



Forty-nine astronauts and cosmonauts from 14 nations gathered October 4-10, 2009 in Prague, Czech Republic for the XXII Planetary Congress of the Association of Space Explorers (ASE). The theme of the XXII Congress was "Space – Opportunities for All", reflecting the Association's belief that emerging international spaceflight capabilities and technologies all play an important role in contributing to the growing human presence in space. The Congress was organised by the Association for Transport Telematics (SDT) representing 80 Czech and Slovak firms and institutions.



*Fliers and spouses gather for the official Group Photo at the Hotel Praha*

Monday morning began with the traditional Opening Ceremony, immediately preceded by the official group photo with the assembled fliers and spouses. Moderated by Congress organizer Roman Srp, the ceremony opened with a short speech by Jan Kohout, Deputy Prime Minister and Minister of Foreign Affairs of the Czech Republic. Congress host Vladimir Remek followed, welcoming the delegates

and spouses to Prague. ASE president Chris Hadfield next took the podium and thanked the Congress organizers and sponsors for inviting the ASE Congress to Prague. Hadfield noted the presence of China's first astronaut, Yang Liwei, attending his first Congress, and recognized Dorin Prunariu as the only ASE member to have attended every Congress since the organization was founded in 1985. Hadfield concluded his remarks by asking the assembled fliers, spouses and dignitaries to rise and observe a moment of silence for cosmonauts Pavel Popovich and Yuri Glazkov, both of whom had passed away in the interval between the XXI and XXII Congresses. Representatives of the European-Russian Bank, Telefónica O2 Czech Republic, and Kapsch Telematic Services, all sponsors of the XXII Congress, welcomed the delegates to Prague after which the Opening Ceremony concluded with a short concert by renowned violinist Jaroslav Sveceny.



*Jaroslav Sveceny performs at the Opening Ceremony*

The Congress Theme Session followed the traditional Executive Committee press conference. Congress host Vladimir Remek opened the session by describing the evolution of Czech scientific and technical capabilities and their contributions to Czech society. Deputy Prime Minister Jan Kohout gave an overview of Czech ambitions in space, government commissioner for space Karel Dobes recounted



*Oleg Kotov and Charlie Walker discuss space medicine, applications and research*

the challenges and opportunities of the first 9 months of Czech membership in ESA, professor Miroslav Svitek of the Czech Technical University described plans for Czech high-tech research and development in the 21<sup>st</sup> century, and Roman Srp of Intelligent Transport Systems & Services discussed space applications and services that directly benefit the Czech industrial and transportation sectors. ASE members Oleg Kotov and Charlie Walker gave an overview of space medicine, applications and research, and Salvador Anglada of Telefónica O2 described his company's efforts to develop innovative networking tools for social care and medical treatment. Following the discussions, a video greeting from the crew onboard the International Space Station was played for the Congress participants.

Following lunch at the Hotel Praha, the second session of the day was a panel discussion on Exploration in the 21<sup>st</sup> Century. Chaired by Chris Hadfield, panel participants included Yi Soyeon, Rusty Schweickart, Sergei Volkov, Ken Reightler and Ladislav Hrzal. Each panelist made brief remarks as to his or her vision for what 21<sup>st</sup> century exploration might look like; a lively discussion with the audience centered on the trade-off between personal risk to life and value in exploring the Moon, Mars and beyond.

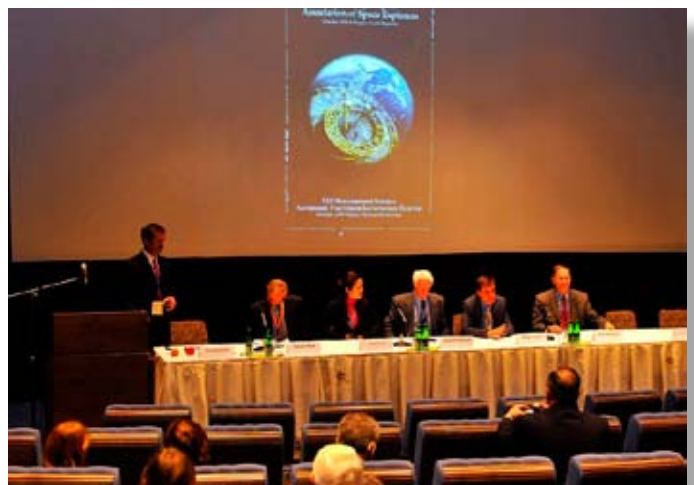
Monday afternoon, the fliers continued their work in the first of two closed sessions. During this executive session, the delegates developed candidate lists for the upcoming

executive committee elections, discussed the internal affairs of the association and developed plans for future activities.

