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

Script

843rd Meeting
Wednesday, 21 March 2012, 10.00 a.m.
Vienna

Chairman: Mr. Tare Brisibe (Nigeria)

The meeting was called to order at 10.00 a.m.

The CHAIRMAN Good morning distinguished delegates, I now declare open the 843rd meeting of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space.

Distinguished delegates, this morning we will continue our consideration of agenda items 4, General Exchange of Views, 5, Status and Application of the Five United Nations Treaties on Outer Space, 6, Information on the Activities of International, Intergovernmental and Non-Governmental Organizations Relating to Space Law, and item 7(a), the Definition and Delimitation of Outer Space, as well item 7(b), the Character and Utilization of the Geostationary Orbit.

There will be two technical presentations this morning by a representative of Germany entitled "Space Debris: Current Situation", and by a representative of France entitled "Registration Issues: French National Registry 1965 to 2012".

I will then adjourn the meeting so that the Working Group on Matters Relating to the Definition and Delimitation of Outer Space, under the chairmanship of José Monserrat Filho, can hold its first meeting.

I would also like to inform delegates that during lunchtime today, delegations are invited to a presentation entitled "Japanese Space Technology and National Frameworks", to be given by Japan's experts on the topic.

I will revert during the course of the deliberations this morning with more details on this invitation from the Japanese delegation at this time.

General exchange of views (agenda item 4)

Distinguished delegates, with respect to our agenda item 4, General Exchange of Views, I would now like to continue our consideration of this item and

the first speaker on my list is the distinguished delegate of Libya.

Mr. F. A. BEN ASHOUR (Libya) (*interpretation from Arabic*) Thank you Mr. Chairman. I would like to express my congratulations from my delegation on you being elected as Chair of this Legal Subcommittee. I would like to say how pleased I am to see you chairing this fifty-first session. I would like to pay tribute to the way in which you chair our work.

My delegation is convinced that, thanks to your qualities, wisdom and knowledge of the issues this Subcommittee debates, you will ensure a successful meeting.

We would also like to congratulate all of the Bureaux on their election and thank them for their important role and the efforts they make to guarantee the success of this session.

The delegation of Libya would like to express its consideration and gratitude to the Director of the Office for Outer Space Affairs for the important role she and her staff play in order to foster international cooperation in the peaceful use of outer space and the contribution made to developing countries.

Mr. Chairman, the Libyan delegation underscores the importance of strengthening international cooperation in the exploration and peaceful use of outer space especially for sustainable development for the wellbeing of all States independently of their economic or social development or scientific and technological development whilst granting specific interests to developing countries in accordance with the Declaration of Legal Principles and the Declaration on International Cooperation in Outer Space adopted by the United Nations General Assembly and the other United Nations treaties and instruments in this field.

My delegation would like to welcome the significant role played by COPUOS in the promotion and development of space law and the implementation of rules and regulations in order to strengthen useful relations between developed and developing countries. This will serve our shared interests as countries.

We would also like to reiterate the need to strengthen the role of COPUOS in accordance with the recommendation of the United Nations General Assembly that we can achieve our stated goals in terms of international cooperation for the peaceful use and exploration of outer space, especially in exchanging experience and space technology and applications. If we strengthen these exchanges between developed and developing countries, this will be to our mutual benefit.

Mr. Chairman, my delegation is well aware of the importance of international cooperation in strengthening international space law and the need for universal adherence to the legal principles of international law, the United Nations Charter, Treaties and relevant United Nations instruments governing space activity, as well as the relevant General Assembly resolutions. This is a prerequisite for reinforcing international cooperation in the exploration and peaceful use of outer space.

My delegation grants specific importance to strengthening international cooperation regarding capacity-building in space law, especially to the benefit of developing countries and garnering knowledge regarding educational programmes, exchange of experience and strengthening assistance received from the Office for Outer Space Affairs and associated bodies whilst reinforcing cooperation between developed and developing countries.

My delegation supports the point of view that calls for a redubbing of efforts regarding nuclear energy uses in outer space including geostationary orbit, as far as the legal aspects regarding the risk of collision between space bodies carrying nuclear power and other accidents require urgent attention. Space activities must respect the principle of conserving life and peace.

We agree with those delegations who have expressed concerns about the increase of space debris and we call for urgent attention to this issue at national and international level. The necessary means must be employed to mitigate space debris.

To conclude, I would like to thank you for your attention.

Thank you.

The CHAIRMAN I thank the distinguished representative of Libya for his statement.

I do not have any other delegations on the list who would like to intervene on this agenda item at the moment.

Are there any other speakers who would like to make statements on agenda item 4, General Exchange of Views?

I see none.

We will, therefore, continue our consideration of this item later this afternoon.

Status and application of the five United Nations treaties on outer space (agenda item 5)

Distinguished delegates, I would now like to continue our consideration of agenda item 5, Status and Application of the Five United Nations Treaties on Outer Space.

I recognize the distinguished delegate of Indonesia. You have the floor.

Mr. SUPRAPTO (*Indonesia*) Thank you Mr. Chairman. In connection to efforts towards the universalization after this on outer space, Indonesia is of the view that there is a need to identify challenges and implementing provisions of the treaties. Activities(?) _____(?) basis as well as the legal assistance may be given to for their utmost implementation by its ratifiers.

In light of the increasing threats towards commercialization of outer space activities, direct enforcement of the private sector and concerns regarding the militarization of outer space. Indonesia believes that this increases the need to further strengthen space law regimes and important role that this Subcommittee plays.

Thank you Mr. Chairman.

The CHAIRMAN Thank you distinguished representative of Indonesia for your statement.

Are there any other delegations wishing to make a statement under agenda item 5, Status and Application of the Five United Nations Treaties on Outer Space?

I see none.

We will, therefore, continue and suspend our consideration of agenda item 5, Status and Application of the Five United Nations Treaties on Outer Space, this afternoon, pending discussions in the Working Group under this item.

Information on the activities of international, intergovernmental and non-governmental organizations relating to space law (agenda item 6)

Distinguished delegates, I would now like to continue our consideration of agenda item 6, Information on the Activities of International, Intergovernmental and Non-Governmental Organizations Relating to Space Law.

The first speaker on my list is the distinguished delegate of the International Law Association. You have the floor Madam.

