

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

Unedited transcript

795th Meeting

Tuesday, 31 March 2009, 10 a.m.

Vienna

Chairman: Mr. V. Kopal (Czech Republic)

The meeting was called to order at 10.15 a.m.

The CHAIRMAN: Good morning distinguished delegates. I now declare open the 795th 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 morning.

We will continue our consideration of agenda item 10, National Mechanism Relating to Space Debris Mitigation Measures, and agenda item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space.

There will be two technical presentations this morning pertaining to agenda item 10 by the representative of Japan entitled "Space Debris Mitigation in Japan: the Case in JAXA", and the representative of Germany entitled "Implementation Mechanism of Space Debris Mitigation Guidelines by DLR".

The Working Group on Agenda Item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space, will hold its first meeting, and the Working Group on Agenda Item 4, the Status and Application of the Five United Nations Treaties on Outer Space, will hold its sixth meeting.

Are there any questions or comments on this proposed schedule?

I see none.

General Information on national mechanisms relating to space debris mitigation measures (agenda item 10)

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

The first speaker on my list is the distinguished representative of Japan to whom I give the floor.

Mr. H. YAMADA (Japan): Mr. Chairman, distinguished delegates, on behalf of the Japanese Government, I am pleased to address the forty-eighth session of the Legal Subcommittee of COPUOS regarding the national mechanism in Japan towards space debris mitigation.

Mr. Chairman, Japanese space activities are mainly conducted the Japan Aerospace Exploration Agency, JAXA. JAXA established the Space Debris Coordinating Committee which stipulates that all of JAXA's departments must plan, coordinate and review their space debris-related activities together. The activities are well coordinated with domestic and international organizations and the Agency is committed to the goal of solving the space debris issues.

It is for this reason that JAXA maintains its also called Space Debris Mitigation Standard, a Standard which complies with the United Nations Space Debris Mitigation Guidelines, as adopted by the General Assembly in 2007.

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.



While domestic mechanisms for space debris mitigation and as part of the safety reviews, JAXA applies the design and operation plans of spacecrafts and launch vehicles in each of their own development phases in order to assure compliance with the Space Debris Mitigation Guidelines.

In the cases with other organizations' plans to utilize Japanese launch vehicles, to launch their spacecrafts, JAXA reviews their compliance as a part of the Payload Safety Review, each review, their compliance as a part of the Payload Safety Review. These reviews are conducted independently from the department which promotes these projects and are finally authorized by the Vice-President and other executives in JAXA.

In these reviews, it is confirmed that all the energy sources will be pacivated by the end of operation to prevent explosion which is a major factor contributing to the deterioration(?) of the orbital environment.

As a result of the precautions, there have been no explosions in our history.

To preserve the geosynchronous of the orbital region, all commercial and JAXA satellites have been programme so as not to interfere with the protected regions defined by the United Nations Guidelines and the ITU Recommendations.

To preserve the low-Earth orbital region, mission-terminated spacecraft are recommended to be removed within 25 years but it is difficult for small satellites which do not have propulsion systems to reduce their orbital lifetime. Technical and operational improvement will be necessary in order to deal with this situation.

In other to avoid collision among operating satellites and debris, JAXA is analyzing collision probability every day by using United States surveillance data. In a case that an analysis shows a high probability of collision occurring, JAXA would request for access to the final radar system of given following countries and aid and conducting collision avoidance manoeuvres as needed.

Adding to spacecraft collision avoidance, launch times are planned in order to avoid collisions between launch vehicles and manned-missions space systems in orbit.

JAXA is also conducted research and development in cooperation with universities. Current

research items include observation technology to detect smaller objects, technology to provide protection from collision with tiny debris, and active removal systems for drifting unused space systems.

Particularly an active removal system is so important because the future dominant factors of debris increase will be brought about by collisions operating(?) among debris, followed by the chain reaction of collisions

Japan will continue to make efforts to mitigate space debris. We hope other nations will all take actions to prevent accidents caused by collisions with debris by implementing the United Nations Guidelines steadily.

Thank you for your attention.

The CHAIRMAN: Thank you distinguished representative of Japan for your statement on agenda item 10, General Exchange of Information on National Mechanisms Relation to Space Debris Mitigation Measures. You informed us that in Japan, it is the Japan Aerospace Exploration Agency, called JAXA, that established the Space Debris Coordinating Committee and there maintains its own so-called Space Debris Mitigation Standards, Standards which complies with the United Nations Space Debris Mitigation Guidelines, as adopted in 2007.

