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SPACE MEDICINE BRANCH REPORT

President's Message

I would like to express my sincere appreciation to you for giving me the opportunity and the honor to serve as President of the Space Medicine Branch (SMB), and for allowing me to lead the efforts and represent the interests of our membership. The SMB promotes awareness about space medicine, including the critical role that our specialty has played and that will continue to play in support of the exploration and utilization of space. The SMB is a leading scientific organization thanks to the support of our members and the dedication of our outstanding executive team. The 2001-2002 SMB's executive team includes Dr. Chiharu Sekiguchi (Vice-President), Mr. Lloyd Tripp (Secretary/Treasurer), Dr. Philip Scarpa (Representative to AsMA Council, Policy Committee Chair, and Program Committee co-chair), Dr. Denise Baisden (Representative to AsMA Nominations Committee, and Program Committee co-chair), Dr. Wyckliffe Hoffler (Historian and Custodian of the Gavel), Dr. Annette Sobel (Education Committee Chair), Dr. Chrysoula Kortidou Papadeli (International Committee Chair), Dr. Roger Bisson (Membership Committee Chair), Dr. Paul Humbert (Corporate Membership Committee Chair), Dr. Jeffrey Myers (Representative to AsMA Membership Committee and Young Investigator Award Subcommittee Chair), Dr. Smith Johnston (Hubertus Strughold Award Subcommittee Chair), and Members-at-Large: Dr. Arthur Arnold, Chrysoula Kortidou Papadeli, Dr. Volker Damann, Dr. Patrick McGinnis, Dr. Joe Dervay, and Dr. Dwight Holland. I want to reiterate that it is thanks to the efforts of these colleagues that the SMB continues to be the leading organization representing the interests of space medicine professionals.

Through the Young Investigator Award program established in 1976, the SMB has been instrumental in recognizing the scientific accomplishments of 27 young researchers and promoting excellence in scientific research in Aerospace Medicine. Further, 40 senior scientists have been the recipients of the SMB's Hubertus Strughold Award for their dedication and outstanding contributions in advancing the frontiers of Space Medicine and/or for sustained contributions to furthering the goals of the SMB. I believe that it is very important to recognize the efforts and dedication of our colleagues, and I invite you to have an active role by nominating deserving candidates for the Hubertus Strughold Award.

The effort initiated by Dr. Robin Dodge to review the SMB's Constitution and By-laws was completed under the leadership of Dr. Philip Scarpa, and the final document will be posted in our website.

The new Millennium is turning out to be very exciting and promising for all of us who are involved in the discipline of Aerospace Medicine.

Space Tourism

On April 12, 1961, cosmonaut Yuri Gagarin became the first human being to venture into outer space, followed 20 days later by U.S. astronaut Alan Shepard. More than 40 years have passed since these historical achievements that inspired millions of people on Earth to dream about space travel. Finally, at a cost of \$20 million dollars and amid intense political controversy and last minute high-level negotiations, millionaire Dennis Tito (age 60) became the first ordinary citizen to fly into space and to experience life aboard the International Space Station. His achievement has rekindled the imagination of many space-faring dreamers. Former Apollo astronaut and Moon-walker Buzz Aldrin stated recently "We must sweep away barriers, and allow Americans of every stripe to visit and enjoy space travel. While the idea of orbiting tourist stations or hotels may seem more from Arthur C. Clarke than from modern space rocketry, the time is ripe again to think big, and to set new goals."

Space tourism has the potential of becoming a highly profitable industry according to the results of the NASA-STA (Space Transportation Association) Space Tourism Study published on March 25, 1998. The National Aerospace Laboratory (NAL) in Japan conducted a national survey and found that over 70% of those surveyed stated that they would like to visit space. Of these, 70% indicated that they would be willing to pay up to 3 months' salary for the trip. NAL conducted a similar survey in the U.S. and overall, 60% of the respondents said they would be interested in a trip to space. Of these, 75% indicated that they would be willing to pay at least 3 months of their salary for the experience. Even if only 10% of the intended spending were to translate into actual spending, this would amount to a multi-billion dollar annual market.

The establishment of the "X Prize Foundation" on May 18, 1996, was intended to stimulate the development of commercial space tourism by offering a \$10 million dollar cash prize to the first private team to build and fly (two consecutive flights) a reusable space vehicle capable of carrying three individuals on a sub-orbital flight to 62 miles (100 km). This international competition is promoting the development of private, low-cost, reusable space vehicles that will enable rapid intercontinental passenger and cargo transport, space tourism, and access to space resources.

Safety and health of occupants (crews and passengers) is a critical issue that the emerging manned commercial space transportation industry will have to address in order to successfully promote the development of space tourism. In 1999, the Aerospace Medical Association (AsMA) approved the following resolution proposed by the Space Medicine Branch (SMB): "The Aerospace Medical Association urges that appropriate agencies develop

relevant U.S. Federal policies, procedures, guidelines, and regulations to ensure the health and safety of human crewmembers and passengers who will be involved in manned commercial space flights in the near future". On November 20, 2000, the Aerospace Medical Association convened a task force to develop a position paper on medical guidelines for commercial space passengers.

