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English only

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**Committee on the Peaceful  
Uses of Outer Space**  
**Scientific and Technical Subcommittee**  
**Forty-eighth session**  
Vienna, 7-18 February 2011  
Item 13 of the draft provisional agenda\*  
**Long-term sustainability of outer space activities**

**Long-term sustainability of outer space activities**

The present conference room paper contains comments received by the Secretariat from the following member States of the Committee on the Peaceful Uses of Outer Space: Algeria, Australia, Bolivia (Plurinational State of), Canada, France, Germany, Japan, South Africa, Spain, United Kingdom of Great Britain and Northern Ireland, Venezuela (Bolivarian Republic of), and from the following international intergovernmental and non-governmental organizations: World Meteorological Organization and International Astronautical Federation.

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\* A/AC.105/C.1/L.306.

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## **Algeria**

### **Terms of reference**

Given that the work of the Working Group will be based on the current legal framework governing the activities of States in the exploration and use of outer space for peaceful purposes, and in view of the thematic areas to be examined, it would be recommendable to establish two subgroups within the Working Group, one to address legal issues and the other to address technical issues.

### **Thematic areas**

The topics to be examined by the Working Group, like those considered by the Working Group on Space Debris, should include the use of nuclear energy sources in space in the context of both the Safety Framework for Nuclear Power Source Applications in Outer Space, adopted at the fifty-third session of COPUOS in June 2010, and the new multi-year workplan for the period 2010-2015.

### **Workplan for the period 2010-2014**

The workplan should take into consideration the need for adequate provisions to ensure that the guidelines on best practices can be reviewed and updated in light of the results of their implementation and in view of new needs that might emerge from future developments in the use of outer space.

## **Australia**

Australia welcomes the initiative of Scientific and Technical Subcommittee of the UN Committee on the Peaceful Uses of Outer Space to address the Long-term Sustainability of Outer Space Activities through a Working Group established in February 2010.

Australia notes the indicative schedule of work for the Subcommittee's meeting in February 2011.

Australia would like to express its general support for the Terms of Reference and methods of work of the Working Group.

Australia believes the issues outlined in the Terms of Reference and the methods of the Working Group are exceptionally important to the Long-Term Sustainability of Outer Space Activities.

Australia wishes to raise particular awareness of the importance of the following issues:

- The contribution of space science and technology to sustainable development of Earth is critically dependent on the protection from interference of key "frequencies of nature", such as the spectra of water vapour, carbon dioxide and other substances of interest. If such "frequencies of nature" are not comprehensively protected on a global basis, the ability of space science and technology to contribute to sustainable development of Earth will be diminished, perhaps significantly and irreversibly. Australia therefore suggests that the Working Group assess the extent to which current arrangements are

appropriately protecting key frequencies of nature to ensure they are able to be used to remotely sense from space key environmental variables.

- The importance of assisting in technical capability-building for developing countries.
- The significance of contribution of space utilization to support the sustainable development of Earth.
- The need to encourage a safe space environment with regards to controlling or limiting space debris.

Australia would also like to endorse the scope of the space weather involvement, particularly considering changing space weather may well impact, for instance, controlled de-orbiting of space debris since drag is one of the main components of this.

### **Bolivia (Plurinational State of)**

The Plurinational State of Bolivia provides the following comments regarding the document on the long-term sustainability of outer space activities that was submitted by the Chair of the Working Group on the Long-term Sustainability of Outer Space Activities at the fifty-third session of the Committee on the Peaceful Uses of Outer Space (COPUOS).

#### **Analysis**

In light of the documentation provided by the Scientific and Technical Subcommittee and the terms of reference of the Working Group, the latter having been presented by the Chair of the Working Group, an analysis of the proposal for the Group's terms of reference, methods of work and workplan, which have been submitted to us for consideration, has yielded the following comments:

(1) The aforementioned document states the vital importance of the exploration and use of outer space for peaceful purposes and the fact that space science and technology make a major contribution to the well-being of humanity, and specifically to achievement of the Millennium Development Goals, referring to the world in general and to the international community as a whole, but does not elaborate on the impact on and potential benefits for developing countries such as Bolivia, which is beginning to use space and satellite technologies and resources.

