

PAPER REFERENCE LIST FOR ICES 2015 - BELLEVUE

Paper #	Session	Paper Title	Authors
ICES_2015_(#)			
97	101	SMOS Payload Thermal Control: Review of performances after 5 years in orbit operation	Pilar Rubiales, Josep Closa, Elena Checa, Silvio Dolce, Mariano Kornberg and Manuel Martin-Neira
118	101	An Innovative Very Low Thermal Power Waste Heat Recovery System for Thermal Control of Deep Space Missions - A Thermal Flask in Space	Pradeep Bhandari
135	101	Atomic Clock Ensemble in Space (ACES) Thermal Design and 10 years of Transport Scenario Evolutions	Raphael Naire and Monika Kaercher
194	101	Solar Probe Plus MAG Sensor Thermal Design for Low Heater Power and Extreme Thermal Environment	Michael Choi
265	101	Design Evolution of the Wide Field Infrared Survey Telescope using Astrophysics Focused Telescope Assets (WFIRST-AFTA) and Lessons Learned	Hume Peabody, Carlton Peters, Juan Rodriguez-Ruiz, Carson McDonald, Dave Content and Cliff Jackson
280	101	Small GEO Satellite : Chemical Propulsion Sub-System (CPPS) Thermal Design and Lessons Learnt	Davide Rizzo, Christian Vettore, Marcus Groeller and Alessandro Spalla
283	101	Small GEO Satellite : Electrical Propulsion Sub-System (EPPS) Thermal Design and Lessons Learnt	Christian Vettore, Davide Rizzo, Alessandro Spalla and Marcus Groeller
307	101	RETURN TO MERCURY: AN OVERVIEW OF THE MESSENGER SPACECRAFT THERMAL ENVIRONMENT PREDICTIONS AND ANALYSIS PROCESS	Gary Holtzman, Shawn Begley and Carl Ercol
22	102	Vented detector housings for use in the Mars atmosphere	Ian McKinley and Jose Rodriguez
23	102	Water and Helium Leak Rate Requirements for a Mars Sample Sealing System	Matthew Redmond, Dan Berisford and Pradeep Bhandari
24	102	Thermophysical and Optical Properties of Materials Considered for Use on the LDSD Test Vehicle	Matthew Redmond and A.J. Mastropietro
83	102	MASCOT thermal subsystem design challenges and solution for contrasting requirements	Luca Celotti, Małgorzata Sołtyga, Riccardo Nadalini, Volodymyr Baturkin, Caroline Lange, Ross Findlay, Christian Ziach, Tra-Mi Ho, Vladimir Kravets and Sergey Khairnasov
134	102	Preliminary Surface Thermal Design of the Mars 2020 Rover	Keith Novak, Jason Kempenaar, Matthew Redmond and Pradeep Bhandari
247	102	Preliminary Thermal Design of the Japanese Mars Rover Mission	Ryuta Hatakenaka, Kazuhisa Fujita, Genya Ishigami, Taku Nonomura, Moto Takai, Hiroyuki Toyota, Takehiko Sato, Akihiko Yamagishi, Hideaki Miyamoto, Kazuhiro Umetani and Hiroyuki Sugita
249	102	Characterisation of the insulation provided by a carbon dioxide gap for the ExoMars 2018 Rover	Edward Nelson, Luke Tamkin and Hannah McQuail
318	102	A Proposal and Verification of the Lunar Overnight Method by Promoting the Heat Exchange with Regolith	Shogo Okishio, Hosei Nagano and Hiroyuki Ogawa
328	102	First Test Flight Thermal Performance of the Low Density Supersonic Decelerator (LDS) Supersonic Flight Dynamics Test (SFDT) Vehicle	A. J. Mastropietro, Jason Kempenaar, Matthew Redmond, Michael Pauken and Walt Ancarrow
52	103	Multiple Loop Heat Pipe Radiator for Variable Heat Rejection in Future Spacecraft	Nathan Van Velson, Calin Tarau, Mike Dechristopher and William G. Anderson
104	103	Space Evaporator Absorber Radiator (SEAR) for Thermal Storage on Manned Spacecraft	Michael Izenson, Weibo Chen, Ariane Chepko, Grant Bue and Gregory Quinn

125	103	Integrated Sublimator Driven Coldplate (ISDC) for Thermal Control Systems	Tom Leimkuehler and Chad Bower
188	103	Continued Water-Based Phase Change Material Heat Exchanger Development	Scott Hansen and Joe Poynot
35	104	A Heat Pump for Space Applications	Henk Jan van Gerner, Johannes van Es, Gerrit van Donk and Aswin Pauw
50	104	Hybrid Heat Pipes for Planetary Surfaces and High Heat Flux Applications	Mohammed T. Ababneh, Calin Tarau and William G. Anderson
51	104	Two-Phase Thermal Switch for Spacecraft Passive Thermal Management	Nathan Van Velson, Calin Tarau and William G. Anderson
85	104	On-orbit Test of Heat Storage Materials with Crystal Transformation	Tsuyoshi Totani, Takuya Kuni, Toshifumi Satoh, Masashi Wakita and Harunori Nagata
109	104	A Passive Sublimator Driven Coldplate (ISDC-P) for Direct Avionics Cooling	Chad Bower, Tom Leimkuehler and Calin Tarau
167	104	Phase Change Material Heat Sink for an ISS Flight Experiment	Gregory Quinn, Jesse Stieber, Rubik Sheth and Thomas Ahlstrom
173	104	Characterizing the Effect of Gravity on a Freezable Water Heat Exchanger with Respect to Flow Orientation	James Nabity, Jordan Holquist, Matthew Milanese and David Klaus
180	104	Innovative new High Performance Radiators: Developing heat rejection systems with flexible film technology.	Bruin Benthem and Fabrice Mena
