>

10:45 a.m. 2005-01-2984 **Passive Observatories for Experimental Microbial Systems (POEMS): Microbes Return to Flight**
Michael S. Roberts, Dynamac Corporation; David W. Reed, Jose I. Rodriguez, The Corporation

Wednesday July, 13

Biological Waste Processing & Microbial Processes II

Session Code: ICES33B

Room Sala Pamphili

Session Time: 1:30 p.m.

This session focuses on the development, application, and testing of microbial-based processes for use in advanced life support systems. Paper topics this year include evaluation of various reactor types/approaches for processing solid, liquid, and air streams.

Organizers - Kathy Banks, Cummins Inc.; Jay L. Garland, Dynamac Corp.; Jean B. Hunter, Cornell University; Art Teixeira, Univ. of Florida

Chairpersons - Kathy Banks, Cummins Inc.; Jay L. Garland, Dynamac Corp.; Jean B. Hunter, Cornell University; Art Teixeira, Univ. of Florida

Time	Paper No.	Title
1:30 p.m.	2005-01-3019	Fate of Dissolved and Particulate Carbon in an Anoxic Biological Water Processor <i>Leticia M. Vega, Jacobs Sverdrup; Dean Muirhead, Barrios Technology Inc</i>
2:00 p.m.	2005-01-3021	Inline Monitoring and Evaluation of Inorganic Gases from a Nitrification Membrane Bioreactor <i>Daniel R. Haddock, Jacobs Sverdrup; Dean Muirhead, Barrios Technology Inc.</i>
2:30 p.m.	2005-01-3023	Evaluation of Biological Trickling Filter Performance for Graywater Treatment in ALS Systems <i>Sybil A. Sharvelle, M.K. Banks, Eric McLamore, Yong Sang Kim, Stephen Clark, Pu</i>
3:00 p.m.	2005-01-3024	Biodegradation of Disposed Means of Personal Hygiene <i>V. K. Ilyin, L. V. Starkova, L. N. Muhamedieva, Konstantine Mikos, Russian Federat Research Ctr.; S. V. Kostrov, G. A. Velikodvorskaya, Institute for Molecular Genetic A. Chuvilskaya, K. S. Lauriniavichius, Institute for Biochemistry and Physiology of Microorganisms</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3025	Automated SEBAC-II Prototype Solid Waste Management System for Long Term Space Mission <i>Suneet S. Luniya, Wei Liu, John M. Owens, Arthur A. Teixeira, Univ. of Florida; Pratap Pullammanappallil, Univ of Florida</i>
4:15 p.m.	2005-01-3026	Space-Based SEBAC-II Solid Waste Management Technology for Commercial Application to Beet Sugar Industry <i>Arthur Teixeira, David P. Chynoweth, John Owens, Univ. of Florida; Pratap Pullammanappallil, Univ of Florida; Kristen J. Riley, William J. Sheehan, Univ. of Florida</i>

Wednesday July, 13

Satellite, Payload and Instrument Thermal Control

Session Code: ICES10

Room Sala Rospigliosi

Session Time: 8:00 a.m.

This session covers the development and design of thermal control systems for Satellites, Payloads, and Instruments.

Organizers - Nico H. Pennings, ESA ESTEC; Patrick Hugonnot, Alcatel; Hiroyuki Ogawa, Isas; Marco Molina, Carlo Gavazzi Space

Chairpersons - Marco Molina, Carlo Gavazzi Space; Nico H. Pennings, ESA ESTEC

Time	Paper No.	Title
8:00 a.m.	2005-01-2985	The Large Deployable Antenna (LDA), A Review of Thermal Aspects <i>Marco Gottero, Enrico Sacchi, G. Lorenzo Scialino, Alenia Spazio; Sergey V. Reznik, Kalinin, Bauman Moscow State Technical Univ.</i>
8:30 a.m.	2005-01-2986	Thermal Performance of BIRD Microsatellite Thermal Control System - 3 Years of Operation in Space <i>Volodymyr Baturkin, National Technical Univ. of Ukraine; Franz Lura, Bernd Biering, Georg Lötzke, Hartwig Studemund, German Aerospace Centre</i>
9:00 a.m.	2005-01-2987	Progress in the Alpha Magnetic Spectrometer (AMS-02) Thermal Control System (TCS) Design, Operations Scenarios and Verification Approach <i>Marco Molina, Christian Vettore, Maddalena Cova, Carlo Gavazzi Space</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-2988	The I/R Thermal Balance Test of Radarsat-2: Approach to Verification / Correlation <i>Claudia Asteggiano, Enrico Sacchi, Corrado Guglielmo, Federica Tessarin, Alenia Spazio S.p.A.; Trevor Williams, Frank Borde, MacDonald Dettwiler & Associates</i>
10:15 a.m.	2005-01-2989	Integral: 2.5 Years on Orbit - Thermal Performance and Lesson Learnt <i>Gaetano Poidomani, Giorgio Costa, Marco Compassi, Alenia Spazio</i>
10:45 a.m.	2005-01-2990	Lightweight Conformal Thermal Radiator <i>Douglas S. Mehoke, Paul D. Wienhold, Keith S. Caruso, Johns Hopkins University</i>

Wednesday July, 13

Thermal Testing

Session Code: ICES11

Room Sala Rospigliosi

Session Time: 1:30 p.m.