(2) The Working Group is to examine the long-term sustainability of outer space activities in all its aspects, in the wider context of sustainable development and achievement of the Millennium Development Goals, particularly the goal of environmental sustainability. However, the terms of reference make no mention of actions to be taken to address issues relating to climate change and their significance in relation to developing countries.

(3) Moreover, reference is made to current practices, operating procedures, technical standards and policies and to the legal framework and principles of the United Nations, yet developing countries such as Bolivia do not have legislation that specifically addresses such issues. Consequently, those countries would have to be governed by the regulatory instruments of the International Telecommunication

Union (ITU) and the International Telecommunications Satellite Organization (ITSO) until they are able to adopt legislation on space technologies and satellite communications.

(4) With regard to the objectives and outputs to be addressed by the Working Group, it is mentioned that the work of inter-institutional committees and subcommittees covers a range of other relevant activities. It is therefore necessary to establish how the Working Group is composed, which other committees are represented in it and which countries are among its members.

(5) In the context of objectives and outputs and with reference to paragraph 13 (b) on space debris, the impact of space debris on the environment in the short, medium and long term should be taken into account and the need to develop environmental policies for dealing with such debris and to undertake every possible effort to minimize its creation should be underscored.

(6) Subparagraph (i) of paragraph 13 (c) on space weather should include the words “use” and “access” with reference to data and should clarify how the data, models and forecasts generated will be made public, whether they will be freely accessible and what costs they will entail for developing countries.

### **Conclusions and recommendations**

In light of analysis of the document submitted by COPUOS, the following conclusions have been reached:

- The long-term sustainability of outer space activities for peaceful purposes should contribute to the sustainable development of the entire world and to achievement of the Millennium Development Goals, focusing on developing countries, which is why it is important to support such activities.
- Bolivia is beginning to use space and satellite technologies and is constructing a communications satellite, “El Túpak Katari”. It would therefore benefit greatly from contact with and participation in the working groups, committees and subcommittees established with the aim of making practical contributions to the use of space, satellite and telecommunications technologies.
- Many developing countries currently have no legislative or regulatory instruments that support activities and initiatives relating to the use of outer space for peaceful purposes. Such States should therefore be encouraged in developing and adopting laws and regulations that are consistent with their development plans, rather than relying solely on the provisions of international legislative and regulatory instruments.
- The unrestricted and cost-free exchange, dissemination, use and accessibility of data, models and forecasts should be promoted, particularly for developing countries.
- Lastly, cross-cutting issues such as those relating to scientific innovation, research and education and the application of space and satellite technologies are of little relevance in the above-mentioned document in that they are already reflected in the Millennium Development Goals.

## Canada

Since 2008, Canada has supported efforts made to address concerns related to the Long-Term Sustainability of Outer Space Activities (LTSOSA). We have participated in a number of informal consultations led by France over a period of several years within the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS). In February 2009, we expressed our strong support to include a new agenda item addressing the LTSOSA. In February 2010, we extensively contributed to the discussions on a draft Terms of reference and method of work for the Working Group (WG) on the LTSOSA that finally received support from all UN COPUOS member states.

Canada is highly appreciative of the work and leadership provided by the Chair of the WG on the LTSOSA during the plenary session of June 2010 and during the workshop held on the margins of the International Astronautical Congress (IAC) in September 2010.

Canada is aware of the importance of adopting the Terms of reference and methods of work of the WG on the LTSOSA at the up-coming session of the UN COPUOS Scientific and Technical Subcommittee in February 2011.

Canada supports the proposal to cluster the topics of the WG on the LTSOSA within sub-committees and to establish expert groups for each of them.

Canada would like to mention few comments and suggestions regarding the document Future A/AC.105/C.1/L.307:

The use of space science and technology for disaster management has taken increasing importance and visibility, and further emphasis should be made in the Terms of reference to reflect this reality.