220	104	Evaluation of Thermal Insulation Performance of a New Multi-Layer Insulation with Non-Interlayer-Contact Spacer.	Takeshi Miyakita, Ryuta Hatakenaka, Hiroyuki Sugita, Masanori Saitoh and Tomoyuki Hirai
231	104	Phase Change Material Heat Storage Device for launchers and orbiting systems	Romain Peyrou-Lauga, Jean-Paul Collette and Nicolas Nutal
34	107	PEASSS thermal subsystem: challenges in the thermal design of cubesat missions	Luca Celotti, Małgorzata Sołyga and Bianca Cefalo
84	107	A Simple Thermal Design Procedure for Micro and Nanosatellites with Deployable Solar Panel	Tilok Kumar Das, Tsuyoshi Totani, Masashi Wakita and Harunori Nagata
263	107	Thermal analysis of Iodine Satellite (iSAT)	Stephanie Mauro
2	201	Pressure Profiles in a Loop Heat Pipe under Gravity Influence	Jentung Ku
3	201	Loop Heat Pipe Temperature Oscillation Induced by Gravity Assist and Reservoir Heating	Jentung Ku, Matthew Garrison, Deepak Patel, Franklin Robinson and Laura Ottenstein
14	201	Stability Theory for Loop Heat Pipe Design, Analysis and Operation	Triem Hoang, Robert Baldauff and Jesse Maxwell
39	201	Verification of Loop Heat Pipe Stability Theory Part I: Low-Frequency/High-Amplitude Oscillations	Triem Hoang, Robert Baldauff and Christopher Tiu
126	201	Thermal Behavior of Axial Groove Heat Pipe under Gravity: Dependence of Groove Shape and Orientation	Yasuko Shibano and Hiroyuki Ogawa
329	201	Visualization of Loop Heat Pipe with Multiple Evaporators under Microgravity.	Hosei Nagano, Yuta Matsuda, Shun Okazaki, Hiroki Nagai and Hiroyuki Ogawa
18	202	Sentinel 1 - Spacecraft and SAR antenna thermal design, analysis, verification and in flight performances	Silvio Dolce, Pierluigi Petrini, Raquel Alvarez, Marc Perellon and Arne Sauer
19	202	Sentinel 3 - Spacecraft Thermal Control : design, analysis and verification approach	Massimo De Stefanis, Ignacio Melendo, Silvio Dolce and Gerard Cluzet
57	202	Valve-less Mechanically Pumped Fluid Loop (MPFL) using East and West Panels of a Telecommunication Satellite as Radiator	Roel Benthem Van, Adry Vliet Van, Henk Jan Gerner Van, Johannes Es Van, Jacques Elst, David Schwaller and Patrick Put Van
66	202	A sub-micrometric thermal refocussing mechanism for High Resolution EO telescopes	Alberto Franzoso and Raffaele D'Imporzano
76	202	Thermal design and thermal verification tests of the Solar Orbiter Heat Shield STM	Claudio Damasio, Paolo De Filippis, Chris Draper and Daniel Wild

92	202	BepiColombo Mercury Magnetospheric Orbiter Proto-Flight Model Thermal Balance/Thermal Vacuum Test	Hiroyuki Ogawa, Tsutomu Yamazaki and Akira Okamoto
122	202	Advances in the Thermal Design of the "MERS" Satellite	Sean Tuttle
159	202	CHEOPS (CHaracterising ExOPlanet Satellite) Instrument thermal design and thermal analysis	Romain Peyrou-Lauga and Giordano Bruno
8	203	Early Environmental Screening of Spacecraft Electronic Units Using Pre-Unit-Level Thermal Testing	John Welch
13	203	Environmental Testing under High Solar Flux (13 Sc) on Solar Orbiter payload instruments	Clement Brysbaert, Carine Amoros, Audrey Albert-Wendland and Christopher Smith
28	203	CBERS-4 Satellite Thermal Design and Flight Model Environmental Thermal Tests	Rafael L. Costa, Tiantian Wang, Valeri V. Vlassov and Geng Liyin
42	203	Development of an Infrared Lamp Array for the SMAP Spacecraft Thermal Balance Test	Jennifer Miller, Nickolas Emis, Daniel Forgette and Gary Kinsella
233	203	Simulation of Rarified Gas Heat Transfer for Acceleration of Thermal Transitions during JWST Thermal Vacuum Testing	Russell Schweickart and Randy Franck
236	203	Thermal Testing & Integration MMS Observatories with Digital 1-wire Sensors	Jason Solimani and Santino Rosanova
246	203	Lessons Learned from Thermal Vacuum Testing of LISA Pathfinder over three system level Thermal Tests	Nicholas Fishwick, Katy Smith and Jose Antonio Romera Perez
276	203	Soil Moisture Active and Passive (SMAP) White-Painted Expanded Polystyrene (EPS) Radome Survivability Test	Rebecca Mikhaylov, Eug-Yun Kwack, Matthew Stegman, Douglas Dawson and Pamela Hoffman
331	203	Thermal Testing and Model Correlation of the Magnetospheric Multiscale (MMS) Observatories	Jong Kim and Nick Teti
58	204	Introducing EDEN ISS - A European project on advancing plant cultivation technologies and operations	Paul Zabel, Matthew Bamsey, Conrad Zeidler, Vincent Vrakking, Bernd-Wolfgang Johannes, Petra Rettberg, Daniel Schubert, Oliver Romberg, Barbara Imhof, Robert Davenport, René Waclavicek, Chris Gilbert, Molly Hogle, Alberto Battistelli, Walter Stefanoni, Stefano Moscatello, Simona Proietti, Guglielmo Santi, Filomena Nazzaro, Florinda Fratianni, Raffaele Coppola, Mike Dixon, Mike Stasiak, Eberhard Kohlberg, Dirk Mengedoht, Lorenzo Bucchieri, Erik Mazzoleni, Viktor Fetter, Thomas Hummel, Giorgio Boscheri, Federico Massobrio, Matteo Lamantea, Cesare Lobascio, Alessandro Petrini, Marco Adami, Giuseppe Bonzano, Lorenzo Fiore, Tom Dueck, Cecilia Stanghellini, Grazyna Bochenek, Anthony Gilley, Michelle McKeon-Bennett, Gary Stutte, Tracey Larkin, Siobhan Moane, Patrick Murray, Peter Downey, Raimondo Fortezza and Antonio Ceriello