You then informed us about some elements of the system that you preserve in Japan for this purpose and, for example, concerning the geosynchronous orbital region, also for the Earth orbital regional. However, you said that it is difficult for small satellites which do not have propulsion systems to reduce their orbital lifetime to apply your present standards of protection.

Finally, you were also speaking about avoiding collisions. And in the last paragraph of your statement, you also informed us about research and development in cooperation that has been conducted by JAXA in cooperation with the universities. And you assured us that Japan would continue to make efforts to mitigate the space debris. Thank you very much distinguished representative of Japan for your statement.

Ladies and gentlemen, I do not have any other speaker for the time being on my list of speakers on this item.

Is there any delegation wishing to speak on this particular item now?

I see none and neither do I see any observer that would apply for the discussion and, therefore, I believe that we can continue and hopefully conclude our consideration of agenda item 10 this afternoon.

Distinguished delegates, I would now like to continue our consideration of agenda item 11, National Legislation Relevant to the Peaceful Exploration and Use of Outer Space.

And the first and so far the only speaker on my list of speakers on this agenda item is again the distinguished representative of Japan and, therefore, I give him once again the floor. Thank you.

Mr. K. NARISAWA (Japan): Mr. Chairman, distinguished delegates, on behalf of the Japanese Government, I am pleased to present on Japanese presentation(?) concerning the peaceful exploration and use of outer space.

Mr. Chairman, last May the Diater(?), a space(?) -related body, passed a space law. This law mandated that Japan's space activities be executed in ways that promote industry, improve student life, ensure national security and continue to foster international relationships and cooperation. It also requires further development of laws and regulations necessary to implement it.

The space exploration and utilization we carry out under this new basis space law will continue to be in accordance with space-related treaties and pursuant to the pacifist principles enshrined in the Constitution of Japan.

Based on the basic space law, in August of last year, the Strategic Headquarters for Space Development and Utilization was established in the Cabinet Office. The Headquarters, led by the Prime Minister, is currently formulating the best space plan for future space activities which is expected to be finalized next May.

In addition, we are further discussing the material(?) legislation with regard to outer space activities.

Mr. Chairman, in 2003, Japan's three organizations with outer space organizations, the Institute of Space and Aeronautical Science, the National Space Development Agency, and the National Aerospace _____(?), were integrated in one organization called the Japan Aerospace Exploration Agency, JAXA.

Since JAXA was established as a non-governmental entity, as specified in Article 6 of the Outer Space Treaty, the Japanese Government is obligated to supervise JAXA's activities, as outlined in the JAXA(?) Law of 2003, in particular Article 24.

The Supervisory Authorities of Japan currently consist of the Ministry of Education, Culture, Sports, Science and Technology, MECSST, and the Ministry of Internal Affairs and Communication.

JAXA conducts its launches in accordance with the Guidelines entitled "Launch of Artificial Satellite Standard". These Guidelines mandate a comprehensive safety level of launch activities as authorized by MECSST in accordance with Article 18, paragraph 2, of JAXA(?) Law.

While launching operation a 8II-L(?) two-way rocket while time _____(?) to private companies the year before last, safety management responsibility for these launches remain under the control of JAXA since the launching is conducted in Tanagasma(?) Space Centre which JAXA owns.

Such a framework assures that private launches of 8II-L Rocket conducted in full conformity with the Safety Guidelines, as outlined by JAXA(?) Law and its related regulations which JAXA observes. Thereby, adequately supervised by the Minister of MECSST.

Japan will continue both to fulfil its obligations as outlined in the space-related treaties and to exchange information including the foregoing discussion on legislation with COPUOS members. Thank you for your attention.

The CHAIRMAN: Thank you distinguished representative of Japan for your second contribution to our agenda, this time to the agenda item 11 in which you inform us that last May the Diater(?), the Japanese legislative body, passed the basic space law, and this law mandates that Japan's space activities be executed in ways that promote industry and citizens lives and so on and so on, all these purposes that are outlined in this Law.

The space exploration and utilization you carry out under this new basic law would continue to be in accordance with space-related treaties and pursuant to the pacifist principles enshrined in the Japanese Constitution.

