

**Committee on the Peaceful
Uses of Outer Space
Legal Subcommittee**

Unedited transcript

796th Meeting

Tuesday, 31 March 2009, 3 p.m.

Vienna

Chairman: Mr. V. Kopal (Czech Republic)

The meeting was called to order at 3.23 p.m.

The CHAIRMAN: Good afternoon distinguished delegates, I now declare open the 796th meeting of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space.

I would first like to inform you of our programme of work for this afternoon.

We will continue and hopefully conclude our consideration of agenda item 10, National Mechanisms Relating to Space Debris Mitigation Measures, and will continue and hopefully suspend agenda item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space, pending deliberations of the Working Group on this agenda item.

We will also begin our consideration of agenda item 12, Proposals to the Committee for New Agenda Items.

At the end of the afternoon, we will have two presentations pertaining to agenda item 10 by the observer for the European Space Agency entitled "Requirements on Space Debris Mitigation for ESA Projects", and by the representative of the Russian Federation entitled "Russian Space Debris Activities". Yes, the title is very unusual "Russian Space Debris Activities for Protecting Against ..."?

The Working Group on Agenda Item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space, will hold its second meeting.

Are there any questions or comments on this proposed schedule?

I see none.

Finally, I would like to remind all delegates to please make any changes or corrections to the document list of participants distributed in CRP.2 by the end of this afternoon so that the Secretariat could proceed to issue the final document.

Before turning to our work this afternoon, I would like to inform the Subcommittee that, as requested, the Secretariat has placed the presentations made by delegations during the session on the website of the Office.

National mechanisms relating to space debris mitigation measures (agenda item 10)

Distinguished delegates, I would now like to continue and hopefully conclude our consideration of agenda item 10, National Mechanisms Relating to Space Debris Mitigation Measures.

The first speaker on my list of speakers on item 10 is the distinguished representative of Italy.

Ms. N. BINI (Italy): Thank you Mr. Chairman. Mr. Chairman, distinguished delegates, the Italian delegation is pleased to share with the Legal Subcommittee some information on national mechanisms relating to space debris mitigation measures.

In its resolution 50/27 of 6 December 1995, the General Assembly endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space that, beginning with its thirty-ninth session, the Committee would be provided with unedited transcripts in lieu of verbatim records. This record contains the texts of speeches delivered in English and interpretations of speeches delivered in the other languages as transcribed from taped recordings. The transcripts have not been edited or revised.

Corrections should be submitted to original speeches only. They should be incorporated in a copy of the record and be sent under the signature of a member of the delegation concerned, within one week of the date of publication, to the Chief, Conference Management Service, Room D0771, United Nations Office at Vienna, P.O. Box 500, A-1400, Vienna, Austria. Corrections will be issued in a consolidated corrigendum.



The Italian delegation would like to remind that Italy has been actively involved in all international initiatives on the issue of space debris mitigation. In particular, we would like to remind you of the efforts of the Italian chairmanship in the negotiations concerning the United Nations Guidelines endorsed by the General Assembly last year, and the organization and approval of the European Code of Conduct on Space Debris Mitigation signed by the Italian Space Agency on 14 February 2005.

Furthermore, the Italian Space Agency fully supports the Inter-Agency Space Debris Committee's activities in all fields of monitoring, modelling, protecting and mitigating space debris.

With reference to the European Code of Conduct, the Italian delegation would like to underline that this document is applicable to all contracts of the Italian Space Agency concerning the development of spacecraft.

The Code has already been applied to the contracts governing the development and launch of two important programmes, the Earth Observation Prognostic(?) and Satellite System, of which three units are already in orbit, respectively, launching due in December 2007 and October 2008, and the astrophysical mission named AGILA(?), launched in April 2007.

Under the guidance of the Italian Space Agency, consultations are growing on a national level aimed at raising the awareness of space debris mitigation amongst all Italian entities already involved or interested in space activities, such as the Ministry of Defence, Italian universities and private companies.

In this respect, we wish to mention two main activities. The National Workshop held in 2008 on the space debris issue, the Institution of the Italian Registry of Objects Launched into Outer Space which is in the course of finalization.

The first event was organized in Rome on 6 May 2008 by ASI, under the chairmanship of Mr. Claudio Portelli, the Expert on Space Debris in the Italian Space Agency. I am referring to the first National Workshop on Space Debris on the topic of Space Debris Mitigation. The aim of the Workshop was to promote the knowledge and assessment of the main results achieved at international level, namely the signature of the European Code of Conduct and the adoption of the United Nations Space Debris Mitigation Guidelines. The Workshop was attended by representatives from the Ministry of Defence, the Civic

Protection, universities and other research institutes, as well as industries and scientific press. Most Italian universities are already involved in research activities on space debris monitoring, modelling and protection.