60	204	Review of Antarctic Greenhouses and Plant Production Facilities: A Historical Account of Food Plants on the Ice	Matthew Bamsey, Paul Zabel, Conrad Zeidler, Daniel Schubert, Eberhard Kohlberg, Dirk Mengedoht, Joanna Rae and Thomas Graham
99	204	Analysis of Process Gases and Trace Contaminants in Membrane-Aerated Bioreactor Gaseous Effluent Streams	Janelle Coutts, Griffin Lunn, Caitlin Meyer and Leticia Vega
191	204	The IBIS (Italian Bioregenerative Systems) Working Group Advances the Life Support Sector	Salvatore Pignataro, Cesare Lobascio and Stefania De Pascale
210	204	Rapid Start-up and Loading of an Attached Growth, Simultaneous Nitrification/Denitrification Membrane Aerated Bioreactor	Leticia Vega, Caitlin Meyer, Daniel Barta, Sarah Shull, Stuart Pensinger, Karen Pickering, William Jackson and Dylan Christenson
91	205	Progress in the Development of the Advanced ISS Air Monitor ANITA2 - BB results and alternative ways for an implementation of the program	Timo Stuffer, Atle Honne and Pierre Rebeyre

141	205	Ion Chromatography-on-a-Chip for Water Quality Analysis	Richard Kidd, Aaron Noell, Gayane Kazarians, Andrew Aubrey, Nicholas Scianmarello and Y.-C. Tai
142	205	Report on Development Status of the Micro Total Atmosphere Monitor for ISS and Orion	Stojan Madzunkov, Jurij Simcic, Byunghoon Bae, Rembrandt Schaefer, Evan L. Neidholdt, Dragan Nikolić, John Gill, Wade Rellergert, Richard Kidd and Murray Darrach
169	205	Improved water analysis for long-duration manned space exploration	John Macaskill and Ara Chutjian
199	205	GCMS water testing and results from the MSFC Environmental Chamber	John MacAskill, Robert Newton, Matthew Kayatin, Kenneth Frederick and Joseph Scott
207	205	Portable Sensor for Rapid Measurement of Trace Toxic Metals in Water	Badawi Dweik, Avni Argun, Linda Tempelman, Nicole Mackenzie, John Forchione and Monjid Hamdan
224	205	MarsOASIS: A predeployable small-scale Martian greenhouse for crop production research	Asa Darnell, Anurag Azad, Brennan Borlaug, Daniel Case, Christine Chamberlain, Kier Fortier, Paul Guerrie, Henna Jethani, John Marino, Chaitanya Soma, Aastha Srivastava, Alex Wassenberg, Jordan Holquist and James Nabity
300	205	Qualification of a Multi-Channel Infrared Laser Absorption Spectrometer for Monitoring CO, HCl, HCN, HF, and CO2 Aboard Manned Spacecraft	Ryan Briggs, Clifford Frez, Siamak Forouhar, Randy May, Marit Meyer, Michael Kulis and Gordon Berger
333	205	Advanced Photoacoustic Spectrometer for Air Monitoring in Manned Spacecraft	Jianfa Zhou, Gui Meng, Yi Zheng, Yongqing Peng and Jiangbo Zou
20	206	WPA Mk II - The New Pump Package for ISS Columbus Module	Nicola di Francescantonio, Eugenio Gargioli, Maurizio Freddi, Giancarlo Falcetti, Sara Pastor, Jan Persson, Hap Frerker, Zoltan Szigetvari and Alexander Schwientek
81	206	SABL – An EXPRESS locker-sized incubator/freezer for performing biological experiments onboard the ISS	Tobias Niederwieser, Jonathan Anthony, Asa Darnell, Geoffrey King, Paul Koenig, Louis Stodieck, Jim Wright, Philipp Gahbler and Alexander Hoehn
158	206	The ATV Thermal System modifications to accommodate the LIRIS Equipment on ATV5: A Success Story	Roberto Palestro, Andrea Ferrero, Silvia Strom and Frank Bouckaert
296	206	Development of NASA's Sample Cartridge Assembly: Design and Thermal Analysis	Brian O'Connor, James Duffy and Deborah Hernandez
59	207	Derating Standards and Thermal Modelling Tools for Space Harness Designs	Roel Benthem Van, Marc Malagoli and Bastien Bonnafous
61	207	Development of an automated thermal model correlation tool	Benjamin Frey, Martin Trinoga, Mathias Hoppe and Wolff-Dieter Ebeling
222	207	Traverse Planning on the Lunar Surface – Benefits of Thermal Modeling	Matthias Killian and Philipp Hager
16	300	Dynamic Transition to Fallback Operation of Material Circulation Control in Advanced Life Support System using Hierarchical Autonomous Control Method	Masakatsu Nakane, Yoshio Ishikawa and Hiroyuki Miyajima
25	300	Numerical Modeling of a Rack Ventilation Characteristics for the International Space Station on Orbit Operation	Chang Son, Nikolay Ivanov, Evgueni Smirnov and Denis Telnov
160	300	Computer Simulation and Modeling of CO2 Removal Systems for Exploration	Robert Coker, James Knox, Carlos Gomez and Greg Schunk