Ms. V. CONTIN-WILLIAMS (*International Law Association*) Thank you very much Mr. Chairman. The International Law Association is now about to celebrate its 140th anniversary of its creation. It was founded in Brussels in 1873 and its headquarters are in London and, in fact, it is a contemporary of the Institut de Droit Nationale.

The Chair of the Executive Council is Lord Mance, Justice of the United Kingdom Supreme Court, and Professor Nico Schrijver from the Netherlands is the current World President.

The ILA Director of Studies is Professor Christine Chinkin from the London School of Economics. The ILA Space Law Committee was set up in New York in 1958 and has worked and met without interruption to date. Its present officers are the General Rapporteur, Professor Stephan Hobe, from the German branch, on my left, and I have the honour of being the Chair of this Space Law Committee. Since 1990, the Committee's honoured to be permanent observer to COPUOS and both its Legal Subcommittees.

According to its byelaws, the ILA objectives are the study, clarification and development of international law, public and private, and to furtherance of understanding and respect of international law.

The International Committees were permanently in between the bi-annual conferences of which 74 had been held to date and now the central point of its activities.

The Seventy-Fifth ILA Conference is programmed for August 2012, in Sofia, and on this occasion, the Space Law Committee will be submitting its fifth and final report to which I shall come back later. In this context, the ILA Space Law Committee works in close cooperation with various of its other committees and study groups dealing with issues of common interests in the field of public and private international law in the certainty that international law and comparative law are at the very root of the international law of outer space. To be sent as regular practice, the ILA includes cooperation activities with international organizations, public and private, such as the International Law Commission by its Study Group on Liability of International Organizations, the Permanent Court of Arbitration on the Drafting of Rules on Arbitration for Dispute Settlement Procedures Arising From Space Activities, and also with a number of national space agencies, both in industrialized and developing countries.

Within COPOUS, the ILA Space Law Committee is participating in the Expert Meetings on Promoting Education in Space Law.

In the private field, the ILA Space Law Committee takes active part in the work of the International Institute of Space Law, the International Academy of Astronautics, the European Centre for Space Law, and the Ibero-American Institute of Aerospace Law. It should be noted that among the members of the European Centre for Space Law, there are a few specialists from the ILA Space Law Committee and that the 2011 activities of the Centre proved of great importance, particularly in the field of teaching and organizing Moot Courts.

I shall go briefly on the activities of the Committee during 2011 to then pause for a while on what we consider the pillars of our work during last year, namely the work in the framework of a Permanent Court of Arbitration and the preparation for the forthcoming Conference in August 2012 in Sofia.

So, chronologically, I shall highlight the following activities.

First, the Second United Nations/Argentina International Conference on the Use of Space Technology for Water Management, March 2011. The venue of this Conference was the Ministry of Foreign Relations of Argentina. It was hosted by its National Space Agency on behalf of the Argentine Government, in cooperation with the European Space Agency and the Prince Sultan Bin Abdullah Aziz.

The Chair of the ILA Space Law Committee was invited to attend the Conference which consisted of six technical sessions dealing with the various aspects of such a topical issue as is water management and the use of space technologies.

The Conference was opened by the Secretary-General of CONAE, the Argentine National Space Agency, Félix Menicocci, together with the Under-Secretary for Water Resources of the local country, and the Head of the United Nations Programme on Space Applications, Takao Doi.

The opening session included a talk on upcoming satellite missions of the National Space Programme of Argentina with emphasis on Mission Aquarius by a representative of the National Space Agency.

Satellite SADC Aquarius, a scientific space vehicle, designed and built in Argentina, was launched from Vandenberg on 10 June 2011. It is positioned in the low-orbit, NLEO(?), and takes an hour and a half to orbit the Earth. It is, in fact, an observatory in the sky equipped with high technology to measure the salinity of oceans, rain, ice, water vapour and the oceans temperature. It has a capacity to detect, *inter alia*, the effect of cosmic radiation on electronic equipment and the position of micro-particles of space debris. Mission Aquarius is the outcome of a prodigious effort of international cooperation between Argentina and the United States for launching the satellite and in which the national space agencies from Canada, Italy and France participated by providing the instruments on board, and Brazil for its part for its facility for testing vibration and environmental resistance at the disposal of the mission.

The Conference included discussions on initiatives and strategies for the use of satellite data for water resources management, i.e., surface water studies, distribution of water resources, space technology applications to water management in mountains and arid areas, management of ground water resources, and water-related emergencies.

Two Working Groups prepared observations and recommendations before the Conference and developed proposals for follow-up projects.

A post-session was also included which was really very enlightening.

Second, the fiftieth session of the Legal Subcommittee of COPUOS in 2011. The ILA was represented by the Chair of the Space Law Committee,

the General Rapporteur, the ILA Conference Session Reporter for Space Law, and the distinguished member of the Committee, Professor Armel Kerrest, from the French branch.

Other ILA members, acting in different capacities, also attended the Legal Subcommittee last year.

The ILA Committee Chair made an oral presentation of the main activities carried out by the Committee in 2010 with special emphasis on the Seventy-Fourth ILA Bi-Annual Conference held at The Hague in August 2010. This is registered in document A/AC.105/C.2/L.281/Add.1.

The fiftieth session of the Legal Subcommittee was marking, as you all may remember, the fiftieth anniversary of man in space and the flight of Yuri Gagarin. In this context, the ILA members took place in activities organized at the same time of the meeting of the Legal Subcommittee of which I shall mention ESPI under the ILA University. Concerning ESPI, the European Space Policy Institute, the ILA was invited to take part in a panel within a meeting to organize to discuss perspectives for space law. The panel was moderated by Kai Uwe-Schroegel and addressed the consistency of the current international space legislation in light of the new development of space technologies. The discussion veered between aspects of the commercialization of outer space. In fact, the general title of the study of the ILA Space Law Committee "From There to the Legal Uncertainties Raised by Sub-orbital Flights and the Need to Ensure a Sustainable Use of Outer Space". The prevailing opinion was that the United Nations treaties on outer space were an important basis from which further and more detailed regulations could be developed to give a more precise legal meaning to the provisions embodied in those United Nations instruments.

A second panel followed, with the participation of Anatoly Katushkin(?) from the Russian branch of the ILA. The topic was "The Role of COPUOS and Space Law-Making Procedures" and it was recommended that the Basic Principles be kept intact. However, they could be refined in certain cases by further provisions to keep base with technological development.