Mr. Chairman, in the framework of national activities devoted to space debris monitoring, my delegation would like to recall the successful experiment jointly carried out by Italian and Ukrainian scientific institutes, namely the Institute of Radio-astronomy of Bologna and the Astronomical Observatory of Turino for the Italian side, and the Radio Telescope of Equatoria(?) for the Ukrainian side.

The experiment took place in the late afternoon on 23 March 2009. Two big radio-telescopes, one transmitting and the Italian one in receiving mode, were able to clearly identify six space debris generated by the collision of the two Region 33 and Cosmos 2251 satellites.

The experiment proved that the radio-telescope capabilities can be very useful in the space debris monitoring and, therefore, there is a precursor activity which is being carried out by ESA to explore such a sensor for the European space situation awareness programme capability. ASI in the meantime is financing general space debris research activities using this kind of technology or capacities.

Concerning the Institution of the National Registry for Objects Launched into Outer Space, the Italian delegation would like to recall that under Article 3, paragraph 3, Law No. 153 of 12 July 2005, the National Registry has to be filed with (a) any space object when it is launched by physical or legal persons of Italian nationality, the launches or procure the launch of the space object; (b) any object launched into outer space from a launch site located in the national territory or under the control of Italy by foreign nationals or legal persons. Article 5 of Law No. 153 also requires that the concerned physical or legal persons to notify ASI when the space object enters into the Registry are no longer in Earth orbit.

The Italian Space Agency is about to approve a regulation to set up the National Registry with the aim of the Final Rules and Procedures on Registration of Objects Launched Into Outer Space, bearing in mind that the apparent implementation of the Registration Convention is strictly connected with the Space Debris Mitigation Measures. It was also of clear evidence to us the need to follow the indication contained in the United Nations resolution 62/101 on Recommendations on Enhancing the Practice of States

and International and Intergovernmental Organizations in Registering Space Objects.

Mr. Chairman, the Italian delegation is convinced that a further effort is needed in order to comply with international guidelines and principles on space debris mitigation and in order to better implement the relevant provision of the Liability Convention, we deem that it would be necessary to include a set of binding procedure on this topic in the national legislation.

Mr. Chairman, Italy is fully committed in the Space Debris Mitigation Policy for the maintenance of a clean space environment.

Following the last event of collision, as already mentioned by our delegation during the last Scientific and Technical Subcommittee in February 2009, Italy is convinced that there is a need to increase the international efforts of coordination in order to promote a warning alert system on a voluntary basis. An international database on this subject could encourage transparency and partnership on ensuring safety also for human space flight in the space environment.

We are confident in the fruitful pursuing of the debate on this new agenda item, and we would like to propose to keep this agenda item in the agenda of the Legal Subcommittee also for next year. Thank you Mr. Chairman.

The CHAIRMAN: Thank you distinguished representative of Italy for your statement on agenda item 10, National Mechanisms Relating to Space Debris Mitigation Measures. In this statement, you mentioned first, you brought to our attention that it was the Italian chairmanship in the negotiations concerning the United Nations Guidelines endorsed by the General Assembly last year that was exercised by Italy and that you also recalled the participation of Italy in the negotiations concerning the Code of Conduct for Space Debris Mitigation signed by the Italian Space Agency in 2005.

You also emphasized that the European Code of Conduct is applicable to all contracts of the Italian Space Agency concerning the development of spacecraft.

You then proceeded further with your information on your activities and particularly you mentioned the National Workshop held in 2008 on the space debris issue, this was the First National Workshop in this field, and the Institution of the Italian

Registry of Objects Launched into Outer Space which is in the course of finalization.

You also mentioned your successful joint experiment carried by Italy and Ukraine by the scientific institutes of those countries. You then also mentioned that the Italian Space Agency approved a regulation to set up the National Registry with the aim of defining rules and procedures on registration of objects launched into outer space.

In the last part of your statement, you expressed the conviction that a further effort is needed in order to comply with the international guidelines and principles on space debris mitigation and that you also deemed it necessary to include a set of binding procedures on this topic in the national legislation.

Thank you very much once again for your statement distinguished representative of Italy.

And I have now to say that there is no longer the name of any other country on the list of speakers for this afternoon.

Is there any delegation? Yes, I recognize the distinguished representative of the United States of America.