- In the introduction, reference to space activities in support of warning of potential disasters could be explicitly mentioned. We would like to suggest adding this comment in the first sentence: “(...) and improving the daily lives of people worldwide through environmental monitoring, management of natural resources, early warning systems to help mitigate potential disasters and to support disaster management, meteorological forecasting, climate modelling, satellite navigation and communications”.
- In section “IV. Scope”, a reference to Earth Observation for purposes of forewarning of potential disasters and supporting management of disaster-related activities could also be made. We would like to add this suggestion to point (a) (i): “(a) Sustainable space utilization supporting sustainable development on Earth: (i) The contribution of space science and technology to sustainable development on Earth and to forewarning of potential disasters and supporting management of disaster-related activities; (...)”.

In the area of outer space activities, global importance is now given to issues related to microsatellites and smaller satellites. We are of the view that reference to microsatellites and smaller satellites should not be in the “Guidance for new actors” sub-section of section “IV. Scope” of the Terms of reference, but should rather be addressed under “Space debris” as part of efforts to dispose of microsatellites and smaller satellites.

We look forward to participating in the work of the Working Group, and are compelled by the breadth of the Terms of reference.

## **France**

France has no particular comment to make on draft document A/AC.105/C.1/L.307 (“Terms of reference and methods of work of the Working Group on the Long-term Sustainability of Outer Space Activities of the Scientific and Technical Subcommittee”) and can accept the document as drafted.

We believe it is important that the Group should be able to begin its substantive work at the upcoming meeting of the Scientific and Technical Subcommittee in February 2011.

Indeed, France, which has participated actively in the launch of the initiative on the long-term sustainability of space activities through the involvement of the former Chair of COPUOS, Mr. Gérard Brachet, is of the view that if nothing is done to limit the growing dangers in space, space could, in the medium or long term, become inaccessible to the entire international community. France would therefore like to underscore that, as far as it is concerned, this work is in no way intended to restrict the access of developing countries to space and space services.

The work should therefore start off on the right track. In our view, the Group’s priority goal is not to place space in the service of sustainable development but to work towards the preservation of space as a resource that has become essential to sustainable development, notably thanks to the development of space tools.

As will be indicated in the presentations to be delivered during the forthcoming session of the Scientific and Technical Subcommittee, the French authorities, for their part, are very active in the areas of safety in space (ensuring the safety of satellites => preventing collisions, including collisions with space debris) and space surveillance (Space Situational Awareness with the European Space Agency). The complex and long-term issue of how to “clean up” space is also beginning to be addressed.

Finally, before one can speak of possible solutions to a problem, it is imperative that the problem should become widely known. Thus, there is a need for widespread awareness of the risks posed by increasing space debris. Therefore, the Report is intended to contribute to the international debate on the challenges posed by space debris. The Report has been written in such format and style so that both the general public and experts in the field can read the Report and benefit. This Report is being made available to the public and submitted to various international institutions, private companies as well as government entities, with a view to raise such awareness, to highlight the challenges ahead, and to promote technical exchange and international cooperation focused on preserving the space environment and enhancing the sustainability of use of space by all nations as well as their public and private entities.

## Germany

*[Germany refers to its submissions included in document A/AC.105/978 on space debris; and in document A/AC.105/979 on ISWI]*

## Japan

As a space-faring nation, subjective participation in the rule making process to secure the long-term sustainability of space activities is important for Japan. That is why Japan contributes to this item as globally and affirmatively as possible. With this, we would like to submit the following comments:

### 1. General Remarks

(1) Although some Member States have suggested that the outcome of this WG should have a legal binding force, Japan does not agree with this opinion. Rather than spending time discussing this matter, COPUOS should concentrate on technical examinations during a four-year limited work plan.

(2) Applying a best practice guideline to space activities for national security should be carefully weighed by the WG under this item.

(3) In order to ensure consistency with the existing frameworks, COPUOS should refer to the frameworks or results of each international organization to avoid overlap between the scopes of new documents and those of existing documents as much as possible. This enables non-contracting or non-participant states to promote or participate in existing initiatives such as treaties of space area and soft laws.