This session focuses on thermal tests and test methods, on thermal test correlation and on (special) thermal test facilities for all kinds of satellites and instruments.

Organizers - Markus Huchler, EADS Astrium GmbH; Andrew Robson, EADS Astrium, Ltd.; Hume Peabody, Swales Aerospace; Philippe Poinas, European Space Agency

Chairpersons - Markus Huchler, EADS Astrium GmbH; Andrew Robson, EADS Astrium, Ltd.

Time	Paper No.	Title
1:30 p.m.	2005-01-3027	Design of Wireless Multi-Channel Measurement System <i>Sumitaka Tachikawa, Akira Ohnishi, Japan Aerospace Exploration Agency; Shouzo UBE Industries, Ltd.; Y. Saitoh, T. Tanaka, Takion Co., LTD.</i>
2:00 p.m.	2005-01-3029	Investigation of Effective Thermal Conductivity of Porous Materials <i>Wolfgang P. P. Fischer, EADS Space Transportation GmbH; Leonid Ya Paderin, Ce Hydrodynamics Institute (TsAGI)</i>

2:30 p.m.	2005-01-3030	Thermal Vacuum Test on the Extravehicular Activity (EVA) in the Manned Space Flight <i>Dianfu Qie, Hwei Pang, Beijing Institute of Satellite Environment Engineering; Yuan Beijing Institute of Satellite Environment Engineering; Wei Chuanfeng, Beijing Institute of Satellite Environment Engineering</i>
3:30 p.m.		BREAK

Thursday July, 14

Physico-Chemical Life Support Process Development III

Session Code: ICES16C

Room Sala Aldobrandini

Session Time: 8:00 a.m.

This session will address research issues and development of physico-chemical technology for processing of wastes in space habitats. The emphasis will be on control, monitoring and processing technologies of waste water and ensuring that the water quality for astronauts will be of hygiene and/or potable quality to ensure safety and health of the astronauts.

Organizers - Michael T. Flynn, NASA Ames Research Center

Chairpersons - Michael T. Flynn, NASA Ames Research Center

Time	Paper No.	Title
8:00 a.m.	2005-01-3031	Progress in the Development of a Direct Osmotic Concentration Wastewater Recovery Process for Advanced Life Support Systems <i>Tzahi Cath, V. Dean Adams, Amy Childers, University of Nevada; Sherwin Gormly, Research Center; Michael Flynn, NASA Ames Research Center</i>
8:30 a.m.	2005-01-3032	Urine Processing for Water Recovery via Freeze Concentration <i>Jeffrey M. Schmidt, James E. Alleman, Purdue University</i>
9:00 a.m.	2005-01-3033	Performance Testing of the Vapor Phase Catalytic Ammonia Removal Engineering Development Unit <i>Michael Flynn, NASA Ames Research Center; Gregory Quinn, Hamilton Sundstrand Aerospace; Maher Tleimat, Water Reuse Technologies; James H. Fort, Tim A. Nale Baker, Hamilton Sundstrand Space Systems International, Inc.</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3034	Results of VPCAR Pilot Scale and System Level Tests for the Selective Oxidation of Ammonia to Nitrogen and Water <i>David T. Wickham, Jeffrey Engel, Jinhan Yu, TDA Research, Inc.; Timothy Nalette, Thibaud-Erkey, Gregory J Quinn, Hamilton Sundstrand Space Systems Intl.</i>
10:15 a.m.	2005-01-3035	Hydrodynamics of Packed Bed Reactor in Low Gravity <i>Brian J. Motil, Henry K. Nahra, NASA Glenn Research Center; Vemuri Balakotaiah, of Houston</i>
10:45 a.m.	2005-01-3036	Gravity Effects on Premixed and Diffusion Limited Supercritical Water Oxidation <i>Michael C. Hicks, NASA Glenn Research Center; Uday Hegde, National Center for Research; Richard W. Lauver, NASA Glenn Research Center; David G. Hall, Tobin ZIN Technologies</i>

Thursday July, 14

Physico-Chemical Life Support Process Development IV

Session Code: ICES16D

Room Sala Aldobrandini**Session Time: 1:30 p.m.**

This session will address research issues and development of physico-chemical technology for processing of wastes in space habitats. The emphasis will be on control, monitoring and processing technologies of waste water and ensuring that the water quality for astronauts will be of hygiene and/or potable quality to ensure safety and health of the astronauts.