The final session of the day, Crew Safety & Technical Issues, featured a detailed technical briefing by US flier Pam Melroy, who presented the results of NASA's Columbia Crew Survival Investigation Report. Melroy presented an analysis of the accident, focusing on the factors and events affecting crew survival, and suggested recommendations for improving crew safety for future human space flight vehicles. Melroy stated that the comprehensive, respectful investigation provided knowledge and data that will benefit future crews in the worldwide community of astronauts and cosmonauts. She added that in the course of the investigation, several areas of research were identified that could improve our understanding of both nominal space flight and future spacecraft accidents.

While the fliers were in session, the spouses and companions enjoyed an afternoon tour of Prague, including visits to the Prague Castle, the Prague Loreto, Strahov Monastery and Old Town Square. Fliers and companions were reunited for an evening reception and dinner at the Prague City Hall.

Tuesday's technical program was hosted by and at the Czech Technical University in Prague. The morning session, International Space Programs Review (Part I), was chaired



*Chris Hadfield, Ladislav Hrzal, Yi Soyeon, Rusty Schweickart, Sergei Volkov and Ken Reightler discuss exploration in the 21st century*

by former US astronaut Leroy Chiao and featured presentations by astronauts from China, Japan and Russia. Chiao opened the session by welcoming the assembled students, faculty and fliers, noting that the session's first speaker would be China's first astronaut, making his first appearance at an ASE Congress. After a warm welcome from the audience, Yang Liwei presented an overview of China's activities in space and a roadmap for future Chinese exploration of low-earth orbit and beyond. Japanese astronaut Koichi Wakata followed, providing an entertaining look at his recent long-duration mission on the International Space Station, a detailed briefing on the Japanese HTV and its recent flight, as well as future JAXA plans for science and utilization onboard the orbiting outpost. Russian cosmonaut Sergei Volkov concluded the session with an overview of his recent long-duration flight on the ISS; Volkov was the first legacy cosmonaut to fly in space.

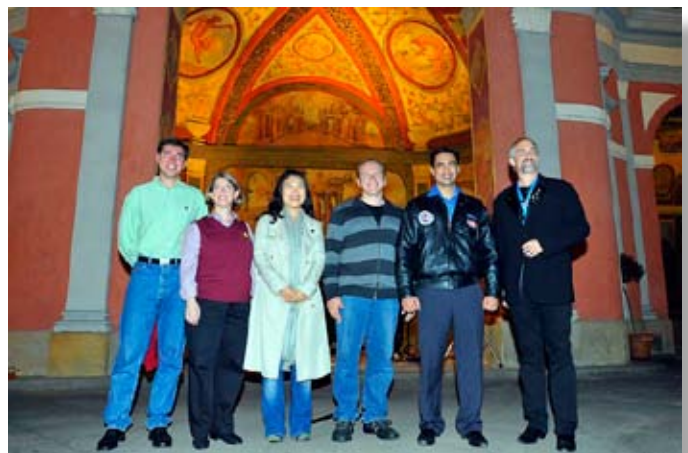
Following lunch at CTU, the delegates reconvened for the second of the two-part International Space Programs Review session. Chaired by former US astronaut Dick Richards, the session featured presentations by fliers from Canada and the United States. Canadian astronaut Chris Hadfield opened the session with a comprehensive overview of Canada's activities in space, noting that Canada, given its size and low population density, is particularly reliant on space-based remote sensing and earth observation technologies for weather reporting, disaster management and national security. Hadfield described the many significant Canadian contributions to the ISS program, with particular emphasis on the physical and life sciences and robotics. US flier Jerry Ross followed with a briefing on the history of the Hubble Space Telescope and the shuttle servicing missions, and provided an in-depth look at the most recent mission to the orbiting observatory. Ross described the STS 125 mission profile, payload configurations and HST instruments that were replaced. NASA astronaut Catherine "Cady" Coleman concluded the session with a review of the ISS missions over the past year, and described some of the many new challenges faced with assigning, training and supporting a six-person crew on board the ISS.



*Jerry Ross reports on the Hubble servicing mission at the Czech Technical University*

Meanwhile, the companions and spouses enjoyed a day-long excursion to nearby Carlsbad, the best known and largest spa in the Czech Republic. The tour included visits to the Church of St. Andrew, the Church of Sts. Peter and Paul, the Mill Colonnade and the Cathedral of St. Mary Magdalene.