181	300	Experiment and CFD investigation on gravity effects in reverse osmosis	Peng Ke
192	300	Analytical model and simulations of closed-loop rebreather systems for Earth and Space applications	Ioana Josan-Drinceanu, Olivier De Weck and Thomas Filburn
216	300	Improved Dynamic Modeling of the Cascade Distillation Subsystem and Integration with Models of Other Water Recovery Subsystems	Bruce Perry and Molly Anderson
64	302	Progress on the CO2 Removal and Compression System	Darrell Jan, Tra-My Justine Richardson and John Hogan

65	302	Carbon Dioxide Compression and Storage Trade Assessment	Tra-My Justine Richardson, Darrell Jan and John Hogan
82	302	Advanced Oxygen Recovery via Series-Bosch Technology	Morgan Abney, Matt Mansell, Mononita Nur, Rockford Beassie, Christian Junaedi, Saurabh Vilekar and Bobby Atkins
93	302	Status of the Advanced Closed Loop System ACLS	Johannes Witt, Klaus Bockstahler, Carsten Matthias, Joachim Lucas, Daniele Laurini and Scott Hovland
107	302	Evaluation of an Atmosphere Revitalization Subsystem for Deep Space Exploration Missions	Jay Perry, Morgan Abney, Ruth Conrad, Kenneth Frederick, Zachary Greenwood, Matthew Kayatin, James Knox, Robert Newton, Keith Parrish, Kevin Takada, Lee Miller, Joseph Scott and Christine Stanley
108	302	Trace Contaminant Control Design Considerations for Enabling Exploration Missions	Jay Perry and Matthew Kayatin
112	302	CO ₂ Removal from Spacecraft Environments by Liquid Systems	Matthew Paragano and Jan Kolmas
115	302	Advancing the Oxygen Generation Assembly Design to Increase Reliability and Reduce Costs for a Future Long Duration Mission	Kevin Takada, Ahmed Ghariani and Steven Van Keuren
120	302	Increased Oxygen Recovery from Sabatier Systems Using Plasma Pyrolysis Technology and Metal Hydride Separation	Zach Greenwood, Morgan Abney, Jay Perry, Lee Miller, Juan Agui, Robert Green, Marit Meyer, Roger Dahl, Neal Hadley, Spencer Wambolt and Richard Wheeler
152	302	Feasibility Tests of Oxygen Recovery Technology as an Internally Reforming Regenerative Fuel Cell	Christie Iacomini, Phillip Benjamin and Daniel Milobar
165	302	Optimization of the Carbon Dioxide Removal Assembly (CDRA-4EU) in Support of the International Space System and Advanced Exploration Systems	James Knox and Christine Stanley
166	302	Sorbent Structural Impacts due to Humidity of Carbon Dioxide Removal Sorbents for Advanced Exploration Systems	David Watson, James Knox, Philip West, Christine Stanley and Richard Bush
177	302	Development of Carbon Dioxide Removal Systems for Advanced Exploration Systems 2014-2015	James Knox, Robyn Gatens, Robert Coker, Timothy Huff, Lee Miller and Christine Stanley
195	302	Hydrogen Purification in Support of Plasma Pyrolysis of Sabatier Derived Methane	John Holtsnider, Richard Wheeler, Ross Dewberry, Morgan Abney and Zachary Greenwood
200	302	Development of a Test for Evaluation of the Hydrothermal Stability of Sorbents used in Closed-Loop CO ₂ Removal Systems	James Knox, Lee Miller and Hernando Gauto
203	302	Plasma Extraction of Oxygen from Martian Atmosphere	Richard Wheeler, Neal Hadley, Spencer Wambolt, John Holtsnider, Ross Dewberry and Laurel Karr
240	302	Scaleable, High Efficiency Microchannel Sabatier Reactor	John Thompson
262	302	Electrolyte Membrane Hydrogen Recovery for Advanced Oxygen Recovery Architecture	Joshua Preston, Trent Molter, Karen Murdoch, Morgan Abney and Zachary Greenwood
273	302	Development of Water Electrolysis System for Oxygen Production Aimed at Energy Saving and High Safety	Masato Sakurai
278	302	Microlith®-based Catalytic Reactor for Air Quality and Trace Contaminant Control Applications	Saurabh Vilekar, Kyle Hawley, Christian Junaedi, Bruce Crowder, Julian Prada, Richard Mastanduno, Jay Perry and Matthew Kayatin
294	302	Evaluation of Low Temperature CO Removal Catalysts	Oscar Monje
298	302	Automated Test-bed for Rapid Characterization of Sorbent Materials for Siloxane Removal in Contaminated Airstreams	Jeffrey Richards, Oscar Monje and Lawrence Koss
38	303	2014 ISS Potable Water Characterization and Continuation of the DMSD Chronicle	John E. Straub I I, Debrah K. Plumlee and Paul Mudgett
67	303	Results for the BEB's Brine Processing Test	Lance Delzeit, Hali Shaw, Brian Kawashima, David Beeler, Michael Flynn, John Fisher and Kevin Howard
69	303	Results of the GCMS effluent gas analysis for the Brine Processing Test	Lance Delzeit, Hali Shaw, Brian Kawashima, David Beeler, Linden Harris, Jeffrey Lee, Michael Flynn and John Fisher

75	303	Water Recovery System Design to Accommodate Dormant Periods for Manned Missions	Donald Carter and David Tabb