Organizers - John W. Fisher, NASA Ames Research Center

Chairpersons - John W. Fisher, Kanapathipillai Wignarajah, NASA Ames Research Center

Time	Paper No.	Title
1:30 p.m.	2005-01-3080	Testing and Analysis of the First Plastic Melt Waste Compactor Prototype <i>Gregory S. Pace, Lockheed Martin Technical Operations; John W. Fisher, NASA Ames Research Center</i>
2:00 p.m.	2005-01-3081	Magnetically Assisted Gasification of Solid Wastes: Comparison of Reaction Strategies <i>James E. Atwater, UMPQUA Research Company; Goran N. Jovanovic, Oregon State University; James R. Akse, Richard R. Wheeler, Roger Dahl, Neal Hadley, UMPQUA Research Company; John W. Fisher, NASA-Ames Research Center</i>
2:30 p.m.	2005-01-3082	Magnetically Assisted Filtration of Solid Wastes: Laboratory and Flight Experiments <i>Goran N. Jovanovic, Thana Sornchamni, Brian P. Reed, Carlos Cruz-Fierro, Oregon State University; James E. Atwater, James R. Akse, Richard R. Wheeler, UMPQUA Research Company</i>
3:00 p.m.	2005-01-3083	A Prototype Pyrolysis / Oxidation System for Solid Waste Processing <i>Michael A. Serio, Erik Kroo, Elizabeth Florczak, Marek Wójtowicz, Advanced Fuel Research, Kanapathipillai Wignarajah, John Fisher, NASA Ames Research Center</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3084	Lyophilization for Water Recovery III, System Design <i>Eric Litwiller, Martin Reinhard, Stanford University; John W. Fisher, Michael Flynn, NASA Ames Research Center</i>
4:15 p.m.	2005-01-3085	Factors Essential for Optimizing Solid Waste Degradation and Recycling using Edible White Rot Fungi <i>Leopold M. Nyochembeng, R.P. Pacumbaba, Caula A. Beyl, Alabama A & M University</i>

Thursday July, 14**Management of Air Quality in Sealed Environments****Session Code: ICES46****Room Sala Borghese****Session Time: 1:30 p.m.**

The papers in this session will address issues related to managing air quality in sealed environments such as submarines, aircraft, and spacecraft. Presentations will describe different aspects of air quality management including preventive steps to control contaminants, predictive activities to determine the risk of contaminant exposure, and the development of monitoring devices to measure the air quality.

Organizers - John T. James, NASA Johnson Space Center; Thomas Limero, Wyle Laboratories

Chairpersons - Hilary Bollan, Defence Procurement Agency; Thomas Limero, Wyle Laboratories

Time	Paper No.	Title
1:30 p.m.	2005-01-3087	Microbial Burden of Commercial Aircraft Cabin Air <i>Myron Thomas La Duc, Tara Stuecker, Gregory Bearman, Kasthuri Venkateswaran, NASA Johnson Space Center Propulsion Laboratory</i>

2:00 p.m.	2005-01-3092	Atmosphere Trials on United States Navy Submarines <i>Thomas J. Daley, Naval Surface Warfare Center; Richard A. Hagar, Naval Sea Systems Command; Salvatore N. Dinardi, Peter Benton, Ray Woolrich, David Burnside, Naval Submarine Medical Research Laboratory; Kevin J. Johnson, Naval Research Laboratory</i>
2:30 p.m.	2005-01-3089	An Assessment of Candidate Technologies for DISSUB CO2 Removal Systems in Royal Navy Submarines <i>Gideon York, MESH AIR PURE 1</i>
3:00 p.m.	2005-01-3090	Development of a Self Powered Carbon Dioxide Absorption Unit for Use in a DISSUB <i>Mike J. Clarke, Jonathan Carr, Molecular Products, Ltd.; Jonathan Boyle, Ministry of Defense, UK</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3091	Formaldehyde Concentration Dynamics of the International Space Station Cabin Atmosphere <i>Jay L. Perry, NASA Marshall Space Flight Center</i>
4:15 p.m.	2005-01-3088	Emergency Atmosphere Control; Design and Operational Experience <i>Thomas J. Daley, Jay Trombley, Naval Surface Warfare Center</i>
4:45 p.m.	2005-01-3093	Study of Long-Term Compound Stability in Dual Sorbent Tubes <i>Thomas Limero, Steve Beck, Patti Cheng, Vanessa De Vera, Wyle Laboratories Inc., Sciences Systems and Services</i>

Thursday July, 14

Spacecraft and Instrument Thermal Design and Technology

Session Code: ICES03

Room Sala Colonna

Session Time: 8:00 a.m.