Based on this basic space law, you also established the Strategic Headquarters for Space Development and Utilization and it is under the scope of the Cabinet Office. And these Headquarters are therefore led by the Prime Minister and is currently formulating the Basic Space Plan for future space activities.

You then informed us more about JAXA itself, which is a non-governmental entity, but the Japanese Government supervises JAXA's activity. JAXA conducts its launches in accordance with the Guidelines entitled "Launch of Artificial Satellite Standard".

You then were speaking about safety management responsibility for these launches under the control of JAXA. You assured us that such a framework guarantees that the private launches are conducted in full conformity with the Safety Guidelines, as outlined by JAXA.

And finally, Japan, you assured us that Japan would continue both to fulfil its obligations as outlined in space-related treaties and to exchange information including the foregoing discussion on legislation with COPUOS members.

Thank you very much distinguished representative of Japan for your contribution to agenda item 11.

Ladies and gentlemen, I do not have any other delegation on the list of speakers for this morning on this item.

Is there any delegation wishing to speak? Yes, I recognize now the distinguished representative of Belgium.

Mr. J.-F. MAYENCE (Belgium) (*interpretation from French*): Thank you very much Chair. Yesterday we listened to a very interesting presentation and I would like to take this opportunity to thank the French delegation, particular Mr. Philippe Clerc for his presentation of the new French Space Law which is a very important event in the light of the weight of France in this field.

I would like to take this opportunity to ask for one clarification concerning their presentation so let me take advantage of the fact that Mr. Clerc is in the room now to raise this.

Now, if I understood correctly, in the presentation, it was stated that when a payload was

launched, or requested by a French operator but using a foreign launcher that did not fall within the French legal jurisdiction. That is the way I understood the presentation. So, first of all, did I understand correctly and does this mean that the French Law does not apply then to this particular case? In other words, a French payload on a foreign launcher. Thank you.

The CHAIRMAN (*interpretation from French*): Let me thank the distinguished of Belgium for those two questions to the French speaker who talked to us about the French Law. Would you like to answer Sir? You have the floor.

Mr. P. CLERC (France) (*interpretation from French*): Thank you. French payloads launched by a foreign operator under a foreign jurisdiction, well, in that case, must be authorized by French law. So in that sense, it does come under French law and in particular Article 2, paragraph 3. There is an authorization here that is necessary but it is a kind of a simplified authorization in that our technical regulations by definition would not(?) apply under foreign territory. So the Government will take notice of the technical authorization which is mainly for guarantees of physical safety of persons and has to do with the international commitments by the State, private commitments by the operator for liability coverage, third party liability under a certain point. But all of this then has to be authorized by French Law, and, as I said, Article 404(?) deals with that part of the regime.

The CHAIRMAN (*interpretation from French*): Thank you very much distinguished representative of France in response to that question from Belgium. Are you satisfied Sir? Thank you.

(*Continued in English*) I now give the floor to the distinguished representative of Greece.

Mr. V. CASSAPOGLOU (Greece) (*interpretation from French*): Thank you Chair. Thank you one and all. I would also have a question for Mr. Clerc for a few clarifications concerning yesterday's presentation.

First of all, I would like to know if an operator sells his satellite to a third party, registered in France, how long would the frequencies and orbital position, what happens to the authorization then? Is there an additional authorization that is necessary?

Secondly, do you have to pay for the French authorization, and if so, on what basis? So this scenarios to avoid a kind of speculation that took place

with licences and authorizations for scooters, as we used to call them during the mobile telephonic rise.

There are two categories of licences, launching and operation. You said you were waiting for a response from CNES within two weeks. Now, if CNES does not answer in that time, what does the Minister do? Why do the French limit the State guarantee to 60 million Euros since in the Liability Convention, there are no limits? Thank you Chairman. Let me thank the French colleague in advance.

The CHAIRMAN (*interpretation from French*): Thank you very much. You have asked four questions of France so Mr. Clerc I give you the floor.

Mr. P. CLERC (France) (*interpretation from French*): Concerning the first question, an operator has obtained a licence under French law, has to have an authorization to sell that satellite. That is Article 3 of the Law.

Now about authorization. Well, the idea here is to ensure that there is a handover of liability and responsibility here that the State that receives the satellite is fully apt to control the satellite since the satellite is still under French responsibility. But the means of utilization which here are simplified are still being worked on.

So there is an authorization for transfer in each direction, purchase as well as sale.