Mr. S. McDONALD (United States of America): Thank you Mr. Chairman and we would like to say that we thought that the exchange of information that has occurred under this agenda item has been quite helpful to see what different countries are doing to implement the Space Debris Mitigation Measures.

We would also request that the Secretariat invite those international organizations, intergovernmental organizations that operate satellites and are observers here to present next year, and not just on the agenda item on the space activities of international intergovernmental organizations, but also to explain what procedures they take to and what they use to mitigate debris and how they implement, for example, the IADC or the United Nations Guidelines. We think that might be some helpful information for the member States to have. Thank you.

The CHAIRMAN: Thank you very much distinguished representative of the United States of America for your contribution to our discussion in which you requested, in which you advised us to request the international intergovernmental organizations to inform us about the measures that they are taking in the struggle against space debris and how

they implement the Guidelines of the United Nations and also of the IADC. Thank you very much.

Any other speaker wants to speak now on this particular item?

I see none.

And, therefore, I believe that we could conclude our consideration of agenda item 10, National Mechanisms Relating to Space Debris Mitigation Measures. This discussion is concluded now.

General Information on national legislation relevant to the peaceful exploration and use of outer space (agenda item 11)

Distinguished delegates, I would like now to continue and also hopefully suspend agenda item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space, pending deliberations of the Working Group on this agenda item.

I do not have any speakers on item 11 at this very moment. Is there any delegation wishing to speak on this agenda item, item 11?

I see none. Neither is any observer wishing to speak on this item?

No, so ladies and gentlemen, I think that also this item has been now suspended, the consideration of item 11, pending deliberations of the Working Group on this item, of course.

So this is as far as item 11 is concerned.

Proposals to the Committee for new agenda items (agenda item 12)

Distinguished delegates, we will now consider proposals for new agenda items for the forty-ninth session of the Subcommittee in 2010. In this context, I would like to refer delegations to the items presently on the agenda of the Subcommittee, in particular a decision will be required to either retain or to discontinue single issues/items for discussion that are presently on the Subcommittees agenda.

These are:

(i) Review and Possible Revision of the Principles Relevant to the Use of Nuclear Power Sources in Outer Space;

(ii) Examination and Review of the Developments Concerning the Draft Protocol on Matters Specific to Space Assets to the Convention on International Interests in Mobile Equipment;

(iii) Capacity-Building in Space Law;

(iv) General Exchange of Information on National Mechanisms Relating to Space Debris Mitigation Measures.

Furthermore, delegations will recall that its forty-seventh session, the Subcommittee had noted that several proposals for new items to be included on its agenda had been retained for possible discussion at its subsequent sessions. These proposals are contained in the last year report of the Legal Subcommittee, document A/AC.105/917, paragraph 160.

To facilitate our discussions under agenda item 12, the Conference Officers will distribute a non-paper containing a list of items presently on the agenda of the Subcommittee, as well as a list of those proposed items that were retained for possible future consideration.

I would now like to begin our consideration of agenda item 12, Proposals to the Committee for New Agenda Items.

So there will be now the distribution of the non-paper for the benefit of all delegations in order to have the list of those items that have been under consideration at this year's session and also of items that could be included in the next agenda of our Subcommittee.

I think everybody now has the non-paper relating to agenda item 12 and so we can start our discussion.

Distinguished delegates, I have on my list of speakers the application of Saudi Arabia, the distinguished representative of Saudi Arabia has the floor now.

Mr. M. A. TARABZOUNI (Saudi Arabia) (*interpretation from Arabic*): Thank you. Mr. Chairman, the delegation of the Kingdom of Saudi Arabia would like to express its deep concern over current activities of a number of private entities in the dissemination, in particular through the World Wide Web, of space-made images of the surface of the planet, including cities, constructions and other populated and non-populated areas. Our delegation is of a strong view that such activities seriously

undermine privacy of citizens worldwide as well as sovereignty and national security of States. Therefore, we would like to propose in the agenda of the Subcommittee, beginning from 2010, a new agenda item which would deal with the above problem and would be entitled "Regulation of Dissemination of Space Images Through the World Wide Web".

Mr. Chairman, our delegation would like to encourage other delegations to support this proposal. Thank you Mr. Chairman.

The CHAIRMAN: Thank you distinguished representative of Saudi Arabia for your contribution and also for your proposal. It means that you expressed your concern of your country about the dissemination of the World Wide Web of space-made images of the surface of the planet, including cities, constructions and other populated and non-populated areas. Your delegation believes that such activities seriously undermine privacy of citizens worldwide as well as sovereignty and national security and national security of States. Therefore, you are suggesting to include in the agenda of the Legal Subcommittee beginning from 2010 a new item which would deal with the above problem and would be entitled "Regulation of Dissemination of Space Imaging Through the World Wide Web". Thank you very much distinguished representative of Saudi Arabia for your contribution to the discussion on item 12.