124	303	Ionomer-membrane Water Processor (IWP) Engineering Development Unit (EDU) Brine Water Recovery Test Results	Laura Kelsey, Patrick Pasadilla, John Fisher and Jeff Lee
150	303	Development of an Exploration-Class Cascade Distillation Subsystem: Performance Testing of the Generation 1.0 Prototype	Michael Callahan and Miriam Sargusingh
151	303	Cascade Distillation System Design for Safety and Mission Assurance	Miriam Sargusingh, Michael Callahan and Shira Okon
171	303	FOST 2 testing using grey water and bioreactor effluent as the feed	Jurek Parodi, Michael Flynn, Jaione Romero-Mangado and Hali Shaw
187	303	Status on Low Toxicity Urine Stabilization for Distillation	Niklas Adam, Giraldo Alvarez, Julie Mitchell and Karen Pickering
202	303	Evaluation of Selected Brine Processing Technologies for Spacecraft Wastewater	Hali Shaw, Michael Flynn, Sarah Shull, Miriam Sargusingh, Lance Delzeit, Harry Jones, Richard Wisniewski, David Beeler, Brian Kawashima, Kevin Howard, Jeanie Howard, Jeffrey Lee, Linden Harris and Jurek Parodi
212	303	Bead Evaporator for Complete Water and Salt Recovery from Brine	John Thompson and Adam Wheeler
219	303	Forward Osmosis Brine Drying	Michael Flynn, Deirdre Hyde and Jurek Parodi
270	303	Evaluation of Aquaporin Hollow Fiber Membranes for Forward Osmosis Applications	Enid Contes-De Jesus, Tomjhon Hamouzas and Tra-My Justine Richardson
279	303	Further Investigations into the Performance of Membrane-Aerated Biological Reactors Treating a Space Based Waste Stream	Dylan Christenson, Ritesh Sevanthi, Daniel Baldwin, William Jackson, Audra Morse, Leticia Vega, Caitlin Meyer, Daniel Barta and Karen Pickering
336	303	Next Generation Capacitive Deionization for use in Spacecraft Water Desalination	Patrick Curran and Tra-My Justine Richardson
339	303	Regenerative water supply on the space stations "Salut", "Mir", ISS and development prospects	Leonid Bobe, Alexey Kochetkov, Alexander Tsygankov, Alexander Korobkov, Sergey Romanov, Alexander Zeleznyakov, Peter Andreychuk and Yuriy Sinyak
211	304	Shakedown Test of the Orbital Technologies PMWC for Performance in Treating Solid Wastes	Kanapathipillai Wignarajah, John Fisher, Richard Alba and Tra-My Richardson
291	304	Space Applications of Torrefaction Processing	Michael Serio, Joseph Cosgrove, Marek Wójtowicz, Jeffrey Lee, Kannapathipillai Wignarajah and John Fisher
322	304	Plastic Melt Waste Compactor Integration and Testing	John Wetzel, Robert Surdyk and Jeff Johnson
136	305	StratEx Environmental Testing	Rolfe Bode and Norman Hahn
137	305	StratEx Mission Overview	Sebastian Padilla, Norman Hahn, Jared Leidech and John Straus
138	305	StratEx Pressure Suit Assembly Design and Performance	Jared Leidich, Zane Maccagnano, Ryan Lee, Dan McFatter and Norman Hahn
140	305	Medical Support And Outcomes Of A Manned Stratospheric Balloon and Free-fall Parachute Flight Test Program	Alejandro Garbino, Derek Nusbaum, Erik Antonsen, Dan Buckland, Jonathan Clark and Maria Vittoria Carminati
148	305	ORION Environmental Control and Life Support Systems Suit Loop and Pressure Control Analysis	Brad Eckhardt, Bruce Conger and Imelda Stambaugh
153	305	Nafion Bundle Technology for Humidity Control	Christie Iacomini, James Harrell and Javier Lopez
37	307	The Wearable Technology Cluster: A Model for NASA and University Collaboration	Cory Simon
98	307	Fashion Meets Space Travel: Engaging Girls in STEM Through Functional Apparel Design	Lucy Dunne, Kristen Morris, Jordyn Reich, Harini Ramaswamy, Susan Ashdown, Fran Kozen and Charlotte Coffmann
312	307	U.S. Spacesuit Knowledge Capture	Cinda Chullen and Vladenka Oliva
342	307	Overview of the NASA Small Business Innovation Research (SBIR) Program	Kathryn Packard, Doug Goodman and James Whittington
31	400	Advanced Extra-vehicular Activity Pressure Garment Requirements Development	Amy Ross, Lindsay Aitchison and Richard Rhodes

63	400	The Design and Development of an Extravehicular, Stratospheric Exploration (StratEx) Pressure Suit	Ryan Lee, David Graziosi and Jared Leidich
89	400	Effects of Dust Contamination on NDX-1 Planetary Spacesuit Material During Simulated EVAs	Kavya K. Manyapu, James R. Gaier, Pablo de Leon and Brian Shiro
116	400	Monitoring Human Performance during Suited Operations: A Technology Feasibility Study Using EMU Gloves	Omar Bekdash, Jason Norcross and Shane McFarland
117	400	Dream Chaser® Spacecraft Pressure Suit Development	Ken Stroud and Shane Jacobs
129	400	Spacesuit Glove-Induced Hand Trauma and Analysis of Potentially Related Risk Variables	Shane Mcfarland, Christopher R Reid, Jason Norcross and Jacqueline M Charvat
130	400	Feasibility Assessment of an EVA Glove Sensing Platform to Evaluate Potential Hand Injury Risk Factors	Shane Mcfarland and Christopher R Reid
