

APPLICATION OF THE RULES OF THE CODE OF CONDUCT TO THE FIRST CREWS ON BOARD THE INTERNATIONAL SPACE STATION

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Abstract

More than three years after the launch of the first Russian module Zarya the International Space Station is now operational being made up of various pressurised modules, where the astronauts live and work during their stay on board, and of a space lab. The Station is also continuously served by the Russian and American shuttles for the transportation of the crews rotating on the Station, of multi-purpose logistic modules and for the transportation of goods and experiments and lately also of visiting astronauts.

The paper, without debating on the specific rules of the Code of conduct agreed upon by Partner States for the Station's crew, will focus on the aspects concerning its application and especially on the co-ordination between the Code and the internal systems of the Partner States. The paper will also consider the role of the Station Commander, the extension of his authority and the relationship with the Commander of the transport shuttles and with the Flight Director on Ground.

A special focus is placed on the questions concerning the jurisdiction and control over astronauts, from the Station and from transport shuttles, during the many activities outside the vehicle itself.

The increasing amount of visiting astronauts and especially of the "space tourist" has required the elaboration of specific rules which will be examined in this paper.

In conclusion, it is evident that in this initial application, especially for these new situations, the criterion based on citizenship, for the choice of the subject holding jurisdiction and control, is now losing effectiveness. The formulation of common rules, to which the State Partners must submit, or flight rules created for specific missions is the system mostly used also to solve problems concerning jurisdiction over the crew.

1. The Code of Conduct

On September 15 2000, the Multilateral Co-ordination Board (MCB)ⁱ representing the highest co-operation organ instituted by the Memoranda, approved the Code of conduct for the International Space Station Crew. It is a specific structure of rules of the Space Station programme agreed upon by all participating States in order to regulate the conduct of crew members.

The Codeⁱⁱ will "establish a clear chain of command on-orbit, clear relationship between ground and on-orbit management and management hierarchy, set forth standards for work and activities in space, and as appropriate, on the ground, establish responsibilities with respect to elements and equipment, set forth disciplinary regulations, establish physical and information security guidelines, and provide the Space Station

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Commander appropriate authority and responsibility, on behalf of all the Partners, to enforce safety procedures and physical and information security procedures and crew rescue procedures for the Space Station”ⁱⁱⁱ.

The agencies are required not only to regulate the conduct of the astronauts according to their own specific personnel policies, in accordance with the IGA and the MOU, but also according to the rules of the Code which the astronauts are required to understand and accept. Crew members are required to conform to the dispositions indicated in the Code, the application of which is in force the moment they are assigned to a specific mission and until post-flight activities are completed. Since art. 5 of the IGA establishes that each State maintains jurisdiction and control over its personnel, it has been necessary to involve the States in the decision and internal application of the Code rules.

For European astronauts, being all members of the European Astronaut Corps (EAC), the mediation for the determination of the Code rules has been carried out by ESA in accordance with the decisional power forwarded by European States. After verifying the accordance of the Code rules with the local legal systems, each government of the European Partners wrote to the Director General of ESA authorising acceptance, that is to say ratification of the Code itself. Subsequently the Director General addressed a directive to the EAC Partners inviting them to subscribe to the terms and conditions of the Code^{iv}.

In the United States, Japan, Russia and Canada the rules of the Code have become an integral part of the employment terms and conditions for astronauts, whether employment is carried out directly by national agencies or through governmental appointment^v.

Referring to a further detailed analysis on the status of the crew^{vi} and on the contents of the Code of conduct, the paper intends to examine some specific aspects concerning the figure of the Commander and the new jurisdiction problems over staff arising during activities towards, on and outside the Station.

2. The Commander

One of the first questions considered on the appointment of the Commander is if the latter should be of a different nationality than Partner States. A disposition has been added to the Code according to which nothing should forbid the Multilateral Crew Operations Panel (MCOP) to appoint an individual of “any” Partner State for the position of Commander. This operation has a double advantage: on one hand it is the first written acknowledgement of the “rotation” principle for such role and on the other it states that no national of a non-Partner State may aspire to the role of Commander.

Section III of the Code of conduct considers in detail the authority of the Station Commander. This authority covers all orbiting elements and all elements which will be added according to the development programme of the Station, it also covers all the personnel on the Station, all activities carried out in and on board the ISS, payload, crew, technical data and information relevant to the programme.