This session presents the thermal design, testing, and on-orbit performance of instruments, and the development of key technologies including high-precision systems and cryogenic applications.

Organizers - Wes Ousley, NASA Goddard Space Flight Center; David K. Wasson, Orbital Sciences Corp.; Brian D. Killough, NASA Langley Research Center

Chairpersons - Wes Ousley, NASA Goddard Space Flight Center; Brian D. Killough, NASA Langley Research Center

Time	Paper No.	Title
8:00 a.m.	2005-01-3037	Thermal Assessment of Swift BAT Instrument Thermal Control System in Flight <i>Michael K. Choi, NASA Goddard Space Flight Center</i>
8:30 a.m.	2005-01-3038	Design and Qualification of HERSCHEL Instrument Helium Cooling System <i>Nicolas Balcet, Jérôme Guichard, Etienne Sturm, Thierry Wiertz, Air Liquide</i>
9:00 a.m.	2005-01-3041	The Cryogenic Thermal System Design of NASA's James Webb Space Telescope (JWST) Integrated Science Instrument Module (ISIM) <i>Keith Parrish, Stuart Glazer, Shaun Thomson, NASA Goddard Space Flight Center</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3042	Thermal System Verification and Model Validation for NASA's Cryogenic Passively Cooled James Webb Space Telescope (JWST) <i>Paul E Cleveland, Energy Solutions International LLC; Keith A. Parrish, NASA Goddard Space Flight Center</i>

10:15 a.m. 2005-01-3043 **Thermoelastic Analysis in Design**

William M. Bell, Topsfield Engineering Service Inc.; John Stewart, Saber Design & A Services LLC; Paul W. Young, Topsfield Engineering Service Inc.

Thursday July, 14

Planetary Protection and Astrobiology

Session Code: ICES17

Room Sala Colonna

Session Time: 1:30 p.m.

The session will address Planetary Protection related planning, guidelines, and technology development for robotic and human missions to Mars. Also discussed will be issues relating to the microbial diversity on the International Space Station.

Organizers - Perry Stabekis, Windermere

Chairpersons - Perry Stabekis, Windermere

Time	Paper No.	Title
1:30 p.m.	2005-01-3094	International Space Station Internal Thermal Coolant System: An Initial Assessment of the Microbial Communities within Fluids from Ground Support and Flight Hardware <i>James Benardini, Jordan Ballinger, Ronald Crawford, Univ. of Idaho; Monsi Roman, Marshall Space Flight Center; Randall Sumner, Bionetics Corp.; Kasthuri Venkatesh, Propulsion Laboratory</i>
2:00 p.m.	2005-01-3096	Extended Temperature Range Studies for Dry Heat Microbial Reduction <i>Michael Kempf, Larry E. Kirschner, Robert A. Beaudet, Jet Propulsion Laboratory</i>
2:30 p.m.	2005-01-3097	Influence of Planetary Protection Guidelines on Waste Management Operations <i>John Hogan, National Space Grant Foundation; John W. Fisher, Julie A. Levri, NASA Research Center; Kanapathipillai Wignarajah, EASI; Margaret S. Race, SETI; Perry Stabekis, Windermere</i>
3:30 p.m.		BREAK

Thursday July, 14

Design and Concepts

Session Code: ICES41

Room Sala Farnese

Session Time: 8:00 a.m.

This session focuses on architectural concepts and designs for orbital and surface space habits, personal astronaut equipment and parabolic flights. They concentrate on practical design solutions and explain the process and methodology developing them.

Organizers - A. Scott Howe, Plug in Creations; David Anthony Nixon, Astrocourier (Ireland), Ltd.; Andreas Vogler, Architecture and Vision; Annalisa Dominoni, Facoltà del Design

Chairpersons - Andreas Vogler, Architecture and Vision

Time	Paper No.	Title
8:00 a.m.	2005-01-3044	BLU (Basic Lunar Unit) for Moon Exploration <i>Manuela Aguzzi, Politecnico di Milano</i>
8:30 a.m.	2005-01-3046	Stairs on the Moon <i>Annette Barnes, Envision Architects</i>

9:00 a.m.	2005-01-3047	ALIS - Art Lab In Space <i>John F. Curran, SpaceSeeds</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3048	VEST_Clothing Support System On-Orbit Validation <i>Annalisa Dominoni, Facoltà del Design</i>
10:15 a.m.	2005-01-3049	"Space-BEE: Space Biomedical Exercise Environment" A Personal Centrifuge within an Inflatable Structure <i>Martina Pinni</i>
10:45 a.m.	2005-01-3050	Design Study for an Astronaut's Workstation <i>Andreas Vogler, Architecture and Vision</i>
11:15 a.m.	2005-01-3051	Mobile Pressurized Laboratory Design Study <i>Andreas Vogler, Architecture and Vision; Stephen Ransom, Aerospace Consultant; Vittori, Architecture And Vision; Wolf-Peter Foth, EADS Space Transportation</i>

Thursday July, 14

Thermal and Environmental Control Simulation Software II

Session Code: ICES05B

Room Sala Ludovisi

Session Time: 8:00 a.m.