The January/February 2001 Issue of the National Space Society's Ad Astra Magazine stated that "Some regulation of space access is probable, but it is critical to engage in frank discussion that takes into account a variety of viewpoints in order to create logical guidelines that will not completely prevent the public from being able to fly in space." The Space Tourism Division of the Space Transportation Association (STA) based in Washington, D.C., has convened annual Space Tourism Conferences to discuss the technological, political, financial, and regulatory (including medical) aspects of manned commercial space operations. The STA organized a special task force during 2001 to develop draft medical guidelines for space passengers.

The U.S. House of Representatives introduced the Space Tourism Promotion Act of 2001 during the 1st Session of the 107th Congress on July 10, 2001. The purpose of this Act is to promote the development of the United States space tourism industry. This Act recommends the issuance of regulations to ensure the safe operation of passenger-carrying launch and reentry vehicles and spacecraft for space tourism, and the safe operation of habitable facilities in outer space for space tourism purposes. This Act also states that the U.S. portion of the International Space Station shall not be visited or occupied by any individuals other than those engaged in or supporting the conduct of official business of the US or the conduct of scientific or engineering research and development, and those authorized by relevant international agreements, except in emergency situations.

FAA's Role in U.S. Commercial Space Operations

In 1982, Space Services Inc. of America conducted the first U.S. commercial space launch (Conestoga I). There were no statutes, policies, or regulations in the U.S. governing commercial space operations. Consequently, in February of 1984, President Ronald Reagan issued an executive order assigning the Department of Transportation (DOT) as the lead Federal Agency for the oversight of all commercial space launch operations in the United States. The Commercial Space Launch Act of October 30, 1984, was enacted by Congress to give DOT the necessary authority to regulate all commercial space launch operations in the United States. The Office of Commercial Space Transportation (OCST) was established in the DOT in 1984 to develop safety and regulatory requirements for commercial space launch operations.
See SPACE MEDICINE BRANCH, p. 960.

SPACE MEDICINE BRANCH, from p. 959. commercial space launch license applicants. On November 16, 1995, this activity was transferred to the FAA becoming the seventh Line of Business (LOB) for the agency. An Associate Administrator was assigned the task of overseeing the work of this LOB. The Secretary of Transportation delegated to the FAA the responsibility to license and regulate all U.S. commercial space launch activities to ensure that they are conducted safely and responsibly, and to promote, encourage, and facilitate commercial space transportation. This regulatory oversight includes commercial launch sites, commercial launch vehicles, and the payloads launched aboard these vehicles; including retrievable materials processing, re-entry systems, non-government research activities and many other, as yet unforeseen, commercial space systems. Within the FAA, the OCST is tasked with carrying out this responsibility consistent with public health and safety, safety of property, and the national security and foreign policy interest of the United States.

The OCST produced a report entitled "The Economic Impact of Commercial Space Transportation on the U.S. Economy". This report indicates that U.S. economic activity linked to the commercial space industry in 1999 totaled over \$61.3 billion dollars. Commercial space transportation was directly and indirectly responsible for \$16.4 billion dollars in employee earnings in the U.S. Over 497,000 people were employed in the U.S. as a

direct or indirect result of commercial space transportation and enabled industries. Commercial space transportation and the industries it enabled affected the economic activity, employee earnings, and number of jobs in all major U.S. industry sectors.

Currently the majority of U.S. commercial space launches involve unmanned flights to transport and deploy payloads that typically consist of communications satellites, remote sensing equipment, and satellites to conduct scientific research. Therefore, at this time the FAA's regulatory oversight has to do only with the safety of people on the ground and other people involved in aviation flights (occupants of aircraft) that share the same airspace. The FAA has not yet had to confront the regulatory issues surrounding the transportation of humans into space (crews and passengers) as part of a commercial venture.

In March of 1998, the FAA Federal Air Surgeon approved the establishment of the Space Medicine Program Committee (SMPC). The SMPC met at the FAA Civil Aeromedical Institute in Oklahoma City, and recommended the establishment of subcommittees including Space Medical Certification. In August of 1998, the Space Medical Certification Subcommittee met to initiate the development of medical standards for commercial space crews, which were completed and submitted to the Federal Air Surgeon for review in April of 1999. A prioritized list of medical and human factors research needs in support of manned commer-

cial space operations was submitted to the Associate Administrator of the FAA Office of Commercial Space Transportation in June of 1999. In February of 2000, the first draft on medical screening guidelines for passengers of commercial space vehicles was submitted to the Federal Air Surgeon for review. This draft was revised in August of 2001. For more information about FAA's activities in commercial space transportation please go to <http://ast.faa.gov/>

I invite you and encourage you to become personally involved in the activities of the SMB through your participation in any of the SMB committees and subcommittees. As President of the Space Medicine Branch, I will do my best to represent our organization. Please feel free to contact me if you have any ideas, suggestions, proposals, etc. to support our SMB mission, or to improve the scope of services available to our membership. You can also contact our SMB Secretary/Treasurer, Lloyd Tripp, 3701 Olde Willow Drive, Beavercreek, OH 45431, or phone 937-255-5742, or e-mail Lloyd.Tripp@wpafb.af.mil

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