And the second meeting I would like to mention in this parallel where the ILA was involved is the one organized at the Vienna University, held on 2 April 2011, with the auspices of the European Centre for Space Law. The different speakers analysed the

functions of non-binding rules in international space law from a diversity of angles. The meeting was marked by a strong interdisciplinary approach and included a first part on general considerations and a second part on special issues consisting of an analysis of several international instruments and their effect on the practice of States and private actors in space as well.

Number three. The Fifty-Fourth Colloquium on the Law of Outer Space in the framework of the International Astronautical Federation, Cape Town, October 2011. The Colloquium was attended by the Chair of the ILA's Space Law Committee, the General Rapporteur and some of its distinguished members, a few of which are members of the Board of the International Institute of Space Law.

The ILA made presentations at its various sessions, particularly on the topic of space debris. ILA members also took part in the judging of the Semi-Finals and Finals of the Manfred Lachs Moot Court Competition.

Fourth. In October 2011, as well, the Ibero-American Conference on Air and Space Law, Asuncion, Paraguay. This Institute has headquarters in Madrid, who is applying for status as observer to the COPUOS, brings together every year and at different venues, specialists on air and space law from Latin American countries and Spain. The space law session was dedicated to space technologies of the service of telecommunications, Earth observation and related areas. The Chair of the Space Law Committee was invited to submit a discussion on this subject.

The Conference was hosted by the Faculty of Law of a national university of Paraguay and one of the recommendations of the Conference was to follow the topics currently on the agenda of the Legal Subcommittee of COPUOS with a view to cooperating with the work of the Legal Subcommittee.

Now I move on to Part C of the report which deals first with the work within the Permanent Court of Arbitration, and second, for the preparations for the Seventy-Fifth Conference.

The report of the Legal Subcommittee of COPUOS on its fiftieth session invited the ILA Space Law Committee to report on the work carried out within the Permanent Court of Arbitration concerning the drafting of arbitration clauses for dispute settlement arising from space activities. On 6 December 2011, the Administrative Council of the Permanent Court of Arbitration adopted the Optional Rules for Arbitration

of Disputes Relating to Outer Space Activities. The final text is available in English and French on the PC website and is also a Conference Room Paper at the disposal of delegates in its official versions in English and French in this room.

This project was set in motion in 2009 by the Permanent Court of Arbitration Secretary-General, Mr. Christian Krauner(?) in response to a perceived need for specialized dispute resolution mechanisms in the rapidly evolving field of outer space activities. The text was developed by the International Bureau of the Permanent Court of Arbitration in conjunction with an Advisory Group of Leading Experts in Aerospace Law.

The Advisory Group was chaired by Judge Pocar, a judge on the Tribunal on Criminal Law in ex-Yugoslavia, and the other members of the Advisory Group, it was a small group. I would like to quote them by name. There is the Chair of the Legal Subcommittee, Tare Brisibe, Professor Franz von der Dunk, Professor Joanne Gabrynowicz, Professor Doctor Stephan Hobe, Dr. Ram Jakhu, Professor Armel Kerrest, Mrs. Justine Limpitlaw, Professor Francis Lyall, Professor Mani, Dr. Monserrat Filho, Professor Haifeng Zhao and the present speaker. More than half of the members of this list are part of the ILA's Space Law Committee.

We welcome this project, developed without interruption during 2010 and 2011. In May 2011, there was a first meeting of the Advisory Group at the Peace Panels to discuss and evaluate the progress reached at the point in the drafting of the Rules. These Rules took as basis the Court's Environmental Rules under 2010 UNCITRAL Arbitration Rules. However, it departed from them in certain cases to make them more specific and more consistent with the new international scenario.

A second and final meeting of the Advisory Group was held last 5 and 6 December at The Hague and on this occasion, the Rules, as we call them, as they are currently called the Rules on Outer Space, became effective.

A few comments and perceptions on the structure and substance of these Rules briefly because I understand that next week the Chair of this Advisory Group will be speaking to this Committee in more detail about this work.

The Rules stand out for their flexibility concerning the applicable law and show a realistic equilibrium among the different interests involved. The need to have these Rules and their objectives appears

very clearly from the outset of our work. They go a long way in avoiding the frustration of arbitration procedures being interfered with by claims related to sovereignty, sovereign immunity and so forth.

In both ILA Conventions, draft Conventions on Dispute Settlement were taken into account in the drafting of these Rules. First, the draft Convention of Dispute Settlement, adopted in the Paris Conference in 1984, and secondly, the 1998 Revised Text of the Draft Convention Related to Space Activities and Disputes Arising Therefrom, at its Sixty-Ninth Conference.

The Rules provide an interesting example of progressive development of the law and they go further than the PCA Environment Rules. Moreover, their language seems clearer than that of the 2010 Arbitration Rules of the Court. In fact, leaving out the words "international wrongdoing" in its Article 16, the formula which appears expressly in the UNCITRAL Rules, is a realistic step forward. The inclusion of that term seems likely to us to enchain the strain of accusations in the sense that the wrongdoing was intentional, possibly opening the door for a myriad of accusations of a kind. The Advisory Group considered that any words to that effect were unnecessary and could lead to unwanted complications hindering the development of an otherwise agile dispute settlement procedure.

Finally, it is considered that these Rules, by being procedural in nature, rather than weakening the faults of the outer space treaties in force, will help them in a way to come to life. I insist they are procedural and they are also very simply. We are being told frequently that their very simplicity is impressive.

I shall now move on to the Seventy-Fifth Conference of the ILA Programme for next August 2012 in Sofia. There are two main topics to be addressed by the ILA in its Final Report on these matters.

The first topic is remote sensing. Remote sensing, ranging from an evaluation of the 1986 Principles and their validity today in light of State practice and technological developments, and the use of the technology to monitor the compliance with international agreements, also included specific problems relating to the use of satellite imagery in Court which not only concerns the academic world, but also the practitioners world.

The second topic is of utmost importance. It is national space legislation under model law drafted and mainly authored by our General Rapporteur, Professor

Hobe, and with your leave, Mr. Chairman, I shall ask him to say a few words on this matter.

Mr. S. HOBE (*International Law Association*) Ladies and gentlemen, since the 2006 Conference in Toronto, the Committee, the Space Law Committee has on its agenda the drafting of a model law for national space legislation. The purpose of this undertaking is to make a recommendation and thus to provide guidance for ILA member States on how to live up to their international law obligation of an acting national space legislation.