Advances in analytical modeling have been achieved as a result of enhancements in existing software, new methodologies and algorithms, software integration and improvements in data exchange and standards

Organizers - Olivier Pin, European Space Agency; William Ducas, Orbital Sciences Corp.; Nicholas M. Teti, Swales Aerospace; Julian S. Thomas, Alstom Power, Ltd.

Chairpersons - Olivier Pin, European Space Agency; Nicholas M. Teti, Swales Aerospace

Time	Paper No.	Title
8:00 a.m.	2005-01-3052	Space Systems Thermal Analysis Software - A User's View <i>Andrew Robson, EADS Astrium, Ltd.; Cosmas Heller, EADS Astrium GmbH; Holger ETA GmbH</i>
8:30 a.m.	2005-01-3053	A Tool For Flexible And Rapid Thermal Analysis And Design In Feasibility And Preliminary Phases Of Space Projects <i>Matteo Gorlani, Andrea Tosetto, BLUE Engineering; Luca Tentoni, Alenia Spazio S. Perotto, Alenia Spazio; Olivier Pin, European Space Agency</i>
9:00 a.m.	2005-01-3054	ESATAP: A Post-Processing Tool for Thermal Analysis <i>Marie Imhof, SILOGIC; Karine Caire, Alcatel Space Industries; Harrie Rooijackers, ESTEC; Alain Fagot, Dorea Technology</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3055	A Hybrid Solution Method Using ThermalDesktop and TMG to Solve LISA and other Large Thermal Models <i>Hume Peabody, Swales Aerospace</i>
10:15 a.m.	2005-01-3056	Thermal Analysis for Systems Perturbed in the Linear Domain Method Development and Numerical Validation <i>Marco Molina, Alberto Franzoso, Matteo Giacomazzo, Carlo Gavazzi Space</i>
10:45 a.m.	2005-01-3058	A Tool for Thermal Analysis of Electronic Boards with Multiple Heat Sources and Sinks <i>Valeri V. Vlassov, National Institute for Space Researches (INPE)</i>

11:15 a.m. 2005-01-3059 **Automatic Linear Conductor Generation Solution for Thermal Lumped Parameter Models**
Nigel J. Stock, Chris J. Kirtley, ALSTOM Power Turbo-Systems; Hans Peter De Kor Appel, ESA/ESTEC

Thursday July, 14

Education and Outreach

Session Code: ICES34

Room Sala Ludovisi

Session Time: 1:30 p.m.

Education is an integral part of NASA's core mission and this session includes educational and public outreach activities related to environmental systems on Earth and in space. The session includes international research on methods and programs that benefit both the general public and space agencies.

Organizers - Dean Muirhead, Lockheed Martin Space Operations Co.; Jean B. Hunter, Cornell University

Chairpersons - Jean B. Hunter, Cornell University; Dean Muirhead, Lockheed Martin Space Operations Co.

Time	Paper No.	Title
1:30 p.m.	2005-01-3100	Advanced Extravehicular Activity Education Outreach in Support of the Vision for Space Exploration <i>Heather Paul, NASA Johnson Space Center</i>
2:00 p.m.	2005-01-3101	Experiences with a Space and Science Club in a Low-Income Community in South Texas <i>Dean Muirhead, Lockheed Martin Space Operations Co.</i>
2:30 p.m.	2005-01-3102	STARS (Science Technology and Research Students): A Hands-on, Interactive, Scientific and Cultural Exchange Lesson <i>Carla V. Goulart, Bioserve Space Technologies, Univ. of Colorado; Kimberly Campbell, SPACEHAB, Inc.; Sherry L. Woodard, BioServe Space Technologies, Univ. of Colorado</i>
3:00 p.m.	2005-01-3104	Next Generation of Scientists are Inspired at an Early Age <i>Ellen B. Peffley, Chad S. Davis, Texas Tech University</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3105	The National Space Biomedical Research Institute Education and Public Outreach Program: Engaging the Public and Inspiring the Next Generation of Space Explorers <i>Marlene Y. MacLeish, Morehouse School of Medicine; William A. Thomson, Baylor College of Medicine; Gary R Coulter, Colorado Consortium for Earth and Space Science Education; J. Newman, Massachusetts Institute of Technology; Patrick J. Gannon, Mount Sinai School of Medicine; Roland B. Smith, Rice University</i>
4:15 p.m.	2005-01-3106	International Space Education Outreach: Taking Exploration to the Global Classroom <i>Thomas W. Dreschel, NASA Kennedy Space Center; Peter V. Chetirkin, Lesley C. O'Neil, Dynamac Corp.; Volodymyr L. Nazarenko, A.V. Palladin Institute of Biochemistry; L. Lichtenberger, NASA Kennedy Space Center; Janet Barfus, Dynamac Corp.</i>
4:45 p.m.	2005-01-3107	NASA Specialized Center of Research and Training in Advance Life Support (ALS/NSCORT) Education and Outreach Program <i>Julia Hains-Allen, M. Katherine Banks, Macon Fish, Sybille Sharvelle, Purdue University</i>
5:15 p.m.	2005-01-3099	Feedback on the Architecture Aerospace Studio Project Keio University and University of Tokyo Associate Program <i>Oscar Arenales</i>