Now, there is only authorization, of course, if there is a change in the ownership of the space object. The law does not have to anything to do with operations within of a purely financial nature with the holding company and so on. There has to be a real change in the jurisdiction and ownership.

Second question. It is free of charge for the time being. There are no rights, no fees. This is part of the general concernation(?). Part of the legal constraints that we wanted to reduce was not to hinder any kind of competitiveness that we would have. The number of these authorizations is, in fact, pretty small with that for main operators who are licensed, IM(?), EUTELSAT, and the two industrial companies, TALES(?) and ADS, when they sell or make orbital sales and they come in at the end of the launchment and between that and the stabilization of the position in orbit. So it is free, the second question answer.

Third, CNES has a variable delivery time of several weeks to several months of going to whether this kind of authorization given and the system under

consideration. In France, in general, a non-response from the Administration, it has to be taken as a refusal, that is a general rule and we do not have to justify the refusal. The only exception is construction permits for buildings, which is the opposite. After two months if there is no answer, it is implicitly accepted. But we had a discussion on this and, in the light of a very short time credits(?), and since there is a kind of a contradictory debate here and we have the possibility to provide an authorization with a series of very strict and, let us say, prescriptions here, deadlines must be met to make sure that things are done correctly. And if there is no answer forthcoming, again it has been refused. It would be irresponsible for CNES not to answer, however. So we consider that we have an obligation to answer and, in fact, it is something that can be taken to court if we do not.

Now, the 60 million ceiling for the operators liability, a private operator. In other words, the French Government covers anything above this, whatever the agreement is. Whether this legal proceeding takes place under the 1972 Treaty or whether it takes place in a private court, the procedure is always the same. The operator has a 60 million ceiling on liability, unless there is an intentional fault, of course. The 60 million figure, well this is a historical thing. It goes back to 1980, the beginning of Ariane when it became operational. Again, we wanted to opt for a continuity. We did not open a new debate. Should we do the maximum, like in Australia and the United States? We have been trying to save 60 million, well, that corresponds for insurers, for operators, it is something that we are used to now so we will stick with that.

I think I have answered all the questions. Thank you.

The CHAIRMAN (*interpretation from French*): Thank you distinguished representative of France.

Once again?

Mr. P. CLERC (France) (*interpretation from French*): Sorry, the frequencies. For satellites under French jurisdiction, we do not follow, in fact, the regime of space law here. This falls under a different administrative entity between our regulatory authority, ARSEP(?), and this is the Ministry of Telecommunications that gives the authorizations.

Now at least we can get a coordination between different Ministries. But attributing frequencies and authorization for services is not something that comes under space law. This is

something that obviously if EUTELSAT asks us to operate a satellite, we are going to make sure ourselves that the frequency requests are in order and try to have a single window here. We do what we can not to disturb the functioning of the other units.

The CHAIRMAN (*interpretation from French*): Thank you very much distinguished representative of France for those answers raised by Greece.

Are you satisfied?

Mr. V. CASSAPOGLOU (Greece) (*interpretation from French*): Thank you very much Chair. Through you, let me thank my colleague for his very interesting and informative answers. But at the same token, I would like to reiterate my proposal from yesterday concerning, how should I put it, to have the texts in French and English, not just of the new French law, but all of the laws that were presented to us yesterday. It is very important to have this kind of documentation for us. It is something very, I think, original. I do not know, I think we can perhaps take care of the translation costs, perhaps Russia, China, Japan can take care of this for those who are not French language-speaking, that we try to have the texts in English and French and in an electronic form too. It is very important for we space lawyers to have this kind of information. Thank you.

The CHAIRMAN (*interpretation from French*): Thank you very much distinguished representative of Greece. Yes, you already raised this point yesterday evening and I think we have answered that.

Let me now give the floor to the distinguished representative of France.

Mr. P. CLERC (France) (*interpretation from French*): Thank you Chair. Just to go back to what our Greek colleague has pointed out, I would like to know if it is possible for the Secretariat to distribute the PowerPoint presentation we made yesterday to the distinguished representatives? And we have the text of the Law in French and in English for interested delegations but I would ask perhaps that the Secretariat distribute the PowerPoint presentation if they would. Thank you and thank you to the Secretariat.

The CHAIRMAN (*interpretation from French*): Thank you very much distinguished representative of France. I think the Secretariat has taken due note of that.

