

Principles Regarding Processes and Criteria for Selection, Assignment, Training and Certification of ISS (Expedition and Visiting) Crewmembers

Multilateral Crew Operations Panel

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Revision A



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Selection, Assignment, Training and Certification of
ISS (Expedition and Visiting) Crewmembers**

This document was prepared by the ISS Multilateral Crew Operations Panel (MCOP).
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I. Introduction

The Space Station Memoranda of Understanding, and the Multilateral Coordination Board (MCB), have charged the Multilateral Crew Operations Panel (MCOP) with defining the processes, standards and criteria for selection, assignment, training, and certification of Space Station crew for flight.

These principles shall be used by all ISS partners when assigning their professional astronauts/cosmonauts or spaceflight participants as ISS (Expedition and Visiting) crewmembers. Each partner that is proposing a crewmember for assignment to a crew shall be responsible for meeting the following process and the requirements listed below regarding flight assignments.

This document, hereinafter referred to as the "ISS Crew Criteria Document," will be updated as required based on operational experience.

II. Scope

This document is limited to defining the processes and criteria for selection, assignment, training, and certification of ISS (Expedition and Visiting) crewmembers.

The selection criteria and processes in this document apply to all crewmembers and are used by all ISS partners/sponsoring agencies prior to nominating their candidates. The MCOP will implement the provisions of this document per the applicable ISS MOUs and the MCOP Charter.

III. Definitions

There are two types of crewmembers, professional astronauts/cosmonauts and spaceflight participants. These crewmembers can be designated as expedition or visiting crewmembers.

Professional Astronaut/Cosmonaut

A professional astronaut/cosmonaut is an individual who has completed the official selection and has been qualified as such at the space agency of one of the ISS partners and is employed on the staff of the crew office of that agency.

Spaceflight Participant

Spaceflight participants are individuals (e.g. commercial, scientific and other programs; crewmembers of non-partner space agencies, engineers, scientists, teachers, journalists, filmmakers or tourists) sponsored by one or more partner(s). Normally, this is a temporary assignment that is covered under a short-term contract.

Expedition (Increment) Crewmembers

Expedition crewmembers are the main crew of the ISS and are responsible for implementing the planned activities for an increment. The right of a partner to have its candidates serve as expedition crewmembers is allocated in accordance with Article 11.1 of the MOUs.

As part of this allocation, it may be possible to have spaceflight participants as part of an expedition once the ISS has a crew complement of more than 3 persons.

Visiting Crewmembers

Based on experience to date with visiting vehicles to the ISS, visiting crewmembers travel to and from the ISS, but are not expedition crewmembers. Consequently, the visiting crewmembers do not count as a use of a sponsoring agency's allocation of flight opportunities or crew time on-orbit rights as defined in Article 11.1 and Article 8.3.c of the MOUs. They may be either professional astronauts/cosmonauts or spaceflight participants.

Sponsoring Agency

A sponsoring agency is one of the five ISS partners (CSA, ESA, NASA, GOJ, and Rosaviakosmos) that provide the crew flight opportunities.

IV. Selection

In general, each partner selects candidates for its own astronaut/cosmonaut corps based on its own criteria and procedures. However, for nomination of candidates to ISS crews, the partner must certify to the MCOP that the individual meets the criteria below. All criteria apply to all crewmembers except where otherwise noted in this section.

A. General Suitability

For spaceflight participants to be assigned to an expedition crew or visiting crew, a background review must be done by the sponsoring agency in accordance with its internal procedures. Partners will cooperate with the sponsoring agency, as appropriate, to provide access to information about a candidate for purposes of this background review.

The general suitability decision process for spaceflight participants involves an assessment of the candidate's past and present conduct in order to predict probable future actions that may adversely impact the ISS program. The following list defines some of the factors that would be considered as a basis for disqualification: (a) delinquency or misconduct in prior employment/military service; (b) criminal, dishonest, infamous, or notoriously disgraceful conduct; (c) intentional false statement or fraud in examination or appointment; (d) habitual use of intoxicating beverages to excess; (e) abuse of narcotics, drugs, or other controlled substances;

(f) membership or sponsorship in organizations which adversely affect the confidence of the public in the integrity of, or reflecting unfavorably in a public forum on, any ISS Partner, Partner State or Cooperating Agency.