Any other delegation wishes to speak on item 12 now at this afternoon's meeting?

I see none.

And I do not have any request ... I recognize the distinguished representative of Colombia.

Mr. J. H. OJEDA BUENO (Colombia) (*interpretation from Spanish*): Good afternoon ladies and gentlemen, the delegation of Colombia would like to stress its interest in being included in the present Working Group, the inclusion of the continuation issues. This would allow COPUOS to be involved in the following events which involve Colombia participation under 6(b) of item 12, i.e. the characterization and the utilization of the geostationary orbit. Here, I am referring to COPUOS contribution through its Working Group and this concentrates on the following: the Workshop on the Use of the Geostationary Orbit is scheduled in May 2009; the COPUOS contribution to the studies to be conducted within Working Group 4(a) of Unit R, as well as the contribution of COPUOS to the upcoming World

Radiocommunications Seminar(?) Eleven Meeting which is going to be held in the second half of 2011.

The Permanent Mission of Colombia, Chairman, awaits with impatience for the expression of interest from States who would like to participate in these events. Thank you very much for your attention.

The CHAIRMAN: Thank you very much distinguished representative of Colombia for your proposal and request to consider some new items. Could you please repeat once again only the names of the items that you would like to be reflected in our list?

Mr. J. H. OJEDA BUENO (Colombia) (*interpretation from Spanish*): Yes thank you Mr. Chairman. This is under item 12, paragraph 6(b), on the nature and utilization of the geostationary orbit, including ways and means to ensure the rational and equitable use of the geostationary orbit, without prejudice of the role of the International Telecommunication Union. And this is as it is spelled out in the document which you recently received.

Colombia would very much like to make sure that COPUOS contribute to three events in particular. First, a Workshop on the Use of the Spectral Orbit Resource in May 2009. Also the study to be carried out by Working Group 4(a) of ITU, and also COPUOS should contribute to the next World Conference on Radiocommunications to be held in the second semester of 2011.

And, if necessary, Mr. Chairman, we would submit this in writing. These are subjects that we would like to see included.

The CHAIRMAN: Thank you very much distinguished representative of Colombia for your statement and, indeed, I would appreciate for the needs of the Secretariat and the report if you could submit the precise titles of your three requests in writing.

Any other delegation? Yes, I recognize the distinguished representative of Belgium.

Mr. J.-F. MAYENCE (Belgium) (*interpretation from French*): Thank you Chairman. Just one detail, if I might, which I did not quite perfectly well understand and the translation that I had of the proposal made by the distinguished representative of Saudi Arabia, we referred to Internet broadcasting or dissemination of some imagery and you picked up the World Wide Web in that reference. This is interesting. Could Saudi Arabia exactly refer to

which media he is referring to? The Internet or World Wide Web?

The CHAIRMAN: So far as I remember it was by Web. It was on the basis of the text that was submitted by the distinguished representative of Saudi Arabia in English. Thank you. So it was only a question of translation. Thank you very much.

Any other request or proposal? Yes, I first saw the distinguished representative of the Islam Republic of Iran.

Mr. N. SHIRAZI (Islamic Republic of Iran): Thank you Mr. Chairman. My delegation would like to support the proposal made by the distinguished delegation from the Saudi Arabia concerning the dissemination of satellite imagery through websites because I think this is a real concern for my country and all countries, I think, and it is of the relevance of the work of the Legal Subcommittee. I thank you.

The CHAIRMAN: Thank you distinguished representative of Iran. I recorded that you would be supporting the initiative introduced here by the distinguished representative of the Saudi Arabia, it means a regulation, a new item called "Regulation of Dissemination of Space Imaging Through the World Wide Web". Thank you.

I now recognize the distinguished representative of Colombia.

Mr. J. H. OJEDA BUENO (Colombia) (*interpretation from Spanish*): Thank you very much Chairman. Sorry for monopolizing the floor this way. In this list that has just been distributed, it says single issues/item for discussion, seven, eight, nine and 10. Reference is made to the strengthening of capacities in item 9 as well. We would like to repeat that it is necessary to strengthen the legal capacities in Latin America, especially for the nationals of Latin American countries, in making proper use of the Regional Centres in this region. As you know, there is one Centre in Brazil and another one in Mexico that were used to step up the regional scientific capacities and we believe that the same can be done for the training and education of legal experts, outer space legal experts, related experts and this for the Latin American States. And, indeed, GRULAC member States are hosting some of these Centres and my colleagues have suggested that possibly we could turn to the Secretariat and its Groups to urge that such strengthening be done. It is Ministries of Foreign Affairs, of course, that have to be involved in this because they are certainly directed interested and

involved in this work. I believe that various countries would be interested in this sort of cooperative effort.

