

Proposal for Forming an IAA Study Group

SG 2.11

Title of Study: *Medical Safety Guidelines for Space Crews Involved in Short-Duration Commercial Orbital Space Flight Operations*

Proposer(s): *Melchor J. Antuñano, M.D. and Rupert Gerzer M.D.*

Primary IAA Commission Preference: *Commission 2 - Space Life Sciences*

Secondary IAA Commission Interests: *Commission 5 - Policies, Laws and Economics*

Members of Study Team

Chairs: *Melchor Antuñano, M.D. (USA) and Rupert Gerzer, M.D. (Germany)*

Other Members:

Bernard Comet M.D. (France), Mark Campbell, M.D. (USA), Volker Damman, M.D. (Germany), Jeffrey Davis, M.D. (USA), James Dulkan, M.D. (USA), Gary Gray, M.D. (Canada), Peter Graef, Ph.D. (Germany), Anatoli Grigoriev, M.D. (Russia), Helmut Hinghofer-Szalkay, M.D. (Austria), Richard Jennings, M.D. (USA), Robert Johnson, M.D. (USA), Nick Kanas, M.D. (USA), Chrisoula Kortidou-Papadelli, M.D. (Greece), Goetz Kluge, M.D. (Germany), Chiaki Mukai, M.D. (Japan), Scott Parazynski, M.D. (USA), Thais Russomano, M.D. (Brazil), Martin Trammer M.D. (Germany), Francesco Torchia, M.D. (Italy), James Vanderploeg, M.D. (USA), Yuri Voronkov, M.D. (Russia), Ronald White, M.D. (USA), Fengyuan Zhuang, M.D. (China)

Short Description of Scope of Study

Overall Goal: *To identify and prioritize minimum medical screening guidelines to preserve the health and promote the safety of space crews who will operate short-duration (up to 1 month) commercial orbital space vehicles. The definition of these recommended medical guidelines will be influenced, among other things, by the various operational and environmental stress factors that represent risks (actual and potential) to the crews of commercial orbital space vehicles. The study group will identify pre-existing medical conditions that could be aggravated or exacerbated by exposure to the environmental and operational risk factors encountered during launch, inflight and landing. Such risk factors include: acceleration, barometric pressure, microgravity, ionizing radiation, non-ionizing radiation, noise, vibration, temperature and humidity, cabin air, and behavioral and communications issues. This study group will also provide recommendations on the medical history assessment, physical examination and medical tests of prospective orbital space crews, as well as the recommended disposition of those space crews who have medical conditions that may preclude their participation in space flight. Other issues to be discussed will include pre-flight, inflight and post-flight medical considerations.*

Intermediate Goals:

1. *Due to the various possible approaches that can be used to design and operate manned commercial orbital space vehicles in the foreseeable future, the study group will first have to categorize the potential physiological impact of flying onboard these vehicles based on their proposed operational flight envelopes.*
2. *Based on the operational categorization of proposed space vehicles, certain practical assumptions will be made in order to enable later generalization of the medical recommendations.*

Methodology:

This retrospective review-type study will utilize a panel of subject-matter experts who will be involved in: 1) Assessing the current state of knowledge in space medicine applicable to short-duration manned orbital space vehicle operations, 2) Identifying gaps in scientific medical/physiological data that require the formulation of experience-based assumptions, and 3) Providing specific medical recommendations to preserve the health and promote the safety of space crews during short-duration orbital space flights.

Time Line:

This study will require 1 to 2 years to complete depending upon the time-availability of the study group members.

Final Product (Report, Publication, etc.):

The final product will be an IAA position paper entitled "Medical Safety Guidelines for Space Crews Involved in Short-Duration Commercial Orbital Space Flight Operations" that will be made available to the manned commercial space transportation industry for voluntary implementation.

Target Community:

Manned commercial space transportation industry, prospective space crews, space life sciences community, and government space agencies.

Support Needed:

The initial support requires the voluntary participation in this study group of IAA members and non-IAA members who have expertise in space medicine and are interested in commercial space transportation.

Potential Sponsors:

*Commercial space transportation industry.
Space commercialization advocacy groups.
Space tourism advocacy groups.
Adventure tourism organizations.
Government space agencies.
Aerospace Medical Association.
International Academy of Aviation and Space Medicine.*

To be returned to IAA Secretariat Paris fax: 33 1 47 23 82 16 email: sgeneral@iaanet.org

Date: *September 24, 2010*

Signature:

A handwritten signature in black ink, appearing to read "Michel J. Antunian". The signature is written in a cursive, flowing style.

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