During the negotiation for the drafting of the Code, the possibility of the Commander’s authority covering the payload was discussed. The question was solved positively by connecting the possibility of the Commander’s intervention to the duty to protect the elements, payloads and Crew on the Station. In fact, the Commander has the authority to carry out any action considered necessary to respect his orders, including enforcement to be used only when immediate security is at risk and when all other systems have failed.

During flight the Commander is responsible for the success of the mission programme. He is authorised to change the crew’s daily routine in order to adapt to any unforeseen events or urgent events associated to the crew’s safety and to the protection of the Station’s elements, and also to conduct critical flight situations. Among other duties, he directs crew activities in accordance with flight regulations, mission plans and consolidated or programmed procedures and under the direction of the Flight Director on

ground, to whose authority the Commander must submit. The Commander must supply the Flight Director with accurate and immediate information on the operational and structural status of the Station, including emergency situations.

The flight regulations indicate specific roles and responsibilities for the Commander and the Flight Director. Furthermore, they also refer decisions planned before the mission and they are intended to reduce the amount of explanations during missions^{vii}.

3. Extravehicular activity

During the first assemblage period of the Space Station many extravehicular activities have been carried out^{viii} in order to manually operate on the external structure of the Station or for the docking of the transport shuttles or the installation of logistic modules for the loading and unloading of goods to and from the Station or for necessary maintenance^{ix}.

The Liability Convention on damage occurring in Outer Space only refers to the loss of human life or damage to people on board space objects, no mention is made about incidents that may occur during one of the many extravehicular activities. In the event of an astronaut's collision during an EVA mission with a space object registered by another State or in the event of his space-suit being torn by space debris, according to the Convention this would be a case of collision between space objects. Even the space-suit, necessary for survival in outer space, could be considered a space object within a wider concept referring to any object capable of "assuring human conditions of life or allowing the transit of persons throughout outer space or celestial bodies"^x.

The new question is that of identifying the subject holding jurisdiction over astronauts outside the Space Station and out of the transport vehicle, who could be considered responsible for his activity.

The Outer Space Treaty (art. VIII) links the registration of the space object to the jurisdiction, therefore the launching State "shall retain jurisdiction and control over such subject and over any personnel thereof". The IGA (art. 5.2) joins the quasi-territorial

jurisdiction of each Partner State over its own flight elements with personnel jurisdiction on its nationals ("...each Partner shall retain jurisdiction and control over the elements it registers in accordance with paragraph 1 above and over personnel in or on the Space Station who are its nationals). Therefore, jurisdiction is mentioned "in or on the Space Station" and it does not extend out of the physical limits represented by the structure of the Space Station.

The Russian Federation issued a national legislation disposition^{xi} solving the question. According to this law the Russian Federation shall retain jurisdiction and control over any crew of a manned space object registered in it. Jurisdiction and control cover all flight stages, from ground activities to return to earth, including extra-vehicular activities during the stay in outer space.

During this first stage of assemblage of the Station American and Russian transport systems have been used, and as soon as they are available other systems of space transportation shall be used. Art. 12 of the IGA concerning transport states that "access and launch and return transportation services shall be in accordance with the provisions of the relevant MOUs and implementing agreements". Initially this meant that the launching State of the transportation vehicle extended its jurisdiction over all the activities concerning the transportation vehicle and planned missions, therefore also extravehicular activities irrespective of astronauts' nationality. If extravehicular activities are linked to the docking to the Station, the Station Commander must cooperate with the transportation vehicle crew acting as shuttle between Earth and Station, in order to ensure the success of operations. The necessary co-operative spirit for the success of the enterprise required Partner States to draw up agreements for each single mission. The Commander's authority, covering all crew members on the ISS, also extends to activities carried out in and on the Station, but the relationship between the Station Commander and the ETOV Commander and their respective authorities are specified by Partners in the flight rules^{xii}.

In space law, the term “jurisdiction” is always linked to the term “control” referring to aspects of the jurisdiction carried out by the Command Centre on Earth managing the movements of the space object, the normal development of the mission and crew activities^{xiii}. The Flight Director on Ground directs the mission and the Commander of the ISS directs operations in orbit, therefore including extra-vehicular activities, under the authority of the Flight Director and in accordance with the flight rules^{xiv}.