Tuesday evening, fliers and spouses enjoyed a private vernissage and reception for the Glass in Space exhibition at the beautiful Ledeburske Gardens below the Prague Castle, organized by pre-eminent glass artists Martin Rosol and Josh Simpson. The evening was capped with a ceremonial flair, whereby new ASE members and first time Congress participants were recognized individually and officially awarded their ASE member insignia; receiving their pins this evening



*New members and first time Congress participants receive their ASE insignia at Ledeburske Gardens. Left to right: Sergei Volkov, Pam Melroy, Yi Soyeon, Oleg Kotov, Sheikh Muszaphar and Richard Garriott*

were Yi Soyeon (Korea), Sheikh Muszaphar (Malaysia), Oleg Kotov (Russia), Sergei Volkov (Russia), Richard Garriott (US) and Pam Melroy (US). Not present this evening, Yang Liwei (China) and Jean-François Clervoy (France) were presented their ASE pins at the Closing Ceremony on Friday.

Wednesday was the traditional Congress Community Day. ASE members and their spouses traveled throughout the Czech Republic to visit with over 5000 students, scientists, media and the public at schools, universities and technical institutes in Prague, Brno, Ceske Budejovice, Jirkov, Klasterec nad Ohri, Liberec, Ondrejov, Ostrava, Pardubice, Podborany, Podebrady, Teplice, Trebic and Usti nad Labem.

Thursday morning, the delegates returned to the Czech Technical University for the Space Science, Operations and Utilization technical session. Chaired by ESA astronaut Jean-François Clervoy, the session opened with a report by Andreas Schoen of the European Astronaut Center, who described the logistics and training challenges of transitioning from a three to a six-person crew on the ISS. Schoen also reviewed changes in ISS maintenance and training philosophies, noting that the classic training concept of parallel training for prime and backup crews is being phased out in favor of a new, single-flow-to-launch philosophy, reducing training time and travel burdens on the international crews. ESA/ESOC



*ESA's Andreas Schoen discusses the transition to a six-person ISS crew*

Flight Operations Director John Dodsworth followed with a report on the launch, operations and expected science results from the Herschel/Planck observatories. Dodsworth described Herschel, ESA's infrared space observatory, as the largest space telescope yet built, with a mission to study the origin and evolution of stars and galaxies; and Planck, the first European space observatory whose primary objective is the study of the Cosmic Microwave Background, the residual radiation left over from the Big Bang. ESA astronaut Reinhold Ewald concluded the session with a technical review of ESA's Columbus ground control facility, the Columbus Control Centre, including its development history, and activities since Columbus activation in 2008. Ewald noted that Columbus has by now become the most used science module on the ISS.

Donning his Executive Committee hat, Ewald then chaired the second session of the morning, "Emerging Spaceflight Capabilities". The session featured presentations by astronaut representatives of Korea and Malaysia, as well as by HRH Dr. Turki al-Saud, representing Saudi Arabia. Korean astronaut Yi Soyeon opened the session with an overview of the Korean Aerospace Research Institute (KARI) and its efforts to pave the way forward for the development of spaceflight capabilities and technologies in Korea. Yi discussed Korean efforts in satellite, launch vehicle and aircraft development, space science, applications and research and aerospace safety and certification. She also described the Korean astronaut program and presented a kaleidoscope of the 18 science experiments from industry, universities and schools that she performed on the International Space Station. Angkasawan Sheikh Muszaphar followed with a video presentation of his flight to the ISS as Malaysia's first astronaut, and discussed the scientific, educational and medical activities he conducted on his mission. Muszaphar emphasized the important role his nation's space efforts play in inspiring Malaysian students to pursue technical studies and careers. Dr. Turki al-Saud, VP for Research Institutes at the King Abdulaziz City for Science and Technology (KACST) wrapped up the session with a report on Saudi national



*Dr. Turki al-Saud outlines Saudi national science and technology policy at the Czech Technical University*

science, technology and innovation policy. Al-Saud identified earth observations, navigation, telecommunications, geodesy and space science as critical components of Saudi space policy, with additional applications in satellite system development, space services, and cooperative applied and science missions. He also reviewed past Saudi activities in space, particularly in the area of remote sensing, and he provided an overview of the Saudi network of institutions to foster advanced optical systems research, systems design, Space Time Anisotropy Research, and lunar and near earth object studies.