132	400	Operational Testing of a Novel IVA Space Suit	Ted Southern, Miguel Iturmendi and Nikolay Moiseev
205	400	Design and Testing of Advanced Space Suit Hybrid Upper Torso	Greg Muller and David Graziosi
253	400	Developing a Standardized Testing Protocol for Space Suit Gloves	Carolyn Newton, Jason Kring, Theodore Southern and Nikolay Moiseev
268	400	Hard Suits/Soft Suits: Revisiting Technologies and Applications for a New Space Era	David Akin and Kevin Davis
343	400	Asteroid Redirect Crewed Mission Space Suit and EVA System Maturation	Jonathan Bowie, Cody Kelly, Jesse Buffington, Adam Nails and Drew Hood
26	401	Modeling the Human Thermal Balance in a Space Suit using a Full Surface, Variable Emissivity Radiator	Christopher Massina, David Klaus and James Nabity
103	401	Multifunctional Cooling Garment for Space Suit Environmental Control	Michael Izenson, Weibo Chen, Scott Phillips, Ariane Chepko, Grant Bue, Janet Ferl and Daniel Cencer
259	401	Prediction of Human and Spacesuit Thermal Behavior using the 3-D Wissler Suit model with integrated PLSS	Thomas Cognata and John Fricker
285	401	Actuator Sizing and Utility Assessment of Control Moment Gyroscopes for an Astronaut EVA Jetpack	Todd Sheerin, Michele Carpenter and Jeffrey Hoffman
330	401	Experimentally determined heat transfer coefficients for spacesuit liquid cooled garments	Grant Bue, Carly Watts, Richard Rhodes, Ian Anchondo, David Westheimer, Colin Campbell, Walt Vonau, Matthew Vogel, Bruce Conger and James Stein
36	402	Failure Analysis Results and Corrective Actions Implemented For the EMU 3011 Water in the Helmet Mishap	John Steele, Carol Metselaar, Barbara Peyton, Tony Rector, Robert Rossato, Donald Holder, Brian Macias and Dana Weigel
102	402	High-Capacity Spacesuit Evaporator Absorber Radiator (SEAR)	Michael Izenson, Weibo Chen, Scott Phillips, Ariane Chepko, Grant Bue and Gregory Quinn
105	402	CFD Analysis of Loose Water in the EMU	Tyler Ball and John Fricker
164	402	Continued Advancement of Supported Liquid Membranes for Carbon Dioxide Control in Extravehicular Activity Applications	David Wickham, Kevin Gleason, Jeffrey Engel, Scott Cowley and Cinda Chullen
174	402	Non-intrusive, Distributed Gas Sensing Technology for Advanced Spacesuits	Jesus Delgado-Alonso, Straun Phillips, Vladimir Rubtsov and Cinda Chullen
179	402	Adsorption of Ammonia on Regenerable Carbon Sorbents	Marek A. Wojtowicz, Joseph E. Cosgrove, Michael A. Serio and Monique Wilburn
313	402	Rapid Cycle Amine (RCA) 3.0 System Development	Cinda Chullen, William Papale, Colin Campbell, Kevin Hawes and Robert Wichowski
314	402	Utilizing a Suited Manikin Test Apparatus and Spacesuit Ventilation Loop to Evaluate Carbon Dioxide Washout	Cinda Chullen, Bruce Conger, Summer Mcmillin, Adam Korona, Bryan Kanne, Jason Norcross, Frank Jeng and Mike Swickrath
327	402	Shuttle/ISS EMU Failure History and the Impact on Advanced EMU PLSS Design	Colin Campbell
338	402	Development of a Back Pressure Valve for the Spacesuit Water Membrane Evaporator (SWME)	Brad Harris, Tom Leimkuehler and John Fricker

100	403	Real-Time Performance Metrics for SAFER Self-Rescue	Patrick Handley, Stephen Robinson, Kevin Duda, Zahar Prasov, Stephen York and John West
301	403	Suit Simulators for Analog Sites: Lessons Learned from HI-SEAS Testing	David Akin, Tiffany Swarmer and Kevin Davis
326	403	INSPECT Sensor Suite for On-Orbit Inspection and Characterization with Extravehicular Activity Spacecraft	David Sternberg, Todd Sheerin and Gabriel Urbain
27	404	Inter-Module Ventilation Changes to the International Space Station Vehicle to support integration of the International Docking Adapter and Commercial Crew Vehicles	Dwight Link and Steve Balistreri
73	404	Status of ISS Water Management and Recovery	Donald Carter, Jennifer Pruitt, Chris Brown, Lyndsey Bankers and Ryan Schaezler
74	404	Process Development for Removal of Siloxanes from ISS Atmosphere	Donald Carter, Mark Wilson, Elizabeth Bowman, Jay Perry, Matthew Kayatin, John Steele, Tony Rector, Gregory Gentry and Oscar Monje
94	404	International Space Station Environmental Control and Life Support System Mass and Crewtime Utilization in Comparison to a Long Duration Human Space Exploration Mission	Robert Bagdigian, Jason Dake, Gregory Gentry and Matthew Gault
133	404	Upgrades to the ISS Water Recovery System	Donald Carter, Jennifer Pruitt, Robert Bagdigian and Matthew Kayatin
146	404	Report on ISS Oxygen Production, Gas Resupply, and Partial Pressure Management	Ryan Schaezler and Anthony Cook
155	404	International Space Station (ISS) Environmental Control and Life Support (ECLS) System Overview of Events: 2010-2014	Gregory Gentry and John Cover