Consideration may also be given to the following factors prior to disqualification: (a) critical/sensitive nature of the ISS crewmember position; (b) nature and seriousness of any misconduct; (c) circumstances surrounding such misconduct; (d) recency of the misconduct; (e) age of person at time of the misconduct; (f) contributing social or environmental conditions; (g) any reoccurrence of the same misconduct and/or occurrence of similar misconduct; and (h) absence of rehabilitation.

For professional crewmembers, general suitability is determined prior to employment so another background review is not required at this stage of selection.

B. Medical

The candidate must meet the agreed-upon medical criteria as established by the ISS multilateral medical operations boards and panels for long-term or short-term spaceflight. This includes the medical aspects of behavioral assessments.

C. Behavioral Suitability

The sponsoring agency, in accordance with its internal procedures, will determine if its candidate has the interpersonal and communication skills necessary to function as a successful member of a space flight team in a multicultural environment and has the ability to demonstrate situational awareness to conduct himself or herself effectively in the space environment.

In addition to the other criteria in this section the sponsoring agency will consider the following attributes in their behavioral suitability assessments of their candidates: (a) relevant operational experience; (b) demonstrated performance under stress; (c) ability to function as a team member; (d) high moral integrity; (e) adaptability/flexibility; and (f) motivation consistent with the program mission.

D. Linguistic Ability

Oral and reading fluency in the English language is a requirement for all ISS candidates. In addition, the ability to communicate effectively in other languages may be required. Candidates must possess both the capacity and the interest to learn a foreign language.

E. Adherence to the ISS Crew Code of Conduct (CCOC)

The candidate must show an understanding of the provisions of the CCOC and commit to adhere to its provisions. Each partner, in exercising its right to provide crew, shall ensure that its crewmembers observe the Code of Conduct.

V. Assignment

A. General

Implementation of the crew assignment process is outlined in Appendix A – MCOP Crew Assignment Work Instruction.

Only professional astronauts/cosmonauts will be eligible to be assigned as crew commanders, pilots, flight engineers, station scientists or mission specialists in either expedition or visiting crews. Space flight participants will be eligible to be assigned as visiting scientists, commercial users, or tourists. Task assignments for spaceflight participants will not include ISS assembly, operations and maintenance activities.

ISS crewmembers should be capable of achieving a suitable level of language capability to correspond with his or her functional duties and type of transport vehicle. As a goal, and due regard being given to the requirement that the working language for all activities under the MOUs is the English language and on the Soyuz is Russian, the ISS Commanders, Pilots, and Flight Engineers should be capable of achieving a minimum level of 1+ in both Russian and English prior to flight.¹ Visiting crew should achieve a minimum level of 1-, in Russian or English (as appropriate to the transport vehicle) prior to flight or they should fly with crewmembers that can provide interpretation support.

B. Assignment and Composition of Expedition Crews

Any expedition crew complement must have one commander and at least two flight engineers. Spaceflight participants will not be assigned to an expedition until such time as the ISS has a crew complement of more than 3 persons.

Flight opportunities are allocated in accordance with Article 11.1 of the ISS MOUs. The MCOP coordinates and determines the scheduling of specific increments for ISS partners' flight opportunities based on major planned activities, expected durations of expeditions, and crew rotation plans. Each MCOP member recommends crewmembers for its flight opportunities and options are discussed. The final assignment takes into account the composition of the full crew from the viewpoints of performance, language abilities and safety. This will be based on individual experience and skill required for the increment, and includes major task assignments (Commander, Pilot, Flight Engineer, Extravehicular Activity, and Robotics) for the ISS and the rescue vehicle.

¹ 1+ is an Intermediate High level of proficiency on the ACTFL (American Council on the Teaching of Foreign Language) scale. 1- is an Intermediate Low level of proficiency. This scale has been accepted for use by all the ISS partners.

As a rule, back-up expedition crew assignments are made at the same time as the prime assignment and mirror the sponsoring agency and task assignments they are backing up.