I would also like to also thank the countries who have financially sponsored such activities, for example, Austria, *inter alia*, and also thank the countries which have participated in the technical Medellin organized courses and we would like this to be included in item 9. Thank you very much for your attention.

The CHAIRMAN: Thank you very much distinguished representative of Colombia but I believe that, you know, the heading of item 9 of the single issues/items for discussion is very wide. If you say capacity-building in space law so it, in fact, involves all the needs that you have mentioned here and this was up-to-date the title for our agenda item so it would remain as it has been. And it initiated the discussion that was including all your concerns, in my opinion, here.

Mr. J. H. OJEDA BUENO (Colombia) (*interpretation from Spanish*): Thank you Mr. Chairman. I just did not know that the National Centres were included in terms of legal capacity-building, such aspects as the training of legal experts, something Colombia does nationally and on a regional scale. Thank you.

The CHAIRMAN: Thank you.

Any other comments on this non-paper or on the agenda item 12 as a whole?

I see none for the time being at least.

So that we could continue in the consideration of this agenda item tomorrow morning, Proposals to the Committee for New Agenda Items, tomorrow morning.

Thank you.

Technical presentations

Distinguished delegates, I would like to turn now to our presentations. I give the floor to Miss Ulrike Bohlmann, observer for ESA, who will make a presentation entitled "Requirements on Space Debris Mitigation for ESA Projects". Thank you very much. You have the floor.

Ms. U. BOHLMANN (European Space Agency): Thank you very much Mr. Chairman. I am very pleased to be able to present to you today the

requirements on space debris mitigation for ESA projects, that is the Space Debris Mitigation Policy of the European Space Agency and also its practical implementation.

I would like to first give you some updated figures on the technical background and the actors(?) to the space debris environment, before then taking you through the scope of the Space Debris Mitigation Policy of the European Space Agency with its detailed requirements on management, design and operations.

I will then shortly assess these ESA requirements against the background of the IADC and the Scientific and Technical Subcommittee Guidelines and give you some information on the implementation and application mechanisms.

Mr. Chairman, as you know, the number of non-functional man-made objects in Earth orbit is growing rapidly causing a significantly increased collision hazard for man-made satellites. Based on the IADC Guidelines for Space Debris Mitigation, and the Space Debris Mitigation Guidelines of the Scientific and Technical Subcommittee of the COPUOS, ESA, therefore, developed its own so-called Administrative Instruction on Space Debris Mitigation for Agency Projects. This Administrative Instruction translates the afore-mentioned Guidelines into so-called ESA requirements which means that they are applicable standards for all ESA procurements of space systems, such as new launches, satellites and inherited objects and of launch services for ESA programmes.

Allow me, Mr. Chairman, to briefly recall some facts concerning the current space debris environment. According to the United States Space Surveillance Network, 4,616 (4,660?) launches and 245 on-orbit break-ups have led to 12,500 objects that have been catalogued. Seventy-three of these objects are low-Earth orbit, eight per cent are near-geostationary orbit, 10 per cent in highly eccentric orbits and nine per cent in other orbits. Twenty-five per cent of the catalogued objects constitute satellites, of which seven per cent are operational, 14 per cent are rocket bodies, eight per cent figure is mission-related objects, and 53 per cent as fragments.

This graph shows you the ever-increasing number of objects in orbit as catalogued and the distribution of the different categories of objects.

Allow me now, Mr. Chairman, to introduce the scope of the Space Debris Mitigation Policy of the European Space Agency.

The document ESA/ADMIN/IPOL2008/2 devised a binding set of management, design and operational requirements for new ESA projects as of April 2008. It is based on the 2004 European Code of Conduct on Space Debris Mitigation that had been elaborated by RC, BNSC, CNES, DLR and ESA, and it is compliant with the IADC Guidelines of November 2002, elaborated by the 11 IADC members and with the United Nations COPUOS Scientific and Technical Subcommittee Guidelines of 2008.

It contains a definition of a minimum set of requirements for the limitation of space debris, in particular in the LEO and GEO protected regions and a definition of a minimum set of risk reduction measures in the case of re-entries of space systems or components thereof that are able to survive ground impact.