225	404	Analysis of Ammonia Moderate Leakage in Columbus	Paola Parodi, Savino De Palo, Ilaria Locantore, Zoltan Szigetvari and Stephan Hinderer
238	404	Investigation of the Makeup, Source, and Removal Strategies for Total Organic Carbon in the Oxygen Generation System Recirculation Loop	Elizabeth Bowman, Joyce Carpenter, Robert Roy, Steve Van Keuren and Mark Wilson
255	404	International Space Station Major Constituent Analyzer On-orbit Performance	Ben Gardner, Phillip Erwin, Souzan Maleki Thoresen, Rachel Wiedemann and Chris Matty
21	405	A Novel Vine-Like Robot for In-Orbit Inspection	Michael Wooten and Ian Walker
267	405	EVA/Robotic Servicing in the Commercial Space Era	David Akin
309	405	Pneumatically Power Assisted Extra-Vehicular Activity Glove	Curt Kothera, Thomas Pillsbury, Norman Wereley and David Akin
341	405	RoboGlove – A Grasp Assist Device for Earth and Space	Myron Diftler, Lyndon Bridgwater, Jonathan Rogers, Evan Laske, Kody Ensley, Jason Lee, Christopher Ihrke, Donald Davis and Douglas Linn
168	500	A Zero Gravity Mass Measurement Device	Robert Morrow, John Wetzel, Daniel Wyman, Russell Wallace, Ron Anderson, Greg Ladwig and Robert Richter
252	500	SELECTION OF LEAFY GREEN VEGETABLE VARIETIES FOR A PICK-AND-EAT DIET SUPPLEMENT ON ISS	Gary Stutte, Gioia Massa, Jeffrey Richards, Lashelle Spencer, Mary Hummerick, Raymond Wheeler, Grace Douglas and Takiyah Simons
7	501	Potable Water via a Grey Water Recycling System	Jaione Romero-Mangado, Tanner Pierce, Auguste Nahas, Jurek Parodi, Kevin Howard and Michael Flynn
44	501	Comments on the MIT Assessment of the Mars One Plan	Harry Jones
48	501	Success Factors in Human Space Programs - Why Did Apollo Succeed Better Than Later Programs?	Harry Jones
68	501	Spray drying technology for brine processing; system design and operation	Richard Wisniewski
86	501	Parametric Analysis of Logistics and Life Support Systems for Deep Space Mission Design	Hiroyuki Miyajima

157	501	New ECLSS Simulation Software and Its Demonstration by Manned Mars Missions	Eriko Moriyama, Reiji Moroshima, Satoshi Ohura, Tomofumi Hiroasaki, Teruhiro Yamashita, Shota Iino, Hiroyuki Miyajima, Yoshio Ishikawa, Masakatsu Nakane and Takuma Terao
198	501	Additive Manufacturing Technology to Enhance Environmental Control Life Support Equipment (ECLS) Performance While Reducing Its Weight and Volume	Thomas Stapleton, Krouse Daniel and Yvon Laliberte
230	501	Development of a Water Recovery System Resource Tracking Model	Joe Chambliss, Michael Moore, Imelda Stambaugh, Miriam Sargusinh and Sarah Shull
266	501	Using V-HAB to Model and Simulate Air Revitalization System Technologies developed at JAXA	Jonas Schnaitmann, Benjamin Portner, Roland Haber and Masato Sakurai
289	501	HabNet – An Integrated Habitation and Supportability Architecting and Analysis Environment	Sydney Do, Andrew Owens and Olivier De Weck
4	502	A Modular Habitation System for Human Planetary and Space Exploration	A Scott Howe
56	502	What Do We Give Up and Leave Behind?	Marc M. Cohen and Sandra Haeuplik-Meusburger
156	502	“From Hostile to Hospitable: Changing Perceptions of the Space Environment”	Elizabeth Lockard
162	502	Random Access Frame (RAF) System Neutral Buoyancy Evaluations	A Scott Howe, David Akin, Raul Polit-Casillas, Katherine McBryan and Christopher Carlsen
239	502	Status: Crewmember Noise Exposures on the International Space Station	Jose G. Limardo, Christopher S. Allen and Richard W. Danielson
286	502	International Space Station Acoustics – A Status Report	Christopher Allen
17	503	Spacecraft Solar Particle Event (SPE) Shielding: SPE environment models and materials performance in a Cygnus Pressurized Cargo Module (PCM) based Exploration Augmentation Module (EAM).	Steven Koontz, Brandon Reddell, Kristina Rojdev, Paul Boeder and William Atwell
54	503	Radiation Protection Strategy Development for Mars Surface Exploration	Arturo Ortiz, Vadim Rygalov and Pablo de León
215	503	Estimates of Maximum Solar Particle Event Proton Fluences That Do Not Exceed Permissible Radiation Exposure Limits	Lawrence Townsend, Wouter de Wet, Jamie Porter, Krista Burton and Whitney Smith
337	503	Passive Neutron Measurements: Some Early Mir/Space Shuttle Results	William Atwell and Gautam Badhwar
340	503	Sub-GLE Solar Particle Events and the Implications for Lightly-Shielded Systems Flown During an Era of Low Solar Activity	William Atwell, Allan Tylka, William Dietrich, Kristina Rojdev and Courtney Matzkind
70	505	Search for a Real-Time Measurement of Dimethylsilanediol in the International Space Station Atmosphere using the Air Quality Monitor	William Wallace, Thomas Limero, Daniel Gazda and Ariel Macatangay