(*Continued in English*) Is there any other delegation wishing to speak on item 11 this morning?

I see none and neither do I see any observer that would apply for the discussion and this has been the last opportunity for discussion or will there be still? Yes, I know, we will continue and hopefully suspend our consideration of agenda item 11 this afternoon, pending deliberations of the Working Group on this agenda item. So Brazil(?) still has this agenda item on our agenda this afternoon once again.

Technical presentations

Distinguished delegates, I would now like to turn to our presentations.

I give the floor to Mr. Masahiko Sato of Japan who will make a presentation entitled "Space Debris Mitigation Mechanism in Japan: the Case in JAXA".

Immediately after there will be a second presentation by Mr. Uwe Wirt of Germany who will make a presentation entitled "Implementation Mechanism of Space Debris Mitigation Guidelines by DLR".

So I now give the floor to Mr. Masahiko Sato of Japan. You have the floor Sir.

Mr. M. SATO (Japan): Thank you Chairman and distinguished delegates. Thank you for giving me the time to show you the space debris mechanism in Japan.

Figure One. This shows the history of the world, Space Debris Mitigation Standards and Guidelines. According to the National Debris-related Safety Standard of 1996, the Japanese Space Agency announced that at the time, now JAXA, registered a Space Debris Mitigation Standard in 1996. Together with the United States Standard, such an effort was succeeded to the IADC and thus the IADC Guidelines were developed after all. We have the pleasure to have the United Nations Guidelines, of course, to _____(?).

Now industrial associated developing a settle(?) , ISO Standards, related to debris mitigation which shall accelerate mitigation activities in the international trade and other commercial activities.

In spite of these efforts the environment continues to deteriorate towards the chain reaction of collision among debris. This situation invites us to discuss the role aspect here in the future.

And this Figure Two, Debris Mitigation Framework in Japan. Japanese space activities are mainly conducted by JAXA. The JAXA controls debris issues with the JAXA Debris Mitigation Standard. This Standard requires Contractors to develop a mitigation grant to be authorized by JAXA. The compliance of each project with the Standard is levied by the Safety Review Board of JAXA. Other organizations which wish to launch spacecraft also require to respect the JAXA Debris Standard as a part of payload safety requirements.

An international consensus of pending(?) United Nations Space Debris Mitigation Guidelines and IADC Mitigation Guidelines will be _____(?) on these JAXA Standards when they are revised.

Figure Three. Talking about commercial space activities in Japan, there are not enough rules in the Regulations to check commercial space activities except for the matter of radiofrequency. Commercial activities are basically conducted in accordance with ITU, the United Nations Guidelines, the JAXA Standard and ISO Standards, for example, Mitsubishi Heavy Industry Corporation Japan and Merle(?) are providing commercial launch services. JAXA is still responsible for applied and arrange safety even in such launch so the Mitigation Debris Standard of JAXA is also applied to such commercial launch services conducted by the Mitsubishi Corporation.

And the commercial space communication activities mainly using geostationary orbit is respecting the ITU Recommendations and keep _____(?) orbit through very well.

Other organizations which contracted JAXA, their orbital operation work or applied to piggy-back launch services on board like the HIIA launch vehicle of Japan would conduct a governmental mission should be in respect of the JAXA Standards.

The JAXA _____(?) Standard consists of management requirements and technical measures as seen in this Figure. The major area of technical requirements are: one, preventing the break-up after GEO(?) mission(?); two, transferring spacecraft that has completed its mission in GEO into higher orbit; three, reducing the orbital lifetime of a mission terminated LEO, low-Earth orbit space system; four, minimizing the number of objects released in orbit during operation of a space system; and, five, minimizing damage caused by on-orbit collisions.

Japanese space systems are well complied with following the national requirements, (a) on-orbital break-ups, there have been no cases of explosions in Japan, and (b) preservation of the GEO region. Japanese satellites including commercial ones have shown good compliance. Collision avoidance for launch vehicles, collision avoidance for manned systems like the ISS is considered to set their launch time. Operating spacecraft, all the JAXA satellites are analyzed for collision probability every day and the result is launched by the two related internal departments of JAXA.

This Figure shows that basically all Japanese satellites launched after 1990 are not interfering with the GEO protective region.

There is a Japanese telescope observing the Earth and there is a Japanese telescope observing the situation and this telescope tries to detect objects in GEO larger than 50cm and another research being conducted to improve is (it is?) limited to 20cm.