On this chart, you find some of the specific responsibilities of an ESA Prime Contractor with regard to space debris mitigation measures. The Prime Contractor needs to define the derived system and sub-system design requirements. Yesterday, fire(?) compliance with the design requirements, define and verify related operations procedures prior to launch and document all of these activities and procedures. He reports on the verification and compliance up to the Flight Acceptance Review and maintains a specific space debris mitigation document. This space debris mitigation document is prepared for the System Requirement Review and updated for the preliminary and the critical Design Review. The document provides a table of compliance, the description of design and operation and measures to achieve compliance, a list of field events and a list with the characteristics of objects released during a nominal mission.

Regarding the launch and design requirements, there shall be no more than one extra launch vehicle element released into orbit for a single payload and no more than two extra elements for multiple payloads of a single launch.

The spacecraft design requirements stipulate that it shall be avoided to release mission-related objects into orbit and if mission-related objects cannot be avoided, they shall remain outside of the GEO protected zone and they shall not remain in the LEO protected zone for more than 25 years after their release.

In addition, it stipulates that space systems shall not be intentionally destroyed in orbit and that

solid rocket motors and pyrotechnic devices shall not release products larger than one millimetre into orbit.

With regard to the end-of-life disposal of space systems, the design shall allow end-of-life clearance of the LEO and GEO zone with adequate allocation of propellant to perform the disposal. The space system shall be permanently pacivated after disposal.

Operational requirements with regard to disposal requirements for C(?) that space systems in low-Earth orbit shall be disposed of by re-entry into the Earth's atmosphere within 25 years after the end of their operational phase. Space systems in GEO shall be disposed of by permanently removing them from the GEO protected region. Space systems in other orbits shall be disposed of with the aim to avoid long-term interference with operational orbit regions. Launcher stages shall perform a direct re-entry as part of their mission sequence. The pacivation of a space system shall be completed within two months after the end of its operational phase.

In the case of an end-of-life disposal by means of re-entry, the Prime Contractor shall perform an analysis to determine the risk potential of entry fragments possibly surviving to ground impact. If the casualty risk exceeds one in 10,000, a de-orbit must be performed over ocean areas.

This chart shows compliance of the ESA requirements document with the IADC and the United Nations COPUOS Scientific and Technical Subcommittee Guidelines and shows that the Space Debris Mitigation Policy of the European Space Agency is an adequate implementation of these Guidelines as it limits the debris released during nominal operations, it minimizes the break-up potential during the operations, it avoids the intentional destruction and other harmful activities, it limits the probability of post-mission break-up and the long-term presence of spacecraft and launcher orbiter stages in the LEO protected regions. Undue risks for the ground population are avoided and a long-term interference of space craft and launcher orbiter stages with the GEO protected region is limited.

The limitation to an accidental in-orbit collision probability, as foreseen in the IADC and the United Nations COPUOS Scientific and Technical Subcommittee Guidelines could not be directly implemented in the ESA Administrative Instruction as a binding requirement as ESA is dependent on external data for the corresponding conjunction analysis. But the limit to accidental in-orbit collision probability has

been adopted as an ESA Guideline and ESA routinely performs collision avoidance manoeuvres for ERS-2 and for ENDOSAT(?).

Concluding, Mr. Chairman, I would like to summarize that the Space Debris Mitigation Policy of the European Space Agency defines requirements for space debris mitigation and control that are applicable to ESA procurements and that are fully compatible with the IADC and United Nations COPUOS Scientific and Technical Subcommittee Guidelines on Space Debris Mitigation. The Space Debris Mitigation Policy is an applicable document for all new ESA space projects and has such an effect on the statements of work, management requirements and operational requirements. It becomes part of the contractual baseline in the Agency's invitations to tender and requests for quotation of any space project.

Thank you very much Mr. Chairman for your attention.

The CHAIRMAN: Thank you very much distinguished representative of ESA for the presentation of the paper.

Are there any questions or comments?

I, myself, have one question. On Page 5, relating to scope of the ESA policy operational requirements. You provide here that the first disposal requirement would be that space systems in LEO shall be disposed of by re-entry into the Earth's atmosphere within 25 years after the operational phase. Why such a long deadline established? Twenty-five years if it is after the operational phase. I am not a technical expert but I simply have such an interest to knowing why.