197	505	Dormancy and Recovery Testing of Biological Wastewater Processors.	Mary Hummerick, Janelle Coutts, Griffin Lunn, Lashelle Spencer, Christina Khodadad, Somilez Francis, Raymond Wheeler and Michele Birmele
241	505	Inflight Microbial Monitoring- an alternative method to culture-based detection currently used on the International Space Station	Christina Khodadad, Michele Birmele, David Smith, Raymond Wheeler, Monsi Roman and Mary Hummerick
243	505	Laser Spectroscopy Multi-Gas Monitor: Results of Technology Demonstration on ISS	Paul Mudgett, Jeffrey Pilgrim and William Wood
49	506	Water System Architectures for Moon and Mars Bases	Harry Jones, Edward Hodgson and Mark Kliss
53	506	Will Astronauts Wash Clothes on the Way to Mars?	Michael Ewert and Frank Jeng
111	506	Environmental Control and Life Support (ECLS) Technology Development and Maturation for Exploration: 2014 to 2015 Overview	Robyn Gatens, Molly Anderson, James Broyan, Ariel Macatangay, Sarah Shull, Jay Perry, Walter Schneider and Nikzad Toomarian
226	506	Comparative assessment of delivering consumable resources versus in-situ resource utilization for moon and Mars habitats	Gregory Gentry, Matt Duggan, William West, Michael Heldmann, Kurt Klaus, Tim Scull and Darren Samplatsky

235	506	Exploring Life Support Architectures for Evolution of Deep Space Human Exploration	Molly Anderson and Imelda Stambaugh
287	506	Benefits of Additive Manufacturing for Human Exploration of Mars	Andrew Owens, Sydney Do, Andrew Kurtz and Olivier De Weck
311	506	Planetary Protection Concepts in the Context of the Evolvable Mars Campaign	James Spry, Margaret Race, James Johnson, Bette Siegel and Catharine Conley
41	508	Estimating the Life Cycle Cost of Space Systems	Harry Jones
46	508	Underestimation of Project Costs	Harry Jones
295	508	The Life Cycle Cost (LCC) of Life Support Recycling and Resupply	Harry Jones
196	509	Results from on-board CSA-CP and CDM Sensor Readings during the Burning and Suppression of Solids – II (BASS-II) Experiment in the Microgravity Science Glovebox (MSG)	Sandra Olson, Paul Ferkul, Subrata Bhattacharjee, Fletcher Miller, Carlos Fernandez-Pello, Shmuel Link, James T'len and Indrek Wichman
204	509	Modeling and Analysis of Realistic Fire Scenarios in Spacecraft	Daniel Dietrich, John Brooker, Gary Ruff and David Urban
213	509	Overview of the "Solid Combustion" Experiment in the Japanese Experiment Module "Kibo" on the International Space Station	Masao Kikuchi, Osamu Fujita, Shuhei Takahashi, Akihiko Ito, Hiroyuki Torikai, Yuji Nakamura and Sandra L. Olson
293	509	Buoyant Effects on the Flammability of Silicone Samples Planned for the Spacecraft Fire Safety Experiment (Saffire)	Justin Niehaus, Paul Ferkul, Suleyman Gokoglu and Gary Ruff
206	510	Characterization of a regenerable impactor filter for spacecraft cabin applications	Juan Agui and R Vijayakumar
248	510	The Dust Library: Enhanced Infrared Spectra of Individual Respirable Dust Particles	James Coe, Antriksh Luthra and Aruna Ravi
304	510	Characterization of carbon particulates in the exit flow of a Plasma Pyrolysis Assembly (PPA) reactor	Robert Green, Juan Agui, Marit Meyer, Rajagopal Vijayakumar, Morgan Abney, Zach Greenwood and Gordon Berger
334	510	Lunar Dust In-situ Experiment and Operational Considerations for the Potential CABLE Canadian American British Lunar Explorer	Roman Kruzelecky, Vincent Latendresse, Jonathan Lavoie, Alireza Nakhaei, Wes Jamroz, Vaios Lappas, Craig Underwood, Yang Gao, Sir Martin Sweeting, Trevor Sorensen, Pete Mouginis-Mark, Edward Cloutis and Brahim Aissa
335	510	Regenerable Cross Flow Filter with Integral Biohazard Treatment Stage	Nicos Andreas, Christopher Cox, Masaaki Tamura and Toru Kato
45	511	Reliability and Failure in NASA Missions: Blunders, Normal Accidents, High Reliability, Bad Luck	Harry Jones
47	511	Diverse Redundant Systems for Reliable Space Life Support	Harry Jones
288	511	Comparison of Spares Logistics Analysis Techniques for Long Duration Human Spaceflight	Andrew Owens, Olivier De Weck, Bryan Mattfeld, Chel Stromgren and William Cirillo
71	513	The Integrated Medical Model: A probabilistic simulation model predicting in-flight medical risks	Alexandra Keenan, Millennia Young, Lynn Saile, Lynn Boley, Marlei Walton, Ronak Shah, Eric Kerstman, Debra Goodenow and Jerry Myers
269	513	Development Status of the Thermal Layer of the Dynamic Life Support System Simulation V-HAB	Claas Olthoff, Jonas Schnaitmann, Florian Bender, Viktoria Koch and Jan Weber
308	513	Adaptive Occupant Protection to Mitigate Biodynamic Response to Capsule Launch and Landing Loads	Andrew Becnel, Norman Wereley and Gregory Hiemenz