Thursday afternoon, cosmonaut Viktor Savinykh chaired "Roadmap for Future Exploration", the final public session of the Congress. Former US astronaut Ken Reightler opened the session with a detailed briefing on NASA's next-generation crewed vehicle, Orion, noting that the vehicle features a crew module designed for maximum crew operability and safety, a service module housing utility systems and propulsion components and a launch abort system for improved astronaut safety throughout the launch profile. Reightler added that the vehicle is designed to support flights to the International Space Station, servicing missions in the low-earth orbit environment, and missions to the moon, with a loiter capability of up to 210 days. ESA astronaut Jean-François Clervoy followed with an in-depth look at the European Automated Transfer Vehicle (ATV) and the 2008 Jules

Verne maiden mission to the ISS. Clervoy described the unique assets of the ATV in autonomous manoeuvring, precise navigation and guidance with stellar, optical, radar and GPS navigation, its versatility as a payload carrier, and its fully redundant architecture featuring independent safety monitoring and autonomous anti-collision systems. Viktor Savinykh concluded the session with a briefing on the Mars - 500 program, a multi-element, international ground-based simulation of a crewed mission to Mars conducted by the Institute for Biomedical Problems in Russia. Savinykh discussed the selection criteria for the candidate crewmembers and the various psychological, medical and human factors experiments they performed during the initial 105-day stage of a simulated flight.

While the fliers were in session at the Czech Technical University, the spouses and companions enjoyed a sightseeing tour to the historic Karlstejn Castle, as well as an afternoon shopping excursion in downtown Prague. Thursday evening, the delegates were treated to a reception at the Hotel Praha hosted by Congress sponsor EADS Astrium.

At the second executive session on Friday morning, Alexander Alexandrov (Russia) was elected to replace Miroslaw Hermaszewski (Poland) for a three-Congress term on the international executive committee. Discussions continued on the structure and function of the various bodies within the ASE, Executive Director Andy Turnage demonstrated the Windows on Earth software capability, a joint partnership between ASE and TERC to develop a simulated, real-time 3-D view of the earth from the International Space Station to facilitate crew earth observations. Sheikh Muszaphar declared his intent to host the XXIII Planetary Congress in Malaysia in 2010, and ASE-Russia presented a general plan to host the XXIV Congress in Russia, coincident with the 50<sup>th</sup> anniversary of the flight of Yuri Gagarin.

Immediately following the executive session, the second of the two-part Crew Safety & Technical Issues session was convened. Rusty Schweickart (US) updated the members on

the progress of the multi-year ASE Near Earth Objects Committee effort to develop an international decision-making framework for addressing the threat of a potential Earth-impacting asteroid. Schweickart also announced that he was stepping down as chairman of the ASE NEO Committee, with Tom Jones (US) appointed as his replacement. Alexander Alexandrov (Russia) discussed past, current and future spacecraft design and cosmonaut concerns over maximizing performance and operability at the expense of crew safety.

After an afternoon of free time, the delegates gathered at the historic Bethlehem Chapel in Old Town, Prague, for the Closing Ceremony. Prior to dinner and the awards ceremony, the attendees were treated to a concert by the renowned Bambini di Praga choir, whose repertoire included folk songs from each of the represented ASE countries as well as folk songs from the Czech Republic. At each Closing Ceremony, ASE recognizes individuals who have made outstanding contributions to promoting space, science and education in the country or region where the Congress is held. In Prague, the ASE's 2009 Planetary Award, the Crystal Helmet, was awarded to



*Jean-François Clervoy and Yang Liwei after presentation of their ASE insignia*

Dr. Boris Valnicek for his lifelong contributions to science, astronomy and astronautics in the Czech Republic. Past recipients of the Crystal Helmet include Jacques-Yves Cousteau, Oleg Gazenko, Yuri Gagarin, Gerard O'Niell, Thomas Paine, Isaac Asimov, Stanislaw Lem and William E. Boeing, Jr. Dr. Ladislav Hrzal was awarded a Leonov Medallion for his innovative, space-themed educational programs for children, as was cosmonaut host Vladimir Remek for his contributions to cosmonautics in the Czech Republic.



*The Closing Ceremony at Bethlehem Chapel featured a concert by the Bambini di Praga*

ASE Founders Alexei Leonov and Rusty Schweickart were honored and recognized as ASE Distinguished Members, a new award to honor ASE members who have made significant, longstanding personal and professional contributions to the organization and executive director Andy Turnage was awarded the Yuri A. Gagarin medal by ASE-Russia president Viktor Savinykh, on behalf of the Russian Federation of Cosmonautics.

The Association would like to extend its gratitude to Vladimir and Jana Remek, Roman Srp, Milan Sliacky, Vratislav Pavlik, Vladislava Kalabova and Lenka Kyselkova for their dedication and hard work organizing the XXII ASE Planetary Congress in Prague.



*Boris Valnicek accepts the Crystal Helmet from Congress host Vladimir Remek*