And then, of course, the further points, you spelled them, space system in GEO but without any deadline, for example. And this is particularly true because of pacivation of a space system shall be completed within two months after the operational phase so that a usual space object, or usual space system, would remain uselessly in orbit in LEO. This is a very important orbit and very crowded orbit, I would say. You will remain there almost 25 years without any use.

Ms. U. BOHLMANN (European Space Agency): Thank you Mr. Chairman. These delays or these numbers, these figures that I have given are just the maximum figures. Obviously we try to attain the least important time possible for these measures but these are the figures that correspond to the Guidelines that have been published international so that is why

we also take up these figures. But I am not the technical expert either, I am a lawyer so I have to rely on the input from my technical colleagues who gave me these figures. Thank you.

The CHAIRMAN: Thank you very much.

Any other comments or questions? The distinguished colleague from Belgium.

Mr. J.-F. MAYENCE (Belgium) (*interpretation from French*): Thank you Mr. Chairman. Just to follow up on your question. I think 25 years is the standard deadline usually envisaged but there is an interesting point also that I would like to touch upon. This 25-year period is quite interesting because it is the lifetime of a satellite, in fact. If you left the satellite in orbit beyond 25 years, that would take care of its entire lifetime. If you took it off-orbit before that, that means you would have enough fuel left in the tank to actually carry out the manoeuvre. And if you added one year to the 25, you could thus prolong the lifetime of the satellite. In a way it has to do with the built-in lifetime provisions. Sometimes an operator chooses to put another satellite in place of the one that is no longer operational and I think there is an economic aspect to this which usually does not figure in the discussion on issues pertaining to space debris. Technical standards are not always in synch with economic interests and they can have some undesirable effects. For example, I would like to see some day a graph that would represent the generation of space debris as a function of the time that the satellite was left in orbit. So sometimes it is more expensive not to take space debris mitigation measures than to take them. And this would be an economic argument in favour of imposing technical standards that are in sync with the need for space debris mitigation. I think this calls for a more in-depth consideration in this Subcommittee.

The CHAIRMAN (*interpretation from French*): Thank you very much for your additional response to my question.

(*Continued in English*) Is there any other request for clarification or contribution? The distinguished representative of Colombia. I saw you, yes.

Mr. J. H. OJEDA BUENO (Colombia) (*interpretation from Spanish*): I just wanted to congratulate and thank the presenter for her very illustrative and informative analysis of the requirements for space debris mitigation but it does not include the economic aspect mentioned by the Belgian

colleague and it would be a good incentive for States to comply with space debris mitigation guidelines. So the economic aspect needs to be included in this discussion and no question. Thank you very much.

The CHAIRMAN: Thank you very much distinguished representative of Colombia for your contribution by which you completed our discussion on this item, particularly with regard to economic measures.

I have now the application of the distinguished observer for the International Law Association, to whom I give the floor. Professor Maureen Williams, you have the floor.

Ms. M. WILLIAMS (International Law Association): Thank you very much. In my statement last week I very briefly mentioned the international instrument of the ILA on the protection of the environment for damage caused by space debris, which was adopted in 1999 at one of the biennial conferences of the Association. I did not go into detail because this instrument was already explained within the Legal Subcommittee by the then Chair of the Committee, Professor Birksteigel(?). I just wanted to say that shortly the ILA Committee will be circulating a draft, this draft, to its members to see whether any changes, if minor changes, should be added, and the fresh text will be submitted to the next Conference next June, 2010, in Amsterdam. I shall see that this instrument is on the website so the distinguished delegates may have a look at it. Thank you.

The CHAIRMAN: Thank you very much distinguished representative of the International Law Association and Chairperson of the ILA Space Law Committee for your information about the draft instrument on space debris of, I think, 2004, and also about your new step that you have undertaken with regard to the next Conference of the ILA in 2010 in Amsterdam in this respect. Thank you very much.

Ladies and gentlemen, I see no other questions or comments on the presentation of Ms. Bohlmann. I would like to thank her for this excellent presentation and I will now give the floor to Mr. Gorobets of the Russian Federation who will make a presentation entitled, as it was now suggested by our distinguished Secretary, "Russian Space Debris Mitigation Activities". Perhaps this would be better, if I may suggest so. Will you agree Mr. Gorobets?

Mr. D. V. GOROBETS (Russian Federation) (*interpretation from Russian*): Thank you Mr. Chairman. You are absolutely right, of course. The

complete title of my presentation seems to have lost something in translation along the way. So let me read the complete title of my brief presentation again. "Russian Federation's Activities on Space Debris Mitigation in Near-Earth Space with Examples of the Application of the COPUOS Space Debris Mitigation Guidelines".