In conclusion, jurisdiction and control over astronauts in extravehicular activity is mainly exercised by the State of the Space object they come from, but during a co-operational programme such as the International Space Station, specific rules will be dictated by actuation agreements and flight rules between Partners.

4. Space tourism

The first specifically tourist journey into space, to the International Space Station, was made on April 30th 2001 by an American industrialist, Dennis Tito, on board the Russian shuttle Soyuz. Mr Tito stipulated a contract with the Russian Space Agency for the amount of approximately 20 million dollars.

The Russian Space Agency’s request to allow Mr Tito’s access was initially refused because there didn’t seem to be enough time for minimum training and NASA feared that the presence on board of an inadequately trained person might interfere with the crew’s activity and routine.

Considering the persistent requests from the Russian Agency, the Multilateral Co-ordination Board (MCB)^{xv} after having consulted with the Multilateral Crew Operations Panel (MCOP) agreed to the exception unanimously but with some limitations. Therefore, the Russian Agency and the American industrialist agreed to specific behaviour regulations, already foreseen in the flight rules, in the Code of Conduct and in the liability regulations, requiring an intensive training on safety on board and a limited access for the tourist to non-Russian elements of the Station. NASA

required the Russian Agency to be liable for any damage that might have occurred to the elements and crews of other Partner States due to the presence on board of the visitor^{xvi}. With a policy stipulated with the Aviakos insurance company for one-hundred thousand dollars, the Russian Agency covered liability for eventual damage caused by Mr Tito’s presence.

NASA also believed that the normal work routine of the mission should be modified, keeping only fundamental activities for the health and safety of the crew and for ordinary maintenance, in order to guarantee the operational efficiency of the Station and its payload.

On such occasion, the MCB deliberated that Partner States should commit to not suggesting further flights for non-professional subjects until the criteria for selecting crew members were definite and adopted by all Partners^{xvii}.

The final decision on the matter was made after months of negotiations, during which the MCB agreed to a common regulation applicable to the commercial branch of space tourism.^{xviii}: “The rules of road for travellers to the International Space Station”. These new criteria are to be applied to all crew members of the Space Station, to professional astronauts and to other participating members such as scientist, tourists, academics and astronauts of non Partner States. The participating crew will not be obliged to perform the intensive training established for professional astronauts of other Partner States, but their freedom of movement and stay on board shall be limited.

The new policy for the selection of the space tourist stresses the necessity to reassure other Partner States on the trustworthiness of the person on board the Station. The so-called “taxi” flights transporting visitors to the Station shall respect previously planned flight priorities. Co-ordination and management of the visitor is totally up to the requesting Partner.

The visitor shall access the space structure by being transported by the vehicle of the Agency with which commercial agreements have been made. Physical requirements for

admittance to a space flight are similar to those made for professional astronauts. Abuse of alcohol and drugs, and also criminal records or belonging to organisations unbecoming to the Station's programme are enough to exclude any possibility of taking part in a space flight.

Appointment of participants must be notified at least six months before the planned flight date. The MCOP shall accept the appointment and appeal may be forwarded to the MCB for any eventual refusal.

Two categories of visitors have been established: short term visitors, appointed by the Space Agencies and destined to activities on board the Station such as the conduction of scientific experiments, and visiting crew members such as journalists, tourists. etc.^{xix}.

The latter shall be trained with the members of the official hosting crew. Short term visitors shall also attend a further week's training at NASA Johnson Space Centre if they are flying on board the shuttle or at RKA Star City if they are flying with the Russian Agency. Visitors must have a good knowledge of Russian language if they are travelling with the RKA or of English if they are travelling with NASA.

Other questions, such as further studies on the problem of liability for eventual damage during a space tourism flight, or details concerning medical requirements and training are being examined by the competent discussion panels.

Commercial exploitation of the Station is now within the space policies of all Partner States and many consider that space tourism might be one of the most important areas for space development^{xx}. Requests for space travel and visits to the Station are increasing and a second paying tourist, Southafrican Mark Shullesworth, was taken to the Station on April 25th 2002 by the Russian Agency on board the Soyuz. The southafrican millionaire paid the same amount as Mr Tito but he took a more active part in the space flight. He accepted the previously agreed rules of road and was therefore allowed to move freely on the Station, whereas Mr Tito was only allowed to stay in the Russian module, and also carried out some experiments on genetic engineering.