As illustrated in Figure 6, in launching operations, the launch window is determined to avoid manned systems like the ISS. In history, JAXA has set a launch window two times to avoid collision in this regard. For operating satellites, collision probabilities are being checked every day. In case the higher collision probability would be detected, JAXA would rely on the high-precision radar in other countries like Africa or Germany through contracts between JAXA and the German Agency, or other domestic radar to plan the collision avoidance manoeuvre.

The JAXA Debris Mitigation Standards about(?) allow(?) _____(?) of its requirements if there would be technical or economic problems and recommended to learn from the cases of other countries.

Currently there are some problems to be improved: (a) mission-related object released into orbit. For the first, are decided not to release any parts. However, in multiple payload launching, a support structure to sustain payloads will be released which are allowed customarily into the world(?) due to its short orbital lifetime; and (b) presentation of the LEO region, the JAXA Standard and other international guidelines required to reduce orbital lifetime, less than 25 years as an example. However, scientific satellites for its orbital are relatively high to avoid effects of the atmosphere, or small satellites which do not have a propulsion system and orbital stage of launch vehicle and so on, it is difficult to comply with this requirement. JAXA may gradually need to apply to

requirement more strictly to inside and outside a payload customer.

This Figure shows the example of an avoidable (orbital?) mission-related object. In every country, I believe, when multiple payloads are launched in one vehicle, some kind of support structure to sustain the payload will be released, which is customary allowed in the world(?) _____(?) of its short orbital lifetime.

As a conclusion, currently JAXA Space Debris Mitigation requires not only to limit generation of debris but also to protect from the _____ (*not clear*) and to ensure that runs safely from the re-entry although there are now(?) governmental regulations for loads and a result of voluntary efforts with the Contractors of JAXA, applicants as pay-back payloads such as onboard HIIA launch vehicle and commercial space users show good compliance with the JAXA Standard or United Nations Guidelines in other words.

However, there are a few areas which industries and the space users cannot comply perfectly with the United Nations Guidelines, at least at this moment. For example, there are avoidable cases to reduce objects to support the structure in multiple payload launching as is now. The requirement to limit of the lifetime is not easy to comply for small satellites such as developed by universities or the venture corporation and all the _____(?).

Thank you for your attention.

The CHAIRMAN: Thank you very much Mr. Sato for your presentation and also for providing us the full text of abstract, detailed abstract, that have helped us to follow this presentation. Once again thank you very much.

Are there any questions or comments on this presentation?

I see none and, therefore, I now give the floor to Mr. Wirt who will have another presentation on behalf of DLR.

Mr. U. WIRT (Germany): Thank you Mr. Chairman. Mr. Chairman, Excellencies, distinguished delegates, resolution 62/217 General Assembly endorsed, it is the Space Debris Mitigation Guidelines, and invites member States to implement those Guidelines through relevant national mechanisms, and I would like here in this Subcommittee to outline the national mechanism developed at the German Space

Agency, DLR, for the implementation of these Guidelines.

After a short introduction, I would like to briefly outline that there are some issues with regard to implement these Guidelines and afterwards I would like to outline our national implementation mechanism which is included in the Product Assurance Requirements tailoring and afterwards concluding.

The authority for defining top-level objectives for Germany's space activities lies with the Bundes Ministerium für Wirtschaft und Technologie(?) with the BMWI, the Federal Ministry of Economics and Technology, the German Space Programme, integrating the German contribution to the Programme of the European Space Agency, the National Programme Activities at the DLR Internal Research and Development Space Programme and space-related research at universities, and institutions is implemented and managed by the German Aerospace Centre, DLR, in its capacity as Germany's Space Agency. The legal framework is given by the delegation of Space Activities Act, the so-called "Rundfahrt aufgaben ubertragens(?) Gazettes", even a strange word even for the Germans. The Integrated German Space Programme sets for the German space community the programmatic and financial framework in which we operate.

The German Space Agency Policy requires for each Contractor the implementation of a Product Assurance Programme, including space debris mitigation, throughout all project phases. The application of an adequate Product Assurance Programme is essential in order to ensure that space products accomplish their defined mission objectives and to demonstrate that they are safe, available and reliable and a centred tool to ensure verifiability and practicability of the requirements to be considered during the development, production and operation of the space system.