Thursday July, 14

Spacecraft Water/Air Quality: Maintenance and Monitoring II

Session Code: ICES32B

Room Sala Odescalchi

Session Time: 8:00 a.m.

This session focuses primarily on recent developments in spacecraft water quality monitoring technology. Also included are papers on development of spacecraft water purification and disinfection systems.

Organizers - John R. Schultz, Wyle Laboratories; Margaret A. Ryan, Jet Propulsion Laboratory

Chairpersons - Margaret A. Ryan, Jet Propulsion Laboratory; John R. Schultz, Wyle Laboratories

Time	Paper No.	Title
8:00 a.m.	2005-01-3060	A New Lab for Testing Biofiltration for Advanced Life Support <i>Congna Li, Albert J. Heber, Hong Huang, Jiqin Ni, Sang Hun Lee, M. Katherine Bar</i> <i>University</i>
8:30 a.m.	2005-01-3061	Modeling and Design of an Ultraviolet Water Disinfection System <i>Zorana Naunovic, Dennis A. Lyn, Chengyue Shen, Ernest R. III Blatchley, Purdue U</i>
9:00 a.m.	2005-01-3062	Electrochemical Monitoring of Iodine and Its Disinfection By-Products with Diamond Thin-Film Electrodes <i>Greg M. Swain, Audrey Martin, Laura Pearson, Michigan State Univ.</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3063	Development of New Detection Schemes Using Colorimetric-Solid Phase Extraction for Formaldehyde and other Trace Organic Contaminants in Water <i>April A. Hazen-Bosveld, Robert J. Lipert, James S. Fritz, Marc D. Porter, Iowa State</i>
10:15 a.m.	2005-01-3064	Spectrophotometric Color Matching: A Straightforward Alternative to Kubelka-Munk Analysis of Reflectance Data for Readout of Water Quality Monitoring Discs <i>Robert J. Lipert, April A. Hazen-Bosveld, Marc D. Porter, Iowa State University; Dar</i> <i>Gazda, Wyle Laboratories</i>
10:45 a.m.	2005-01-3065	Applications of Colorimetric Solid-Phase Extraction with Negligible Depletion <i>Neil C. Dias, Iowa State Universtiy; James S. Fritz, Marc D. Porter, Iowa State Univ</i>

Thursday July, 14

Bioregenerative Life Support I

Session Code: ICES12A

Room Sala Pamphili

Session Time: 8:00 a.m.

This session focuses on the development of ground-based experiments, experimental facilities and flight hardware designs and experiments associated with Bioregenerative Life Support systems.

Organizers - Mark Kliss, NASA Ames Research Center; Yasuhiro Tako, Institute for Environmental Science; Christophe Lasseur, European Space Agency; Yas Takashima, Ichidai Nursery Inc.

Chairpersons - Mark Kliss, NASA Ames Research Center; Christophe Lasseur, European Space Agency

Time	Paper No.	Title
8:00 a.m.	2005-01-3066	MELISSA: Overview of the Project and Perspectives <i>Christophe Lasseur, Christel Paille, B. Lamaze, P. Rebeyre, A. Rodriguez, L. Ordor</i> <i>Marty, European Space Agency</i>