At present the only possibility is offered by the Russian Agency, because the United States are still considering whether to sustain the development of this commercial branch. The 1996 National Space Policy includes various provisions for the promotion of commercial space activity. There is a general encouragement to introduce this sector of space tourism in the National Space Policy with special attention to the safety of tourists and to the economic activity of carriers offering the service^{xxi}. The organisations managing support and regulation of commercial launch activities in the United States could also be appointed the supervision of space tourism^{xxii}.

5. Conclusions

The Intergovernmental Agreement and the memoranda of Understanding have been established during a phase of the Station programme when Partner States were concentrating on the various aspects to be included within the development of the programme itself. The dispositions on the various stages of development are detailed and clear, whereas those directly linked to usage operations are more vague and therefore require a greater interpretation effort in the event of application to concrete events. The will to establish a common legal regime on specific questions, as it also happened for the crew Code of conduct, seems to be the direction suggested by doctrine and practice of Partner States for future developments of the legal framework of co-operation for the Station. The Code, to be known, approved and observed by each astronaut in contact with the Station, determines common behaviour rules, the extension of the Commander's authority, hierarchical relationship in orbit and with those responsible for the mission on ground. In actual fact, as an initial application, such rules have been respected.

However, some questions on jurisdiction and control arose in the event of unusual situations, such as when the Station or vehicle's astronauts were engaged in extravehicular activities or in the case of visiting-astronauts.

The novelty of the introduction of the concept of nationality, concerning jurisdiction over the crew, added to the concept of territoriality, according to the IGA rules, appears to be somewhat outdated and no longer justified in these new situations. The 1967 Outer Space Treaty could only have foreseen the existence of single objects, built and registered by a single country. The subsequent existence of an International Space Station in which many countries co-operate and supply personnel, has required the extension of the jurisdiction of the State over its personnel even when it is within a module belonging to another Partner. Hence the link of jurisdiction over the crew to the nationality of each individual and not only to his presence within a specific space object. However, when crew members of the transport vehicle or members of the Station carry out extravehicular activities, in the event of maintenance or connections, it seems that application of jurisdiction – in some Partner States practice and legislation – is the same of the country the transport vehicle or Station module from where the EVA astronauts come from. Considering the co-operative nature of the programmes to be carried out, there is a need for rules established by parties taking form of “actuation agreements” or “flight rules”, such as established by the Code of Conduct, laying down competencies, sphere of command and relationship with the Ground Directors.

Broadening commercial exploitation of the Station to space tourism has led to the presence of visiting-astronauts. For the latter, who are at times not nationals of any Partner State, the concept of nationality for jurisdiction would not be suitable. In this case, specific “rules of road” to be respected have been established.

Finally, the Intergovernmental Agreement is a structure of rules which can be considered as a framing law, since it considers more or less specific details for general questions, while referring more specific questions, such as crew management, to regulating documents on the matter specifically established for the Station.

NOTES

ⁱ The *Multilateral Coordination Board (MCB)* is made up of members from the Space Agencies of Partner States. The American Agency presides over the board and decisions are taken by common consent. Should the consent not be reached within the established terms, the President is authorised to make the necessary decisions. The Board is responsible for the coordination of the utilization activities of the Space Station, including support services such as transport and communication (art. 8, commas 1.b and 1.c, MOU 1998)

ⁱⁱ Code of Conduct for the International Space Station Crew, Doc. ESA7C(2000)14 ANNEX

ⁱⁱⁱ Art. 11.8 MOU 1998

^{iv} In accordance with the regulations adopted for creating the staff of European astronauts. LAFFRANDERIE, The European Space Agency and the Astronaut's Policy, *Proc. of the 41st Colloquium on the Law of Outer Space, IISL Melbourne 1998*, p. 356; FARAND, The Code of Conduct for the International Space Station Crews, *ESA Bulletin 105 (February 2000)*, p. 64

^v FARAND, The Code of Conduct for the International Space Station Crew, cit. p.67

^{vi} CATALANO SGROSSO, Legal Status, Rights and Obligations of the Crew in Space, *Journal of Space Law*, 1998, vol. 26, n. 2, p. 163 and IDEM, Legal Status of the Crew in the International Space Station, *Proc. of the 42nd Colloquium on the Law of Outer Space, IISL, Amsterdam 1999*, p.35