So far, there are worldwide approximately 20 States that have enacted their national space laws but important States are still missing. Discussion in the Space Law Committee, which interacts with the discussion in the Working Group of this Committee, has advanced and it is hoped that at the Sofia Conference later this year in August 2012, the ILA Space Law Committee will be able to reach final consensus on such a model law that draws on not(?) of its ideas from the observance and collection of State practice.

Thank you.

Ms. V. CONTIN-WILLIAMS (*International Law Association*) Thank you very much. There are within these two general titles other issues to be addressed in the Final Report of the ILA Space Law Committee, namely space debris, which continues under permanent review of our Committee, and the Report will be addressing the latest developments on the basis of information provided by member States through the Legal Subcommittee on their domestic measures for mitigation.

Also the advisability of introducing minor changes to the ILA international instrument on the protection of the environment from damage caused by space debris. We are wondering and we are discussing whether we should introduce a couple of minor changes to the definitions on this matter. The general opinion within the ILA is to support the presentation, the Working Paper of the Czech delegation in the sense that space debris should become principles and not just guidelines. It is worrying that the Mitigation Guidelines drafted by COPUOS were elaborated without the participation of members of the Legal Subcommittee. So that is more or less the idea.

Another topic we are including for further work of the Committee is a review of the Moon Agreement. We worked on this in the 1990s and there was a resolution at the New Delhi Conference on the

Moon Agreement but we feel that now it should be seen in a new light. We need a further revision to follow the latest developments also in the exploration of Mars, given that the Moon Agreement is also intended to apply to other celestial bodies.

Finally, on this subject on the Moon, the idea is to have a hard look on the long-standing controversy of a right to ownership on the Moon treated by Article 2 of the Outer Space Treaty and which the Moon Agreement fails to resolve.

The other topic we have included for a deep study will be the follow-up of the Rules of Dispute Settlement drafted within the Permanent Court of Arbitration.

And another topic we intend speaking about after the Sofia Conference is the legal questions underlined sub-orbital flights.

Some initial thoughts on these questions will be added to our Final Report in Sofia.

The ILA Space Law Committee, Mr. Chairman, would be honoured to include on our agenda, any other questions the Legal Subcommittee may wish to indicate and we look forward very much to welcoming you, to welcoming the distinguished delegates and to welcoming the international organizations, either governmental or intergovernmental, at Sofia next August. For further information, we are open, you can find us on the website where all the details will continue to appear from now on.

The ILA Report will be on the website, the Report to be submitted to Sofia in its final version once it goes round to the members in May and will be on the website as from June and we shall be happy to circulate copies to all of you.

Thank you very much for your attention and this is what we had to say for the ILA this morning, Mr. Chairman. Thank you.

The CHAIRMAN I thank the distinguished representative of the International Law Association for this most detailed statement on the report of the International Law Association's activities.

Are there any other delegations wishing to make a statement under this agenda item at this time?

Yes, I recognize the distinguished delegate of the Czech Republic.

Mr. V. KOPAL (*Czech Republic*) Thank you very much Mr. Chairman. I do not wish to make a statement now but I would like to offer a brief comment on the report that we have just heard from the Chairperson of the Space Committee of the International Law Association, completed by the report of the Rapporteur of this Committee.

I believe that both these presentations have been evidence of very rich activities of the ILA Space Law Committee and that will reflect at the forthcoming Conference of the ILA to be held in Sofia, Bulgaria, this August. I particularly would like to say that much has been done in several topics in several fields and that the choice of the programme of the forthcoming session of the Space Law Committee indeed is very rich and enables to discuss all these subjects that have been here and enumerated.

I would like to call the Legal Subcommittee not only to listen to what has been done by such an important international non-governmental organization, as is the International Law Association, yesterday, the International Institute of Space Law but that the Legal Subcommittee should really use the generous offer to listen to the new suggestions, to suggestions of new topics for the work of the International Association and its Committee.

I would also like to use this opportunity to thank the Chairperson of the Space Law Committee of ILA which expressed the support to the initiative of the Czech Republic as it expressed in the last year's Working Paper relating to the upgrading of the work of the COPUOS in the field of mitigation of space debris and to upgrade the document elaborated by the COPUOS on the Guidelines to be applied in the mitigation against space debris to principles to be submitted to the General Assembly for adoption in the series of the United Nations Principles which are a very important source of the development of international space law.

Thank you very much Mr. Chairman.

One more point. I suppose that the Report of the ILA will be distributed as has been the case with the report of UNIDROIT, for example, which are very useful documents for our work in the Legal Subcommittee.

Thank you very much.

The CHAIRMAN Thank you distinguished delegate of the Czech Republic for your comments, especially in highlighting the means by which we can

strengthen the synergies between our Subcommittee and the activities of the International Law Association.

The next speaker on my list is the distinguished representative of China.

Mr. Y. XU (China) Thank you Mr. Chairman. Thank you for giving me the floor. My comments are in the nature of the procedure or organizational matters.

I think that after although informative but quite lengthy statement made by the representative of ILA, it is good timing for the Chairman of this Subcommittee to remind us all of the delegates and participants of this Subcommittee the time limit for the statements and we all know that the Report of the ILA was incorporating the document A/AC.105/C.2/100. I think if we can make a suggestion to the delegates or to the participants, the next time you just get outlines or the essence of the report rather than read the report. We do want to have productive Committee or Subcommittee meetings but we do not want to go through the details in the statement and we reserve our right to go back when we are dealing with the organizational matters of the Subcommittee.

Thank you Chairman.

The CHAIRMAN I thank the distinguished representative of China for reiterating this very important aspect of our means of work.

Are there any other delegations wishing to make a statement under this agenda item 6 at this time?

I see none.

We will, therefore, continue and conclude our consideration of agenda item 6, Information on the Activities of International, Intergovernmental and Non-Governmental Organizations Relating to Space Law, this afternoon.

The definition and D]delimitation of outer space (agenda item 7(a)), and the character and utilization of the geostationary orbit (agenda item 7(b))

Distinguished delegates, I would like to now continue our consideration of agenda item 7(a), the Definition and Delimitation of Outer Space, and item 7(b), the Character and Utilization of the Geostationary Orbit.

I do not have any speakers that have enrolled or expressed their intention to address the Subcommittee on either one of these items.

Are there any delegations wishing to make a statement under either item 7(a) or 7(b) at this time?