The standards of the European Cooperation for Space Standardization, ECSS, set the benchmark for the necessary Product Assurance Activities required by the DLR Quality Management System.

Germany has imposed, since 2004, on the basis of the European Code of Conduct, the Space Debris Code of Conduct, which was signed by DLR in this year, the Space Debris Mitigation Requirements for the national space projects TERRASAR-X, TAMIN(?) -X, TET, and NETIMAGE on a case-by-case basis, starting in 2007, an integrated approach for the conversion of space debris mitigation guidelines

into an implementation mechanism, has been developed within the Quality Management Systems, Product Assurance Requirements tailoring as part of a multiple-stage process starting with a request for a proposal and leading to the PA Controlling of a relevant project. The European Code of Conduct and Space Debris Mitigation forms the input for the safety part of the Product Assurance Requirements and assesses compliance with both the IADC Space Debris Mitigation Guidelines and the United Nations Space Debris Mitigation Guidelines.

Comprising support documents and tools are available on international level and have been developed at DLR respectively providing a substantial knowledge-base with regard to the implementation of the Space Debris Mitigation Requirements and can be utilized by the Contractors.

Without going into detail, I would just like to briefly outline the United Nations Space Debris Mitigation Guidelines which say we have to limit of the debris released during the nominal operations, we have to minimize break-up potential during operations, which means that we have to avoid failure modes leading to accidental break-ups, but to limit the accidental in-orbit collision probability. This is a requirement which implies both divine and also to the mission profile. We have to avoid intentional destruction and harmful activities, limit the probability of post-mission break-up which means that onboard sources of stored energy has to be depleted or made safe. We have to limit the long-term presence of spacecraft and launcher orbital status in the LEO protected region. Re-entry objects resulting from this recommendation must not pose an under-risk to the ground population and we have to limit the long-term interference of spacecraft and launch orbital status with the GEO protected region which is not a quite easy task, as my distinguished colleague from JAXA just has outlined within the frame of his presentation.

From the Guidelines, which form the fundamental principles, we have to translate these fundamental principles into technical guidelines. These are, for instance, the IADC Space Debris Mitigation Guidelines, and we have to define the applicable rules for the Contractors. So far, in our National Mitigation Guidelines, we have taken the European Code of Conduct on Space Debris Mitigation. For the Contractors, two questions remain. How shall things be done and by which mean that things be done? Fortunately, worldwide efforts by excellent experts are carried out, for example, under the frame of the International Organization of Standardization, ISO, to develop international

standards which will help Contractors to implement these Space Debris Mitigation Guidelines and support documents and tools exist which DLR has developed and we make them available as a comprehensive knowledge-base to the Contractors with regard to the implementation of the Guidelines.

This gives you an overview of the National Space Debris Mitigation Guidelines which can be subdivided into three major blocks. These are design measures and operational measures and with regard to control, verifiability and reliability, we have instead of a concrete sub-division of management measures, a comprehensive Requirement Catalogue on the production and conducting space debris mitigation assessments, whereas quite a number of requirement regarding the reporting on the implementation of the Space Debris Mitigation Guidelines.

As briefly mentioned at the beginning of my presentation, the DLR Policy requires for each Contractor the implementation of the Product Assurance Programme. The Product Assurance Programme is composed by a set of standards, existing international standards, mainly from the European Cooperation for Space Standardization, ECSS, the European Space Components Cooperation, ESCC, the NASA Space Station and _____(?) Safety, Military Standards, the European Code of Conduct and Space Debris Mitigation, and another Standard 8718.14.

For each Contractor, a Product Assurance Safety Requirement Tailoring Catalogue is developed with individual requirements according to the mission characteristics which ensures that the project and the mission respectively will accomplish their objective.

This tailoring process is developed in close cooperation with German industry to ensure that the selected requirements, the tailored requirements, for the space project and mission respectively, ensures verifiability and practicability during the development, production and operation of the space product, taking also into account the assessed(?) cost and Contractors competitiveness.

This slide, which I will not explain in detail, outlines that space debris mitigation is part of the safety requirement and a carefully selected source of requirements are implemented with regards to space debris mitigation, ensuring full compliance with the United Nations Space Debris Mitigation Guidelines.

The tailoring process is carried out in five stages and this is, if I might say so, the legal

framework in which the Contractors operate with regard to the national space projects implemented and controlled by DLR.