^{vii} Code of Conduct, III, C

^{viii} For further details see NASA Human Space Flight website, *International Space Station EVA*, <http://spaceflight.nasa.gov/station/eva/index.html>

^{ix} In June 2002 the space shuttle Endeavour took the crew “Expedition 5” to the Station, to replace the previous crew after six months stay. During their eight days docked to the Station, the shuttle astronauts took three space walks to install the logistic module Leonardo (MPLM) on the Station, to perform maintenance activities and to operate on a partially blocked robotic arm

^x ESQUIVEL DE COCCA, International Liability for Damages Caused by Persons or Space Objects in Outer Space or on Celestial Bodies to Persons, Properties or Environment in Outer Space or Celestial Bodies, *Proc. of the 42nd Colloquium on the Law of Outer Space, IISL, Amsterdam 1999*, p. 50

^{xi} Russian Federation on Space Activity 1993, art. 2 (cosmonauts and crews of piloted space objects): “The Russian Federation shall retain jurisdiction and control over any crew of a manned space object registered in it, during the ground time of such object, at any stage of a space flight or stay in outer space, on celestial bodies, including extra-vehicular stay, and return to Earth, right up to the completion of the flight program, unless otherwise specified in the international treaties of the Russian Federation”. The English version may be found in *Project 2001 “Legal Framework for*

privatising Space Activities", 19 July 1999, Vienna, Institute of Air and Space Law of the University of Cologne

^{xii} Code of Conduct, II, A, W, © and III, B 2

^{xiii} see ZHUKOV, Registration and Jurisdiction Aspects of the International Space Station, in *Proc. of the 42nd Colloquium on the Law of Outer Space, IISL, Amsterdam 1999*, p. 75

^{xiv} Code of Conduct, III, C "Relationship of the ISS Commander (On Orbit Management) and the Flight Director (Ground Management)"

^{xv} The MCB must ensure the coordination of the Partners' activities concerning operation and use of the Station, Memorandum of Understanding, January 28th 1998, art. 8.1.b

^{xvi} Official Document of the United States Subcommittee on Space and Aeronautics, on space tourism. June 26th 2001

^{xvii} ESA-HUMAN SPACE FLIGHT, *International Space Station partners grant flight exemption for Dennis Tito*,

Internet:

http://www.es.int/export/esaHS/ESA5DOVRXLC_iss_2.html

^{xviii} "Rules of Road" for travellers to the International Space Station. Document adopted by the MCB to support the development of the new branch of space tourism. See the article published on the MSNBC website.

<http://www.msnbc.com/news/694231.asp?cp1=1#BODY>, Jan 31st 2002

^{xix} *Short-term visitors* are scientists, researchers and those subjects engaged in research activities. *Visiting crew members*: Simple visitors are paying individuals who wish to travel for journalistic or tourism reasons. In the "Marco Polo" mission which departed from Baikonur of April 25th 2002, there were three astronauts on the Russian "Soyuz" shuttle with different qualifications: the *Commander* of the Shuttle, Russian Iuri Ghidzenko, a *short term visitor*, Italian Roberto Vittori – who after having operated as a flight engineer in cooperation with the Soyuz Commander on the Soyuz itself, also conducted a series of experiments, on board the Station, sponsored by the Italian Space Agency within the agreement between ESA, the Russian Space Agency and RSC Energia-, and finally a *visiting crew member*, Southafrican Mark Shuttleworth, the second paying space tourist on the Station

^{xx} DISCOVERY ON LINE, *Space Entrepreneurs, Space Tourist*,

Internet

<http://www.discovery.com/stories/science/entrepreneurs/tourist.html>; for the increase of space tourism see TAKAYA-LEE, Space Tourism and Permanent Human Settlement: Legal and Regulatory Issues, *Proc. of the 43rd Colloquium on the Law of Outer Space, Rio de Janeiro 2000*, p. 142

^{xxi} SCOTT, Policy/Legal Framework for Space Tourism regulation, *Journal of Space Law*, 2000, vol. 23, p.1

^{xxii} Title 49, subtitle IX of the US Code designates the Secretary of Transportation (DOT) and his executive agent the Administrator of the Federal Aviation Administration (FAA) as the authorities controlling launch activities