

**Committee on the Peaceful
Uses of Outer Space***Unedited transcript*572nd Meeting

Monday, 11 June 2007, 10 a.m.

Vienna

Chairman: Mr. G. Brachet (France)*The meeting was called to order at 10.12 a.m.*

The CHAIRMAN (*interpretation from French*): Ladies and gentlemen, distinguished representatives, good morning. I do hope that you have enjoyed a pleasant weekend in Vienna and surrounding areas, that you have made the best of good weather although it was a little stormy yesterday evening. I call to order the 572nd session of the Committee on the Peaceful Uses of Outer Space. This morning we intend to continue consideration of agenda item 7, report of the Scientific and Technical Subcommittee on its forty-fourth session and item 8, report of the Legal Subcommittee on its forty-sixth session and, time permitting, we will also begin our consideration of agenda item 9, spin-off benefits of space technology: review of current status.

Distinguished representatives, towards the end of this morning's session I would like to inform you that there will be three technical presentations. Mr. Ventskovskiy of Ukraine will make a presentation under agenda item 7 entitled, space disposal of nuclear waste. This will be followed by a presentation under agenda item 9, Mr. Veshnov will be speaking, it is entitled, Intersputnik as provider of state of the art satellite communication services and finally, Mr. Ventskovskiy of Ukraine, under agenda item 7, will again take floor on Yuzhnoye Design Office technologies in the national and international space programmes. We will do our best to start off the technical presentations toward midday. Before I continue however I would like to call, for a short presentation, on Austria.

Ms. G. JUEN (Austria): We invite all delegations cordially to our heurigen tomorrow night.

We have distributed invitations on the first day of the session and we would kindly request all delegations to give our Secretariat an indication of how many of you we may expect because we need to order the food tonight and we want to make sure that we have plenty for everybody. You have invitations on the little sheets that we have distributed. Thank you and we hope to see you all tomorrow.

The CHAIRMAN (*interpretation from French*): I would like to thank the Austrian delegation. I am very much looking forward to this event, thank you for having invited us so please could delegations respond by saying whether or not they will attend.

Distinguished representatives and delegates, I am pleased to bring to your attention that, towards the end of last week, the Office for Outer Space Affairs organized guided tours for children of the VIC staff. The children and their parents had an opportunity to view the multinational exhibition on space and learn about different models of satellites. At the end of the tour they also watched a movie on the International Space Station. A total of 115 children attended the tours, aged between 5-15, and I would like to thank the Secretariat for their efforts. This is also an important part of enhancing public outreach of space activities.

Ladies and gentlemen, distinguished delegates let us now continue with our consideration of agenda item 7, report of the Scientific and Technical Subcommittee on its forty-fourth session. The first speaker on my list is the distinguished representative of Nigeria, Mr. Abiodun.

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.



Report of the Scientific and Technical Subcommittee on its forty-fourth session (agenda item 7)

Mr. A. ABIODUN (Nigeria): Mr. Chairman, this being my first contribution to our formal deliberations at this the fiftieth session of COPUOS, allow me to join other delegates that have spoken before me to express my joy at seeing you and other distinguished members of the Bureaux at the helm of our Committee at this its historical session. We rest assured that you will bring our work to a very successful conclusion this coming Friday.

My delegation also wishes to express its satisfaction with the competence and dexterity with which Mazlan Othman of Malaysia, in her capacity as Chairman of the Scientific and Technical Subcommittee, conducted the affairs of the forty-fourth session of the Scientific and Technical Committee of COPUOS. We would also like to congratulate the Chairman of the Legal Subcommittee as well. Allow me, Mr. Chairman, also to personally congratulate Dr. Sergio Camacho, the Director OOSA, as he brings to a close his illustrious career in the United Nations Secretariat. If you will let me, I can also give you _____ (*inaudible*) distinguished delegates a 30-minute lecture or presentation on what Sergio has achieved in his almost 24 years at the United Nations but, since I know that you will not oblige, I have summarized by comments in a few words as follows.

When all are panting, Sergio will always appear serene and unruffled and when a crisis surfaces Sergio's standard cautionary three words have always been "wait a minute". He did his best for OOSA and for the United Nations, it is an asset that the organization will certainly miss. Sergio, my family joins me in wishing you and your dear wife Carol and your two lovely offspring, David and Monica, the best in life.

Mr. Chairman and distinguished delegates much has happened in the past 50 years in the space arena. It is indeed heartening that the membership of COPUOS has gone from its foundation level of 13 to its current level of 69. Between 1957 and today, more countries have become space capable particularly in the last decade. Human venture into space has gone beyond the immediate environment of our planet Earth and to other planets in the solar system. Indeed, it is apparent that great opportunities and challenges are on the horizon in the decades and centuries to come. The just-released Global Exploration Strategy in the framework of a coordination document which resulted in the high-level panel on space exploration that was

organized by OOSA as one of the events to commemorate the fiftieth anniversary of COPUOS is a case in point.

Similarly, _____ (*inaudible*) mapping, Earth monitoring and remote sensing application communities, in general, are first seeing technology transformation in the next generation of Earth observation satellites. The latter will _____ (*inaudible*) dedicated intelligent systems, configure for dynamic and comprehensive on-board integration of sensors, data processors and communications systems. Earth observation satellites of the future will have capacities for simultaneous global measurements and timely analysis of the Earth's environment for real-time, mobile, professional and common uses. Consequently, the basic satellite imagery of today will migrate to temporal size-specific object mapping products and image-derived information.