### 2. Particular Remarks on the documents A/AC.105/C.1/L.307

#### (1) Scopes

In order to make this discussion more concrete and avoid detaching it from actual space activities, it is important that COPUOS take up the following tasks. First, the “risk factor” that threatens the sustainability of the space activity should be specified. Next, a “risk assessment” by analyzing the influence and frequency of each occurrence should be done. As the result of the risk assessment, a common way to remove the “risk factor” among Member States should be found. After this, a “breakdown” of each aspect should be listed in the documents. Lastly, the risk identified by the breakdown should be added to the Scopes.

For example, in the case of re-entry of space objects, this WG should take into consideration and decide whether the information in the notice should include the falling area or dangerous materials (hazardous substance such as radioactive ingredient or hydrazine etc.) for the falling objects.

Japan would like to ask the Chairman of the WG to clarify the background of each scope from (b) to (g) in the documents.

(2) As a result of the risk assessment above, the WG should identify which risk factor is being addressed by which international framework and create a table reflecting this information. The WG should only focus on the topics that have not

yet been reviewed. Japan is now internally preparing a technical proposal for a risk assessment process, and will provide it in addition to this document.

(3) Japan agrees with the idea of organizing a workshop or experts meeting because comments from experts are essential. Presently, Japan is willing to provide some of its own experts to this end.

(4) Comments on each Scope in the WG:  
(The numbers are the same as in the document A/AC.105/C.1/L.307)

No.	The name of Scope	Views of Japan
(a)	Sustainable space utilization supporting sustainable development on Earth:	-
(i)	The contribution of space science and technology to sustainable development on Earth;	-
(ii)	The concept of sustainable development extended to the domain of outer space;	-
(iii)	Technical capacity-building for developing countries;	-
(iv)	Equitable access to the limited resources of outer space;	-
(b)	Space debris:	-
(i)	Measures to reduce the creation and proliferation of space debris;	-
(ii)	Collection, sharing and dissemination of data on space objects;	-
(iii)	Re-entry notifications regarding substantial space objects;	-
(c)	Space weather:	-
(i)	Collection, sharing and dissemination of data, models and forecasts;	-
(ii)	Capabilities to provide a comprehensive and sustainable network of key data in order to observe and measure space weather phenomena adequately in real or near-real time;	-

No.	The name of Scope	Views of Japan
(iii)	Open sharing of established practices and guidelines to mitigate the impact of space weather phenomena on operational space systems;	-
(d)	Space operations:	-
(i)	Collision avoidance processes and procedures;	-
(ii)	Pre-launch and pre-manoeuve notifications;	-
(iii)	Common standards, practices and guidelines;	-
(e)	Tools to support collaborative space situational awareness:	-
(i)	International, multinational or national registry of operators and contact information;	-
(ii)	International, multinational or national data centres for the storage and exchange of information on space objects and operational information;	Japan would like to ask the Chairman of the WG to clarify what will be established under this article, especially, what each nation needs to do if “international data centres” are established.
(iii)	Information-sharing procedures;	-
(f)	Regulatory regimes:	Japan would like to ask the Chairman of the WG to elaborate on the discussion planned in this Scope. If the purpose of this Scope is to organize the existing frameworks, the title should be renamed to “In respect to existing regulatory regimes”.
(i)	Adherence to existing treaties and principles on the peaceful uses of outer space;	-
(ii)	National legal regulatory frameworks for space activities;	-
(g)	Guidance for new actors in the space arena:	-

No.	The name of Scope	Views of Japan
(i)	Technical standards, established practices and lessons learned for the successful development and operation of space systems throughout all the phases of the mission life cycle;	Regarding discussing the design standard of satellites in this article, ISO or other international organizations have already been considering technical issues and making a systematic approach on frequency management. Therefore, ISO is a more suitable body to discuss this topic.
(ii)	Microsatellites and smaller satellites.	-

### 3. Others

#### (1) Frequency management

ITU or other international organizations have already been considering technical issues and making a systematic approach on frequency management. Therefore ITU is a more suitable body to discuss this topic.