Project requirements developed by DLR are tailored with the Requirements Catalogue so that the tailored Product Assurance Requirements lead to concrete project requirements. These Programme Assurance Requirements will be submitted as a request for a proposal to industry and academia respectively. The proposal coming to DLR is evaluated with a Response Compliance Matrix and the proposal assessments finally leads to a winner who will be a Contractor within the next stage of the Product Assurance Requirements cataloguing.

Project Product Assurance Requirements and the Response Compliance Matrix will lead to the process of the consolidation of the Product Assurance Activities which then are issued, as Consolidated Product Assurance Requirements in the form of the Tailoring Catalogue.

And the next stage, the Contractor has to provide the Product Assurance Planning to DLR by the setting of the project Product Assurance Requirements, together with the Consolidating Compliance Matrix and then issue this Project Assurance Plan on the Contractor to DLR.

And the last stage of this process, Project Product Assurance Requirements, together with the Consolidated Compliance Matrix and the Product Assurance Plan, are the basis for performing the controlling, via the complete lifecycle of the mission and project respectively in the form of readials, reports, inspections and audits and these readials are carried out by the whole lifecycle beginning with the Mission Definition Review and ending in the ELR in the End-of-Life Review.

Let me conclude as follows. The National United Nations Space Debris Mitigation Guidelines implementation mechanism, Germany, conducted by the Product Assurance, DLR Policy requires for each Contractor the implementation of the Product Assurance Programme throughout all of the project phases. Applicable standards are tailored according to the project and project requires respectively to ensure verifiability and practicability of the requirements to be considered during development production and operation and a signing of Contractual Product Assurance Requirements and their control ensures that the space projects accomplished the defined mission objectives, demonstrate safety, availability and reliability.

Space debris mitigation requirements from national space projects are integrated into the safety part of the quality management systems, Product Assurance Requirements tailoring process.

Let me finalize by saying the same space debris mitigation requirements for national space projects are in compliance with the United Nations Space Debris Mitigation Guidelines. Thank you.

The CHAIRMAN: Thank you Mr. Wirt for your presentation by which you outlined the national mechanisms developed at the German Space Agency, DLR, for the implementation of the United Nations COPUOS Guidelines.

Is there any question or comment on this presentation?

I see none.

Once again, thank you very much Mr. Wirt.

Distinguished delegates, I would now like to adjourn this meeting so that the Working Group on Agenda Item 11, National Legislation, could hold its first meeting, and the Working Group on Item 4 could hold its sixth meeting.

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

We will meet promptly at 3.00 p.m. At that time, we will continue and hopefully conclude our consideration of agenda item 10, National Mechanisms Relating to Space Debris Mitigation Measures. We 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 technical presentations pertaining to agenda item 10 by the observer for ESA entitled "Requirements on Space Debris Mitigation for ESA Projects", and by the representative of the Russian Federation entitled "Russian Space Debris Activities".

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 for this afternoon?

I see none.

Yes, the distinguished representative of Greece.

Mr. V. CASSAPOGLOU (Greece) (*interpretation from French*): Thank you Chairman. Now, what about the Working Group on the Five Treaties? Was it not supposed to meet this morning as long as the Legislation Working Group winds up its work? Otherwise we in turn would have to get a slot in the afternoon to pursue our work. Just providing that for you Chairman.

The CHAIRMAN (*interpretation from French*): Thank you representative of Greece. You just mentioned the requirements of the Working Group on the Outer Space Treaties. Of course, indeed, if the Item 11 Working Group has not concluded then you will be afforded the chance to hold your Working Group. Thank you very much.

(*Continued in English*) The Secretary has an announcement for you.

Mr. N. HEDMAN (Secretary, Office for Outer Space Affairs): Thank you Mr. Chairman. Yes, this is an announcement by the Secretariat. There will be a European Union Informative Meeting on COPUOS Matters for European Union member States at 2.30 p.m. today in Room C-0713. Thank you Mr. Chairman.

The CHAIRMAN: Thank you Mr. Secretary for the announcement of the Informative Meeting that would be held at 2.30 p.m. in Room C-0713. It is on this floor.

Ladies and gentlemen, I believe we have exhausted the programme of the Subcommittee for this morning and, therefore, this meeting is adjourned until 3.00 p.m. Thank you for your commitment.

The meeting adjourned at 11.26 a.m.