I recognize the distinguished delegate of Saudi Arabia.

Mr. M. A. TARABZOUNI (Saudi Arabia interpretation from Arabic): Good morning Mr. Chairman. Since the geostationary orbit is a natural resource which is limited and saturated currently, and since there is a study made by the representative of the Czech Republic, as presented during our past session, we consider that there are some orbits where there are no satellites, although they are registered. However, the frequent use of many orbital positions is continuing to date. Currently there are many abuses by many international organizations and States in transferring the ownership of satellites to commercial entities, while giving them all the rights to use the various frequencies. Therefore, my delegation considers that there should be a real cooperation between COPUOS as well as the ITU in order to avoid this priority principle. There should be a law which guarantees to States the ability to acquire an orbital position in accordance with Rules 1 and 2 of the Principles concerning the use of space.

Thank you.

The CHAIRMAN I thank the distinguished delegate of Saudi Arabia for his statement.

And I believe that we will continue the deliberations on this topic under the auspices of the Working Group later this afternoon.

Are there any other delegations wishing to take the floor on either item 7(a) or 7(b) at this time?

Technical presentations

Distinguished delegates, in the absence of any interventions or statements or comments, I would now like to proceed with the technical presentations and presenters are kindly reminded that technical presentations should be limited to 15 minutes in total.

And the first presentation on my list for this morning is by Mr. Carsten Wiedemann of Germany for the delivery of his presentation entitled "Space Debris: Current Situation".

Mr. C. WIEDEMANN (*Germany*)

Mr. Chairman, thank you very much for the introduction. I want to give you some background information about the current situation of space debris on Earth orbits.

What most of you probably know is that we have lots of old satellites in spent upper stages on Earth orbits and also some fragments mainly from explosions. The larger of these objects are included in the Radar Catalogue or catalogue pictures, mainly produced using radar measurement data and some optical measurement data provided by the United States and currently we have about 16,000 objects in this catalogue.

As a rule of thumb, you can say that objects larger than 10 centimetres are included in this catalogue. This is not perfectly correct. Some objects beginning of a size of five centimetres are today also included in the catalogue but they are only a very small minority of the whole five centimetre population. And on the geostationary orbit you can say that objects of a size larger than one metre are included in this catalogue.

These are the objects in the space where the orbital parameters are known and where it is principally possible to predict a collision between these objects. From all these 16,000 objects, only 900 are active satellites. All the rest are space debris.

What you can see in this viewgraph here is that most of the space debris objects appear on very low-Earth orbits because most of our space flight activities are performed at low-Earth orbits. That means collision of satellites with debris objects is mainly a problem on LEO. You can see that also on the geostationary orbit there is an accumulation of objects but here the collision probability is still relatively low.

Here we have another problem. A slot used by a certain satellite shall be re-used after the satellite is out of order and so today, these satellites are transferred to an elevated orbit. Now unfortunately, the objects do not stay on the orbits where they initially have been released. They change the shape of the orbits and also the location of the orbits. You can see this on the geostationary orbit where we have today an inclination of some objects of north 15 degrees due to orbital _____(?).

This is what we know about the space debris environment but there are, of course, much more objects than these 16,000. What we did in Germany is some research in the field of modelling the space

debris environment, that means we simulate all space debris generating events, producing clouds of particles, propagating them at a reference of par or into the far future and comparing these results to measurement data. And this means a simulation of about 234 fragmentation events, mainly explosions, 1,965 firings of solid rocket motors producing slack particles, 16 reactor core ejections producing liquid metal droplets and, of course, the continuous sources of space debris, especially in the small size regime like paint flakes and eject tar.

What I want to show you now are the results of this modelling research. So currently we have about 29,000 objects on orbit greater than 10 centimetres. We have about 60,000 objects greater than five centimetres on all Earth orbits, about 700,000 objects greater than one centimetre, 200 million objects greater than one millimetre, and trillions of objects greater than one tenth of a millimetre.

The most dangerous objects for us are objects in the size regime of one centimetre. So let us have a look on this particular contribution to the space debris environment and let us focus on the very low-Earth orbit altitudes where we have the highest number of these objects.

This viewgraph I show you here the so-called spatial density, that means the number of objects per volume element versus the orbital altitude between 200 and 2,000 kilometres. On these orbits and in this size regime of larger than one centimetre, we have five important contributions to the space debris environment. A very small one, the blue one here, are the so-called launch- and mission-related objects. They are all objects that have been released operationally in space so mainly satellites and upper stages.

Then we have a very small contribution of Multi-Layer insulation, MLI. The number of these objects is very small but they have a very high reflectivity and very often they can be seen during optical measurement campaigns. The white part is the most important contribution and these are fragments due to explosions and some collisions. They are the dominating contribution to the space debris environment.

We can see that most of these objects appear close to 800 or 900 kilometres so these are today the most dangerous orbits we have.

Another contribution of the slack particles from solar rocket motor burns, and they have only a significant contribution on very low-Earth orbital

altitudes, for example, where we have manned space flight activities. Here about fifty per cent of the overall space debris environment is represented by these slack particles. Slack particles can have a size of up to six centimetres or smaller.

And on 900 kilometres altitude of the disposal orbits of a nuclear power source, we have sodium potassium droplets which have been released during the 1980s by spent nuclear reactors during the operational reactor core injection. Today, we have still 30,000 droplets in space and a size regime between five millimetres and 5.5 centimetres. So the orbits of interest are at 800 kilometres altitude.

This is the situation in space today for the year 2009. But now let us have a look at the years before. In the year 2005, the number of fragments were much lower on these orbits. In 2007 and 2009, two important fragmentation events occurred. One was the destruction on a satellite at 850 kilometres altitude and the other one a collision between two satellites close to 800 kilometres and this caused two large clouds of debris objects and so the number of debris objects have been increasing significantly between 2005 and 2009 on low-Earth orbit altitudes.

How will this environment develop in the future? We made also some simulations concerning this question and we found that numbers of objects will increase especially at 800 or 900 kilometres altitude. What you see in this viewgraph here is again the one centimetre size population. Now it is a top view of the viewgraphs you have seen before. Again, an orbital altitude between 200 to 2,000 kilometres and again the spatial density now as a top view, but now as an additional parameter the time between 1970 up, let us say, to the year 2060(?), and what we see here is a continuous increase of space debris at these 800 kilometre orbits due to two reasons. The first one is the continuing space flight activities which means new debris is generated and we have an increase in accumulation of objects on Earth objects. But the other effect is the beginning of the collision of cascading. That means the number of objects on low-Earth orbits are so high today that it is very likely that they will start to collide with each other. This effect is also called the Kessler Syndrome.