#### (2) The relationship between this WG and the existing frameworks

Discussion at this WG should be in line with those under the existing frameworks such as the space treaties and relevant UN Resolutions including the Principle of Remote Sensing, the Principle of the Application of the Nuclear Power Source and the Recommendation of the Registration of Objects Launched into Outer Space. Substantial discussions on matters related to the existing frameworks should also be conducted, not at this WG, but under the existing frameworks. Furthermore, Japan is of the view that it is not appropriate to discuss at this WG the possibility of creating new legally binding documents.

### South Africa

South Africa has the following comments regarding the Terms of Reference of the WG:

#### 1. On Section IV, Scope

Under paragraph 15 (g), “Guidance for new actors in the space arena”: South Africa recommends that the guidelines should apply to all actors and not be limited to new actors. In this regard, it would be appreciated if the word “new” could be removed. Item (g) would then read “Guidance for actors in the space arena”;

Move item (iii) under paragraph 15 (a), to be placed under paragraph 15 (g).

## 2. On Section V, Method of Work

Under paragraph 16, South Africa recommends that the WG should also recognise the work done by the Group on Earth Observations (GEO) as being relevant to the considerations of paragraph 15(a) “Sustainable space utilization supporting sustainable development on Earth” and should invite contributions from GEO as envisaged for other inter-governmental organizations listed in paragraph 16.

### Spain

A new subparagraph containing the following text should be included in section IV of document FUTURE A/AC.105/C.1/L.307:

“Sustainable utilization of the solar system:

- Measures to ensure that bodies of the solar system are explored without alteration to their environment;
- Meetings and exchange of information relating to procedures to avoid pollution.”

### United Kingdom of Great Britain and Northern Ireland

The United Kingdom welcomes the appointment of Dr Peter Martinez as Chairman of the Working Group on Long-Term Sustainability of Outer Space Activities and is pleased to have the opportunity to submit views and comments to the working paper of the Chairman of the Working Group, as contained in document A/AC.105/C.1/L.307.

We concur with the overall aims of the Working Group, to examine and propose measures to ensure the safe and sustainable use of outer space for peaceful purposes, for the benefit of all countries, and in particular in its consideration of current practices, operating procedures, technical standards and policies associated with the safe conduct of space activities. We support the goal of the Working Group to prepare a report on the long-term sustainability of outer space activities containing a consolidated set of current practices and operating procedures, technical standards and policies associated with the safe conduct of space activities, which may lead to the production a set of voluntary recommended guidelines for consideration by space actors in order to reduce the risk to space activities.

In order to be widely adopted, it will be important that any resulting guidelines, which should be voluntary and not be legally binding in nature, can be shown to:

- (a) Improve the safety of spaceflight operations and protect the space environment without imposing unacceptable or unreasonable costs;
- (b) Be consistent with existing international legal frameworks for outer space activities;
- (c) Be consistent with the relevant activities and recommendations of other working groups of the Committee and its Subcommittees, the Inter-Agency Space Debris Coordination Committee and other relevant international organizations with recognized competencies.

We particularly support consideration of the topic of space debris, and measures to reduce the creation and proliferation of space debris, which may involve the collection, sharing and dissemination of data on space objects. With regard to space weather, we similarly support the proposals for collection, sharing and dissemination of data, models and forecasts, and the consideration of capabilities to provide a comprehensive and sustainable network of key data in order to observe and measure space weather phenomena. An important outcome could be sharing of established practices and guidelines to mitigate the impact of space weather phenomena on operational space systems. Further in the area of space operations, there is potential to share experience in relation to collision avoidance processes and procedures, prelaunch and pre-manoeuve notifications, and common standards, practices and guidelines.

We support the proposal for the Working Group to invite contributions from Member States, from relevant intergovernmental organizations and from international organizations, such as the Consultative Committee for Space Data Systems and the Inter-Agency Space Debris Coordination Committee, in addition to private sector space operators and other relevant nongovernmental organizations with relevant experience of space activities.