8:30 a.m.	2005-01-3067	Design and Test of an Anaerobic Prototype Reactor Coupled with a Filtration Unit for the Liquefying Compartment of the MELiSSA Loop <i>Noëlle Michel, Demey Dries, EPAS; Heleen De Wever, Vito; Rebeyre Pierre, ESA; Grasmick, Universite Montpellier II</i>
9:00 a.m.	2005-01-3068	A Total Converting and Biosafe Liquefaction Compartment for MELiSSA <i>Jeroen Bursens, Willy Verstraete, Ghent University; Tobias Albrecht, Gerd Brunner, Univ. of Hamburg-Harburg; Gwendoline Christophe, Catherine Creuly, Claude Gilles, Université Blaise Pascal; Christophe Lasseur, European Space Agency</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3069	Higher Plant Waste Fiber Degradation by Biological Treatment <i>Claude Gilles Dussap, Gwendoline Christophe, Université Blaise Pascal; Catherine Université of Blaise Pascal</i>
10:15 a.m.	2005-01-3070	Monitoring of Methanogenic and Acidogenic Microbial Populations in the Liquefying Compartment of the MELiSSA Loop <i>Heleen De Wever, Brigitte Borremans, Ludo Diels, Vito; Michel Noëlle, EPAS</i>
10:45 a.m.	2005-01-3071	Empirical Relationships Between Light Intensity and Crop Net Carbon Exchange Rate at the Leaf and Full Canopy Scale: Towards the Integration of a Higher Plant Chamber in MELiSSA <i>Geoffrey Waters, Youbin Zheng, Danuta Gidzinski, Michael A. Dixon, Univ. of Guelph</i>
11:15 a.m.	2005-01-3072	MELISSA Food Database: A Means to Fit Diet Requirements to BLSS Products <i>Catherine Creuly, Université of Blaise Pascal, France; Agnes Pons, Laurent Poughon, Gilles Dussap, Université Blaise Pascal, France</i>
11:45 a.m.	2005-01-3073	A Global Approach to Assess Stress Response of the Bioregenerative Life Support System Organism Rhodospirillum rubrum Under Space-Flight Related Environmental Conditions <i>Larissa Hendrickx, Felice Mastroleo, Sarah Baatout, Max Mergeay, Belgian Nuclear Centre; Christel Paille, European Space Agency; Ruddy Wattiez, University of Mons</i>

Thursday July, 14

Bioregenerative Life Support II

Session Code: ICES12B

Room Sala Pamphili

Session Time: 1:30 p.m.

This session focuses on the development of ground-based experiments, experimental facilities and flight hardware designs and experiments associated with Bioregenerative Life Support systems.

Organizers - Mark Kliss, NASA Ames Research Center; Yasuhiro Tako, Institute for Environmental Science; Christophe Lasseur, European Space Agency; Yas Takashima, Ichidai Nursery Inc.

Chairpersons - Mark Kliss, NASA Ames Research Center; Christophe Lasseur, European Space Agency

Time	Paper No.	Title
1:30 p.m.	2005-01-3108	Estimation of Flows of Carbon and Oxygen in the CEEF System Based on Data Collected in a Stable Phase of Sequential Crop Cultivation Lasting More than 100 Days <i>Yasuhiro Tako, Takashi Tani, Ryuji Arai, Keiji Nitta, Institute for Environmental Science</i>
2:00 p.m.	2005-01-3110	Selective Removal of Monovalent Ions from Urine by Electrodialysis <i>Heleen De Wever, Veerle Van Hoof, Chris Dotremont, Vito</i>

2:30 p.m.	2005-01-3111	Simulation of Air Quality in ALS System with Biofiltration <i>Sang-hun Lee, Albert J. Heber, M. Katherine Banks, Sybille Sharvelle, Purdue Univ</i>
3:00 p.m.	2005-01-3112	Preliminary Investigation of Generating Electricity from Wastewater via a Single-Compartment Microbial Fuel Cell <i>Andrew Marcus, Richard M. Lueptow, Northwestern University; Bruce Rittmann, Arizona State University</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3113	Influence of α-Amylase on the Physical Properties and Consumer Acceptability of Sweetpotato Starch Syrup <i>C. Adelia Bovell-Benjamin, Tuskegee Univ.</i>
4:15 p.m.	2005-01-3114	Evaluation of Carrots (<i>Daucus carota</i> L.) Grown in Two Hydroponic Systems for Inclusion in NASA's Advanced Food Systems <i>Peter Gichuhi, Tuskegee Univ.</i>
4:45 p.m.	2005-01-3074	Physiological Responses of Lettuce (<i>Lactuca sativa</i>) to Reduced Atmospheric Pressure <i>Michael Dixon, Cara Ann Wehkamp, Michael Stasiak, Univ. of Guelph</i>

Thursday July, 14

Space Station Thermal Control I

Session Code: ICES04A

Room Sala Rospigliosi

Session Time: 8:00 a.m.

This session will address the International Space Station's (ISS) Internal Active Thermal Control System (IATCS). Topics to be addressed center around the IATCS coolant, including coolant remediation, microbiological issues, and hardware challenges associated with the coolant.