The Kessler Syndrome may become the dominating effect of space debris production in the future but over a very long time limit. It would take many decades. But today we have reached the situation where the LEO population, the low-Earth orbit population, is unstable or becomes to be unstable. That means if we want to control this debris population, we

have to do something within the next years not something within the next decades. Today we still have the possibility to control this environment but in the future this will become more and more difficult.

We also make some simulations to find out where these collisions will occur and which objects may be involved. You see here a result of some propagations in the future. Each cross gives you a possible, potential candidate for a catastrophic collision, a catastrophic collision means the target is completely fragmented and produces a cloud of particles itself and these particles can then trigger new catastrophic collisions. And here see the inclination versus the perigee altitude of objects.

Now an inclination of 90 degrees would mean a polar orbit. You can see that most of the objects with an inclination of 98 degrees will collide with objects with inclinations of 82 degrees. Why that? Both orbital planes of these groups of satellites in upper stages, are about eight degrees away from the North Pole, due to orbital _____(?), both orbital planes can be moved into each other and if the orbital planes of 82 degree objects and 98 degree objects will be in one orbital plane then we will have this very dangerous head-on collision. And that means twice orbital velocity. So the collision velocity is then 15 kilometres per second at the average and no longer 10 kilometres per second at the average, how it is for most LEO collisions.

The orbital regime close to 800 kilometres is a problem for two reasons. One is the high number of objects that exist in this orbital altitude and the other reason is the extremely high energies which occur during these collisions.

Now to summarize, the most important results of my short presentation you can say the orbital region of special interest are orbits at 800 kilometres altitude. We have a high number of space debris. We have very high collision velocities and we have a high probability that so-called catastrophic collisions will occur. That means that targets will be completely destroyed, producing new debris objects, that means that the collision of cascading, the so-called Kessler Syndrome, will start at 800 kilometres altitude. Now it may be necessary in the future to remove existing objects from these orbital altitudes actively.

The scientific and technical challenges to solve these problems, the act of removal, would be a first step to identify the long-living risk objects, that means potential collision partners. By the way, these are mainly long-living, very large and very heavy satellites. Then we have to prioritize the risk objects by

active removal. That means we have to find out which of these high-risk objects will have the highest probability to undergo a catastrophic collision in the future. And then we have to think about which of these objects shall be actively removed, for example, by planning missions using a de-orbiter with a rendezvous manoeuvre docking to the risk object to be removed. Of course, this would be a very expensive way of cleaning up the space debris environment but what will happen in the future, I think, is that we will start to introduce proposal systems to our LEO satellites, that means all satellites that will be launched in the future should be re-orbited at the end of their operational lifetime.

The legal challenges from the viewpoint of an engineer would, of course, be, should all new satellites and rocket stages be equipped with the orbit capability, yes or no, and should this implementation be made an obligation? And for all satellites and rocket stages which are already in space, these high-risk objects which we want to remove actively, is it allowed to remove such an object by a third party, for example, or can someone be held responsible for a collision if such an object causes a collision?

Ladies and gentlemen, with this statement, I want to conclude my presentation. Thank you very much for your attention.

The CHAIRMAN Thank you Mr. Wiedemann for your presentation.

Are there any delegates that have questions for the presenter?

I see the Czech Republic.

Mr. V. KOPAL (*Czech Republic*) Thank you Mr. Chairman. Mr. Chairman, I do not have questions because the presentation was clear to me and outlined in an excellent way in my assessment. The dangers and challenges that the present state of affairs, it means of the existing space debris pieces in outer space, particularly around our Earth and also in the geostationary orbit and anywhere in orbit in outer space are clear and inviting to some legal actions. The paper that was presented was by its substantive a scientific paper but nevertheless in among the conclusions there were also the legal challenges and inviting for some action in this field.

I believe that it was very useful that this scientific paper was presented also in the legal Subcommittee and in order for us to learn what really are the existing challenges and dangers and, therefore, I

believe that this paper should be distributed to all delegations because they need it in our discussions on legal aspects of the space debris and this was a very useful paper and an example how scientific and technical experts can assist us in our own task in dealing with space debris.

Thank you very much.

The CHAIRMAN I thank the distinguished representative of the Czech Republic for your comments and observations.

I now recognize the distinguished representative of China.

Mr. Y. XU (*China*) Mr. Chairman, China would also like to thank Mr. Carsten Wiedemann for this very excellent presentation which is informative as well as thought provocative. I think I echo what has been said by Professor Kopal to distribute this technical presentation.

I do have a question concerning the presentation. In the presentation, Mr. Carsten Wiedemann mentioned that collision or cascading will be a major risk for the future and probably collision cascading will start at 800 kilometres high. At the same time, at that level, there is a special interest for many States activities carried out at that level. So my question is quite open whether you think there should be special rules or special regulations applied at that level rather than the general guidelines on space debris space mitigation, whether you think that probably in the future there will be special protection laws applied at that level, although you mentioned the orbiting from LEO(?). Besides that, do you have any other concrete ideas to offer special protection to that high level at 800 kilometres because it is quite a risk to have a collision or cascading at that high level.

I am not sure whether I have made it clear but just an open question to think about whether there should be new rules to delimit those risks.

Thank you.

Mr. C. WIEDEMANN (*Germany*) Thank you very much for this question. Yes, you are right, there are other possibilities of protecting this orbital regime. One is the suppression of explosions. Still the propulsion-driven explosions are the dominating source of generating space debris, that will probably also be in the future. So the passivation of satellites and upper stages at the end of their operational life is one

very important mitigation measure that should be implemented.

Another one is if it not possible to de-orbit a satellite directly in a controlled way, please reduce the orbital lifetime, for example, 25 years. That means use the onboard fuel to lower the orbital altitude of the satellite a little bit so that comes so close to the atmosphere that it will re-entry within 25 years automatically and burn up in the upper layers of the atmosphere.

The CHAIRMAN The distinguished representative of China, does that appropriately address your question.

Mr. Y. XU (*China*) Thank you.

The CHAIRMAN Thank you very much. I now give the floor to the distinguished representative of the Netherlands.