We agree that the Working Group should avoid duplicating the work being done within existing international entities and should instead consolidate their work and identify areas of concern relating to the long-term sustainability of outer space activities that are not being addressed by such groups.

We support the proposal for the Working Group to consider the establishment of expert groups in order to expedite the work of the Working Group as a whole, working intersessionally as required.

## **Venezuela (Bolivarian Republic of)**

The Bolivarian Republic of Venezuela submits the following proposed changes to document “Future A/AC.105/C.1/L.307”:

### **II. Terms of Reference**

*Add the following paragraph*

9.Bis Due to the impact of the topic on the development of space activities at planetary scale, it is ratified that decisions on this matter are full responsibility of the State and this cannot be transferred, and should be taken on the basis of promoting the social welfare and human benefit.

### **IV. Scope**

(b). ii In the end of the sentence add the words: “and space debris”.

### **V. Method of work**

19 *In the end of the paragraph add the following sentence:*

If during the activities performed by the Working Group is raised a new issue on Nuclear Power Sources or Space Debris that was not previously addressed by the related Working Group, then the Working Group can analyze the subject and produce recommendations, which should be submitted to the established working group for deep analysis and further studies.

## **World Meteorological Organization (WMO)**

*[See submission in document A/AC.105/979 on ISWT]*

## **International Astronautical Federation (IAF)**

Following a series of recent incidents such as the collision between two spacecraft, Cosmos 2251 and Iridium 33, in February 2009 and radio interference events between active spacecraft in the geostationary orbit, the International Astronautical Federation is very much concerned by the long term sustainability of outer space activities and facilitates exchanges of views and cooperation between all actors in outer space, governments, academia and private companies, on ways and means to maintain outer space as a safe and secure environment.

The IAF is active in many areas of direct relevance to the long term sustainability of outer space activities, particularly through its Committee on Space Security, which was set up in late 2008. This committee, chaired by Prof. Kazuto Suzuki of the Hokkaido University, Japan, has addressed this topic at the plenary session of 60th International Astronautical Congress held in Daejeon, Republic of Korea, in 2009. The committee consists of more than 20 experts on political, economic, legal and technical matters, including Peter Martinez, the chairman of the Working Group of COPUOS/STSC on Long-term sustainability of outer space activities. The committee will host a technical session within the E3 symposium (Space Policy, Law and Economics) at the 62nd International Astronautical Congress in Cape Town in October 2011. Also the committee is working closely with non-governmental organizations working on this issue such as the Secure World Foundation and is planning to co-host a workshop on the Long-term sustainability issue.

The International Astronautical Congress which takes place every year is organized by the IAF in association with the International Academy of Astronautics and the International Institute of Space Law. This congress gathers more than 2500 experts of the scientific, technical, legal and cultural areas of outer space and provides an excellent opportunity to review the progresses made in ensuring the safety of space activities, in mitigating space debris and to discuss how space debris could be removed from orbit.

The 61st International Astronautical Congress took place in Prague, Czech Republic, from September 27 to October 1, 2010. It included a symposium dedicated to space debris (symposium A6) with many high quality contributions, including some on “active debris removal”.

The next International Astronautical Congress which will take place in Cape Town, South Africa, from October 3 to 7, 2011. It will again include a symposium dedicated to space debris — symposium A6 — coordinated by Nicholas Johnson

(NASA) and Christophe Bonnal (CNES). Of particular interest to COPUOS delegations, session A6.4 of the symposium will focus on Mitigation and Standards and session A6.5 on Removal and Legal Issues. Also, the 26th International Academy of Astronautics/International Institute of Space Law legal/scientific roundtable chaired by Kai-Uwe Schrogl (ESPI) and Wendell Mendel (NASA) which will be devoted to the topic of Space Debris Remediation. More information on the programme of the 62nd IAC is available on the following web site: [www.iac2011.com](http://www.iac2011.com).

The IAF and its partner organisations, the International Academy of Astronautics and the International Institute of Space Law, are actively involved in promoting a safe and secure space environment for use by all nations and by future generations.

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