The Federal Space Agency of Russia is consistently working to address the issue of space debris. Our work to prevent the generation of space debris is carried out within the framework of Russia's existing national legislation in compliance with the Russian Federal Standards. This instrument is entitled "Space Objects Overall Requirements for Space Debris Mitigation and Near-Earth Space" and it is allied(?) with the international initiatives for space debris mitigation, first and foremost, the Space Debris Mitigation Guidelines approved by COPUOS in June 2007.

Now to cite some examples. Let me first dwell on the first Guideline which says "limit debris release during normal operations". To comply with this Guideline, we fully rule out the release into outer space of design elements, parts and splinters of acceleration units, boosters and operational elements built into the design of spacecraft.

Now for Guideline Two which reads "minimize the potential for break-ups during operational phases". To comply with this Guideline, which is a well-justified endurance limit for the construction components of spacecraft, set up meteor defences in the high-pressure assemblies, replace silver cadmium-based accumulator batteries which can be destroyed through the explosion of the gas they generate by nickel hydrogen batteries. And we also minimize the destruction potential of the acceleration unit by installing pressure release safety valves in fuel tanks and containers.

Now Guideline Three which reads "limit the probability of accidental collision in orbit". In this area, we guarantee the diversion of acceleration units from spacecraft ruling out the possibility of a collision between the two. In the case of the International Space Station, for example, we regularly assess the likelihood of its collision with large fragments so as to minimize the likelihood of such collisions. We have envisaged special manoeuvres to take the Station away from the path of dangerous fragments.

Next, Guideline Four, "avoid intentional destruction and other harmful activities". In this area, we work to rule out intentional destruction in all launch

vehicles, acceleration units and spacecraft developed on orders issued by Russia's Federal Space Agency.

Next, Guideline Five, which reads "minimize potential for post-mission break-ups resulting from stored energy". Here, we release pressure in the fuel tanks of acceleration units after they are put on exit orbits. In the accelerating engine, we release and remove fuel remainder after the spacecraft has separated from the launch vehicle, discharge the on-board accumulator batteries, discontinue the rotation of all mechanical parts, remove fuel traces that are under pressure and discharge the chemical parent sources.

Guideline Six, "limit the long-term presence of spacecraft and launch vehicle orbital stages in the low-Earth orbit after the end of their mission". Here, we remove from orbit and sync acceleration units after the completion of the mission. For spacecraft of the monitor series, we envisage removing them from the working orbital low-Earth orbit, thus decelerating them and making sure they burn in the atmosphere. The design of the STERK(?) (stuck?) mini-satellite, for example, has a built-in possibility for reducing the time it stays in orbit through changing the configuration of the solar batteries installed on it.

And finally, Guideline Seven, which reads "limit the long-term interference of spacecraft and launch vehicle orbital stages with the geosynchronous orbit after the end of their mission". Here, in designing new geostationary spacecraft, we envisage moving them to the burial orbit, as required by IADC, the Inter-Agency Space Debris Coordination Committee.

Distinguished colleagues, in conclusion, let me point out that the Russian Federation supports international effort to address issues related to space debris. We are taking practical steps to reduce man-made space debris by voluntarily applying national mechanisms that are in full compliance with the United Nations Space Debris Mitigation Guidelines.

The Russian Federation is convinced that the Space Debris Mitigation Guidelines, approved by COPUOS, will promote better understanding among nations and prevent the possibility of conflicts in space activities. Thank you very much.

The CHAIRMAN (*interpretation from Russian*): Thank you distinguished representative of the Russian Federation for this presentation entitled "The Russian Federation's Space Debris Mitigation Activities in Near-Earth Space".

(Continued in English) And now are there any questions or comments on this presentation?

I see none.

(Continued in Russian) Thank you very much once again.

(Continued in English) Distinguished delegates, I would now like to adjourn this meeting so that the Working Group on Agenda Item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space, can hold its second meeting.

But before doing so, I would like to remind delegates of our schedule of work for tomorrow morning.

We will meet promptly at 10.00 a.m. At that time, we will continue our consideration of agenda item 12, Proposals to the Committee for New Agenda Items. At the end of the morning, we will have two presentations pertaining to agenda item 11 by the representative of Belgium entitled "Belgian Space Law", and by the representative of Japan entitled "Japan's Basic Space Law".

Thereafter, the Working Group on Agenda Item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space, will hold its third meeting.

Are there any questions or comments on this proposed schedule?

I see none and, therefore, this meeting is adjourned until 10.00 a.m. tomorrow.

The meeting closed at 4.33 p.m.