Mr. R. LEFEBER (*Netherlands*) I thank you Mr. Chairman and good morning to all of you. We would like to underscore what has just been said by our colleagues from the Czech Republic and China. We would like to thank Germany for this presentation. We think this presentation is very important when we are going to discuss agenda items 11 and 13 on our agenda and it would be very useful if we would be provided with a written copy of the presentation so that we can make use of it when we get to those agenda items.

Thank you.

The CHAIRMAN I thank the distinguished of the Netherlands for your intervention.

Are there any other delegates that have questions for the presenter?

In the absence of any other questions, perhaps I should also in my capacity as Chair highlight the very interesting nature of the presentation that we have just witnessed, especially as I indicated yesterday in the course of the interventions that were made by some member States pertaining to the transfer of either ownership or activities related to space objects. I see in the conclusion of your presentation a reference to the risk associated with objects that are removed by a third party and it is strictly legal context presuming the question would be whether there are or should be procedures to allow for a transfer of ownership or control or responsibility and even liability that could arise in the event that a third party that has been instructed by the entity that narrowly(?) supervises the

existence of the space object in the first place could appropriately transfer to a third party.

I find these questions actually quite stimulating and perhaps the Subcommittee as a whole can discuss them in more detail as we carry on with our deliberations here.

Are there any other questions in this respect to this presentation.

And in the absence of any, I will then give the floor to the presenter in respect of the second presentation on my list for this morning's session, which will be delivered by Mr. Mario Hucteau of France. The presentation is entitled "Registration Issues: French National Registry 1965 to 2012". You have the floor.

Mr. M. HUCTEAU (*France interpretation from French*) Thank you Mr. Chairman. Good morning to one and all. This statement is under item 5 of the agenda on the implementation of the five United Nations treaties on outer space and 1975 Convention on Space Object Registration.

It is my honour to present the present status of the National Registry. I am the Head of the Registration Office within the National Centre for Space Studies, CNES.

This is a summary of the presentation. In 2008, there was law decrees, orders, and the National Office for Registration within CNES and the space objects to be registered and the status of the National Registry. The year 1965 was the date that Asterix was launched in November, the first French-launched satellite.

The legal framework is the United Nations Convention on Registration of 1975. Today, 62 States or organizations are signatories of the Convention. We have fairly recent legislation which went into force in June 2008 and entered into force fully in December 2008. Application decrees were published in 2009 and several orders were recently published since the entry into force of the law with a special order on registration of space objects.

As I have said, as per law, the CNES is the public authority which is officially interested with the National Registry. I am not going to be going into the definitions which you are aware of. This is not very readable but this is the Law on Registration, Article 12, on the Obligation to Register and the Decree which stipulates what both the launching operators or satellite

operators have to provide the CNES with information to properly register.

This is a pictorial presentation of registration. French Guyana offers three launchers which can be launched on French territory, Ariane, Soyuz and Vega, both of them fairly recent, in February for Vega, and these launchers are operated by a launch operator under French jurisdiction and because of this, France is a launching State.

As concerns the launching elements, they are not registered by France. This is what you see with the arrow here with presently 180 elements, launching elements. That also starts as from 1965 because there was a stage in Asterix that was launched and it will remain in orbit.

So these launching elements also involve the satellite structures, not just elements.

Then we also have the governmental satellites which are directly managed by CNES or the French Defence Ministry and also satellites run in international cooperation, for example, Jason, which is run in cooperation with the United States of America as per the MoU specified by a specific article. However, there is the French State in registration, even though this is a joint venture.

Another case is one where the satellite under French legislation, according to our legislation on wherever this is launched from France, by CONAE or Sea Launch, it is authorized by the French Government to operate these satellites and here you have France registering the satellites, EUTELSAT, for example, as from 2001 and more recently Global Star – Second Generation. The intergovernmental organization EUTELSAT that launched these products in 2003, in 2001 they privatized. There are some 200 satellites which are geostationary and pursuant to an Agreement between France and EUTELSAT, they are within the French Registry.

So you see such status as per, there are 209 (290?) objects and this also has to take into account the atmospheric re-entries. So we took out the objects which have re-entered. To date, most of these are the launching elements on low-Earth orbit. This information is communicated to the Office for Outer Space Affairs here in Vienna with the additions and subtractions. We have just recently sent the Office for Outer Space Affairs the statistics for 2011.

For the launching operators, other things launched by intergovernmental organizations whose

State launches that have to take their data within their Registry and then independently for France also have to furnish these elements to the Office for Outer Space Affairs.

Then we have the Declaration of Lost Satellites as pursuant to the United Nations Declaration. The launching States have to inform the Office for Outer Space Affairs as to all of the objects placed on orbit.

So the summary which is reported indicates these satellites that we have launched.

Here, I would just like to indicate to you what satellites were launched through Kourou in 2011. Two were launched for foreign operators, Ariane and Soyuz. So here you have the breakdown of the States or intergovernmental positions concerned. Three satellites for ESA, ATV and two Galileos. Luxembourg, one for the UAE, one India, one Singapore, one Japan, one ARABSAT and one Chile on Soyuz in 2011.

Now the present status of the National Registry focusing on 2010 and 2011. For 2010, we have just sent in complementary information, six satellites as per the Agreement that we had with Global Star – Second Generation and these have been registered by France. Six satellites launched in 2010 and 12 in 2011. So for 2011, we have a plus 19 satellite total plus 10 launching elements with the stages from Ariane and through stages that remained in orbit after the Galileo launch, and two atmospheric launch re-entries and some minus two here in January and February 2011(?).

To date, we just have 289 space objects of which 109 satellites, 61 of them operational, the 61 operational are 34 in low-Earth and 27 geostationary ones, so most of them in LEO.

And then more launching elements. There is the Diamond stage that was used for Asterix and then the Ariane stages, equatorial orbits, Soyuz I have already indicated, and, of course, all of the carrying structures, the carbon structures which allow for double or triple launches. Some of them in LEO so when these launch in low-orbit, that the stage remains in orbit and that has recently been the case, a majority in GTO. Thirty-seven satellites for EUTELSAT, but that also includes, EUTELSAT is the intergovernmental organization, 18 Global Star – Second Generation should be found a couple of grouped launches. In 2012, we should have 24 and then possibly we are going to be doubling this subsequently to 48.