C. Assignment and Composition of Visiting Crews

The sponsoring agency that provides the transport vehicle determines the manifest and crew size/composition of its missions, coordinated through the standard ISS operations planning processes. The sponsoring agency nominates which crewmembers will fly, assigns major roles and responsibilities for its crewmembers, and submits this information to the MCOP. If spaceflight participants are being considered, the sponsoring agency will provide the MCOP with necessary information to demonstrate the candidate has met the selection criteria defined in Section IV.

As a rule, back-up visiting crew assignments are made by the sponsoring agency, consistent with the process for assignment of visiting crew described in this document.

VI. Training

Station Program Implementation Plan (SPIP) Volume 7 defines the ISS Program's training concepts for professional expedition crewmembers. As a rule, recommended professional expedition crewmembers should begin advanced training approximately 12 months before the start of increment-specific training.

In the case of visiting crew and spaceflight participants, a minimum ISS training program will be defined by the International Training Control Board (ITCB). Advanced and increment-specific/mission-specific training will be customized by the sponsoring agency and coordinated through the MCOP with the other partners for segment and special equipment training. As a rule, the visiting crew should train with the increment crew that will be on orbit during their visit.

VII. Certification of Crew Flight Readiness

The MCOP will determine the readiness of the crew for flight based on the results of a review of the crew's medical condition, the crew's performance during training, and the CDR's evaluation of the crew's readiness. If the MCOP members concur that the crew is ready for its mission, each member will submit a recommendation to its respective agency to sign the ISS Certificate of Flight Readiness (CoFR) according to internal agency procedures.

APPENDIX A

MCOP Crew Assignment Work Instruction

The following process is used by the MCOP in the assignment of flight crews to the ISS. For expedition crews, the crew assignment process is initiated after the MCOP has scheduled the flight opportunities in accordance with the allocations in Article 11.1 of the ISS MOUs. For visiting crews, the sponsoring agency that provides the transport vehicle determines the manifest and crew size/composition of its missions, coordinated through the standard ISS operations planning processes.

The four steps in the coordination cycle are as follows. Step 1 should occur 22 months prior to launch for expedition crews, and no later than 6 months prior to launch for visiting crews. Step 4 should be completed no later than 20 months prior to launch for expedition crews and no later than 4 months prior to launch for visiting crews. As a rule, the entire process should be completed prior to the start of mission specific training.

1. For expedition crews, the sponsoring agencies that have been scheduled flight opportunities present their candidate(s) in a jointly signed recommendation to nominate a particular crew. In the case of visiting crews, the agency that provides the transport vehicle is responsible for signing the recommendation. The recommendation includes brief background information about the candidates, high-level crew roles, and an overview of the mission. This recommendation is then forwarded by the MCOP Executive Secretary to the other MCOP members for review. All internal reviews are conducted in parallel.
2. Upon receipt of the recommendation, the MCOP members have an opportunity to ask questions about the recommended crew nominations. Questions are limited to the scope of the MCOP's ISS Crew Criteria Document. These questions are forwarded, in writing, within two weeks of receipt of the recommendation to the MCOP Executive Secretary for distribution to all MCOP members. Absence of questions indicates consensus with the recommendation.
3. Upon receipt of these questions, the MCOP partner(s) who initiated the recommendation will provide answers through the MCOP Executive Secretary to all MCOP members. These answers will provide a best effort on the part of the sponsoring agencies to establish necessary conditions that mitigate any concerns of the other partners associated with the flight of any particular candidate. If any partner is not satisfied with the response to a question, they must submit a written statement of their disagreement to the MCOP Executive Secretary within 3 working days. Absence of this written disagreement indicates consensus. Pending resolution of the issues through meetings/telecons scheduled by the MCOP Executive Secretary, the sponsoring agency may start crew training. The MCOP Executive Secretary will issue a formal statement of MCOP consensus on the nomination of the particular crew as recommended by the sponsoring agencies. This step should be completed in approximately 2 weeks.
4. After receiving MCOP consensus, and after receiving authority to proceed from their internal agencies' management, the sponsoring agencies for the flight assignment will sign a resolution making the assignment official. The resolution includes a list of the crewmembers assigned to the mission with their major responsibilities and mission tasks, a brief mission description, and a statement that the sponsoring agencies for the mission certify that the crewmembers meet MCOP established selection criteria with reference to the MCOP consensus.