Organizers - Thomas O. Leimkuehler, Honeywell; Gualtiero Brambati, Alenia Spazio; Jon Holladay, NASA Marshall Space Flight Center; Stephen E. Tongue, Hamilton Sundstrand Power Systems; Frank Cho, NASA Johnson Space Center

Chairpersons - Gualtiero Brambati, Alenia Spazio; Thomas O. Leimkuehler, Honeywell

Time	Paper No.	Title
8:00 a.m.	2005-01-3075	ISS Internal Active Thermal Control System (IATCS) Coolant Remediation Project <i>Russell Morrison, The Boeing Company; Mike Holt, NASA Marshall Space Flight Center</i>
8:30 a.m.	2005-01-3076	Microbiological Characteristics and Concerns of the International Space Station Internal Active Thermal Control System <i>Monsi C. Roman, NASA Marshall Space Flight Center; Paul O. Wieland, Wiseland Systems</i>
9:00 a.m.	2005-01-3077	Assessment of Microbiologically Influenced Corrosion Potential in the International Space Station Internal Active Thermal Control System Heat Exchanger Materials: A 6-Month Study <i>Monsi C. Roman, NASA Marshall Space Flight Center; Patrick Macuch, Thomas Morton Corporation; Ockert J. Van Der Schijff, CorrConsult</i>
9:30 a.m.		BREAK
9:45 a.m.	2005-01-3078	Replacement for Internal Active Thermal Control System Fluid Sample Bag Material <i>Robert Steven Daugherty, The Boeing Company; William F. Oehler, United Technologies Corporation; Richard D. Morton, NASA</i>

10:15 a.m. 2005-01-3079 **A Novel Repair Technique for the Internal Thermal Control System Dual-Membrane Gas Trap**
Thomas O. Leimkuehler, Vipul Patel, Honeywell; Daniel R. Reeves, Boeing; James NASA Marshall Space Flight Center

Thursday July, 14

Space Station Thermal Control II

Session Code: ICES04B

Room Sala Rospigliosi

Session Time: 1:30 p.m.

This session focuses on the Thermal/Environmental Control System of Elements of the International Space Station (ISS) like Columbus and ATV. In particular it is intended to cover topics related to the Environmental Tests from System down to Equipment level, and lessons learned during component development and production. Considerations on Environmental Control applied to Manned Spacecraft other than the ISS are also addressed.

Organizers - Gualtiero Brambati, Alenia Spazio; Thomas O. Leimkuehler, Honeywell; Zoltan Szigetvari, EADS Space Transportation; Jon Holladay, NASA - MSFC; Stephen E. Tongue, Hamilton Sundstrand Space Systems International

Chairpersons - Gualtiero Brambati, Alenia Spazio; Thomas O. Leimkuehler, Honeywell; Zoltan Szigetvari, European Aeronautic Defence and Space Co.

Time	Paper No.	Title
1:30 p.m.	2005-01-3117	COLUMBUS Environmental Control System Tests - Verification of ATCS and ECLSS Performance <i>Zoltan Szigetvari, EADS Space Transportation GmbH; J. Witt, J. Persson, B. Lehmann, European Space Agency/ESTEC; E. H. Turner, Boeing; P. Vaccaneo, Alenia Spazio; Stephan Hinderer, EADS Space Transportation GmbH</i>
2:00 p.m.	2005-01-3118	ECS- ReTest Analytical Evaluation <i>Gaetana Bufano, Paolo Vaccaneo, Valter Perotto, Alenia Spazio; Zoltan Szigetvari, EADS Space Transportation; Jan Persson, Johannes Witt, European Space Agency</i>
2:30 p.m.	2005-01-3119	Columbus to Human Research Facility Hydraulic Compatibility Test: Analysis and Results <i>Savino De Palo, Alenia Spazio; Bruce D. Wright, Robert W. Clark, The Boeing Company; G. Rhone, NASA Johnson Space Center; Zoltan Szigetvari, Stephan Hinderer, EADS Space Transportation; Jan Persson, European Space Agency</i>
3:00 p.m.	2005-01-2769	Columbus Active Thermal Control Equipment Development <i>Ettore Mascellani, Alberto Pavarani, Microtecnica; Paolo Vaccaneo, Alenia Spazio; Zoltan Szigetvari, EADS Space Transportation GmbH; Jan Persson, ESA / ESTEC</i>
3:30 p.m.		BREAK
3:45 p.m.	2005-01-3120	The ATV Cargo Carrier Visual Video Target Switching Unit Thermal Design and Qualification <i>Maria Cristina Tosi, Maria Teresa Signorelli, Pierluigi Morsaniga, Alenia Spazio-Torino</i>
4:15 p.m.	2005-01-3121	Investigation of a Thermal Management of Manned Spacecraft <i>Xiaoping Xu, China Academy of Space Technology</i>