To field any questions that you may have, there is the address BNI@CNES.fr and then my personal address as well if you wish to contact me.

Thank you very much for your attention.

The CHAIRMAN Thank you Mr. Hucteau of France for your presentation.

Are there any delegates who have questions or comments for the presenter?

I take it then that the presentation was very well understood by all delegates given that there are neither questions or comments. In my part as the Chair, I find the experience of a registration practice very useful to some of the member States' delegations that are in the process of establishing their own registries also to national laws that they have implemented recently. So thank you again for your very detailed presentation.

I see the distinguished representative of the Czech Republic.

Mr. V. KOPAL (*Czech Republic interpretation from French*) Thank you Chairman. I would also like to thank our colleague and friend, Mr. Hucteau, for his report which was very precise, very interesting indeed.

I have a question on international registration. How many of these objects were the object of a report to the Office for Outer Space Affairs and the Secretary-General as per cooperation in the National Register?

The CHAIRMAN I give the floor to the presenter to address the question of the Czech Republic.

Mr. M. HUCTEAU (*France interpretation from French*): Last year, I had some non-registered satellites statistics with special focus on satellites that we launched from French Guyana. Last year there were some 80 Ariane-launched satellites that had not yet been registered at that point. That is 80, as compared to the odd 300 non-registered worldwide.

This year, I wanted to give indications as to how this registration process had progressed but unfortunately, as you know, and as Ms. Othman indicated, the Internet site for this does not work. It does not give this recent analysis. So I do not know how this registration process has come along but I would like States to take this into consideration and

register the satellites properly if they are under their jurisdiction and control.

Thank you.

The CHAIRMAN Thank you and can I take it that this addresses appropriately the question from the distinguished delegate of the Czech Republic?

Mr. V. KOPAL (*Czech Republic interpretation from French*) Well, partially.

The CHAIRMAN Another question. I now give the floor to the distinguished representative of China.

Mr. Y. XU (*China*) Thank you Mr. Chairman. A very brief question. Before that, China would also like to thank Mr. Mario Hucteau for his presentation. According to the presentation, you not only register the satellite but also 180 launching elements. My question is that, do you have any criteria to register the launching elements because with other practice we register launching elements, whether you should have some criteria to register launching elements and at what level and how long it will be orbiting? We just want to know whether you have technical or practical criteria or is there any launching elements? It may be helpful for us to think about into our registration practice.

Thank you.

Mr. M. HUCTEAU (*France interpretation from French*) If I correctly understood the question, we consider that it is necessary to register launching elements as long as they remain in orbit for a fair period of time after the launching operation, for example, when the ATV vehicle is launched, I believe that tomorrow the third ATV is going to be launched by Ariane from Kourou and there is a re-entry of the Ariane stage, the controlled re-entry which should be as planned for the Pacific and that stage of the Ariane we consider we do not have to register because it is doing an atmospheric re-entry during the launching phase.

If a stage remains in orbit, beyond that launching phase, we consider that it is necessary to register it.

This is data that we communicate to the Office for Outer Space Affairs and on the Internet site and indicates registry of space objects. Actually it is satellite registry and it is not possible to have a list of the launching elements at present in orbit. There are

some 3,000 objects that can be publicly accessed in this Registry. Last year we were wondering whether we could extend this access to all of the data for space objects. In any case, I think that the launching operators, I do not exactly what the procedure is followed by other operators, but they should be able to follow these points with the Office for Outer Space Affairs.

I do not know whether I fielded your question satisfactorily.

The CHAIRMAN Are there any other questions or comments to the presentation that we have just viewed?

In the absence of any other comments or questions, I can only once again say thank you to Mr. Hucteau for your very detailed presentation.

Distinguished delegates, I will shortly adjourn this meeting so that the Working Group on Matters Relating to the Definition and Delimitation of Outer Space can hold its first meeting.

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 our consideration of agenda item 4, General Exchange of Views. We will continue and suspend our consideration of agenda item 5, Status and Application of the Five United Nations Treaties on Outer Space. We will continue and conclude our consideration of agenda item 6, Information on the Activities of International, Intergovernmental and Non-Governmental Organizations Relating to Space Law, and we will also continue our consideration of agenda item 7(a) on the Definition and Delimitation of Outer Space, as well as agenda item 7(b), the Character and Utilization of the Geostationary Orbit.

Time permitting, we will then begin our consideration of agenda item 12, General Exchange of Information on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space.

The Working Group on National Space Legislation, under the chairmanship of Ms. Irmgard Marboe, will then hold its first meeting.

I would also like to remind delegates that during lunchtime today, as I indicated at the opening of this session, precisely at 1.15 p.m., later this afternoon delegations are invited to the presentation entitled "Japanese Space Technology and National Frameworks". This presentation will be given by Japan's experts on the

topic and the presentation will be held from 1.15 p.m. to 1.45 p.m. and which will then be followed by a reception which will take place at the premises of the Permanent Mission of Japan in the Andromeda Tower. I understand that invitations have already been distributed to delegations in their pigeonholes.

Is that a convenient schedule for the Japanese delegation?

Ms. T. YAMAMOTO (Japan) Thank you Mr. Chairman. Mr. Chairman and distinguished delegates, I would like to take this opportunity to announce our lunchtime events for a presentation on Japanese space technology and national framework will be held at the Permanent Mission of Japan to the International Organizations in Vienna.

This event will begin at 1.15 p.m. sharp and will be followed by a reception.

We are pleased to extend the invitation to all delegates.

At the Permanent Mission of Japan is only five minutes away by foot and directions to the Mission can be found on the back of the leaflet provided to you and the leaflet also is put at the back of this Conference Room. Thank you for your kind attention and we are looking forward to seeing you at the Permanent Mission of Japan. Thank you very much.

The CHAIRMAN Thank you distinguished delegate of Japan.

Are there any questions or comments from the delegates of the Subcommittee on this proposed schedule?

I see none.

I would also like then to inform delegates that this evening, from 6.00 p.m. to 8.00 p.m., delegations are cordially invited to the reception hosted by the United States of America in the Mozart Room at the Vienna International Centre Restaurant.

And at this juncture, I would now like to invite Mr. José Monserrat Filho to chair the first meeting of the Working Group on Matters Relating to the Definition and Delimitation of Outer Space.

This meeting is adjourned until 3.00 p.m.

Thank you distinguished delegates.

The meeting adjourned at ????