When we speak about remote sensing, back home in Nigeria, NASRDA is continuing with its extensive campaign on the usefulness of its Nigeria-Sat-1 data this _____ (*inaudible*) has contributed to a surge in the use of the Nigeria-Sat-1 data nationally in different aspects of the country's development. The follow-up satellite Nigeria-Sat-2 is scheduled for launch in 2009. Nigeria is also aware that optical sensor systems are not adequate to meet all its Earth resources data needs, particularly because of the persistent cloud cover in the southern part of the country.

Accordingly, Nigeria, through NASRDA, has signed a cooperative agreement with Infoterra Global. As part of this agreement NASRDA will provide a receiving station for the radar gauge to be acquired by Infoterra TERRA-SAR-X satellite and we use such data in its own education and training programmes. We are also following with keen interest the unfolding efforts and progress of Malaysia in its use of _____ (*inaudible*) orbit for RAZAKSAT satellite. Experiences gained by Nigeria from these arrangements to set the stage for the nation's next steps in radar technology as well as _____ (*inaudible*) undertakings in the Earth observation field.

In the regional and international cooperation areas in addition to the statements already made at this session of this Committee during the general exchange of views by my delegation on African Resource Management Satellite Constellation, on the First African Regional Conference of the International Academy of Astronautics which will take place in Abuja, December this year and the second African Leadership Conference on Space Technology

scheduled to take place in August this year in South Africa have been mandated, by both UNESCO and the African Union, to brief this Committee at this session on the joint initiative on remote sensing in Africa.

This joint initiative took into account, inter alia, the 2006 Africa Science and Technology consolidated plan of action of the African Union and the New Partnership for Africa Development, otherwise known as NEPAD, which advocated the establishment of an African Institute of Space Science and the initiative also responded to the African Union call for an increased role of UNESCO in supporting the implementation of the decisions of the January 2007 Summit of African Heads of State and Government on science and technology and scientific research for development. Subsequently, the AU and UNESCO convened a high level scientific workshop of African experts and partners, between 30 May and 1 June, at UNESCO annex in Paris, France to assist the African Union to define its own strategy on the applications of satellite remote sensing for sustainable development in Africa. The workshop concluded that satellite remote sensing is an effective tool that can support Africa's economy, human security and quality of life. The workshop concluded on these issues, many categories of issues and, because there are many, I will just identify a few.

These include harnessing Africa's opportunity for the development of its human resources by building knowledge that can lead to innovation, increasing Africa's ability to harness its natural resources, manage its land degradation and desertification and protect its environment, contributing to the development of agriculture and food security, facilitating concrete management and peace-keeping, providing fundamental information necessary to develop and sustain Africa's infrastructure including a transportation system, providing information needed for human security and safety and, finally, to enhance Africa's opportunities to effectively participate in a global economy.

To accomplish the above the high level scientific workshop recommended that the AU should establish a scientific and technical working group that would collaborate with the AU Steering Committee on Science and Technology to do two things:

(a) Review the existing initiatives and programmes related to the above cause and;

(b) Formulate a strategy and necessary plans of action that can assist Africa to contribute to the development and utilization of space science and

technology to improve social economic development. The workshop also recommended that such a strategy as described in (b) above could focus, inter alia, on a number of the following elements including: raising awareness of the critical importance of space science and technology in the development process to the decision-makers; formulating an African science and technology policy backed by practical realistic and achievable programmes that depend on heterogeneous efforts and address the needs of the people; continuous political commitment at both the national and regional levels backed by necessary resources; building on existing capacity and _____ (inaudible) generation at all levels; the grooming of the private sector through governmental support and regional and international cooperation.

Mr. Chairman and distinguished delegates, the workshop concluded that the commitment of the African Union and its member States through the implementation of such a strategy _____ (inaudible) could result in a variety of significant benefits for Africa and its people and this was identified and analysed and that these benefits would enable Africa to contribute to the world body of knowledge.

Mr. Chairman and distinguished delegates, we all recall we celebrated the International Heliophysical Year this year and my delegation, particularly my country Nigeria, contributed to the IHY 2007 exhibition that was staged this past February during the forty-fourth session of the Scientific and Technical Subcommittee of COPUOS. We congratulate the Chairman of the Scientific and Technical Subcommittee for the exhibition. My delegation wishes to recognize in particular the tireless efforts of Professor Hans _____ (inaudible) of OOSA in ensuring the success of the exhibition. We also afford him our sincere thanks for his genuine and indefatigable contributions to the promotion of basic space science education in Africa.

On SPIDER, Mr. Chairman and distinguished delegates. We all know that no nation is immune from natural disasters as exemplified by the unfortunate cyclones and severe storms that are wreaking havoc in Australia, China, Iran and Oman. Such disasters support the Scientific and Technical Subcommittee of COPUOS and this Committee to work tirelessly over the years to develop SPIDER as a universal programme that will respond to global disaster needs. As we all also know the International Charter on Space and Major Disasters provided a good working example for such a programme. Last June this Committee enjoys the work of its Scientific and Technical Subcommittee on this subject and subsequently recommended

SPIDER for the approval of the General Assembly. My delegation is very satisfied with the decision of the General Assembly, as contained in its resolution 61/110 of 14 December 2006, to establish SPIDER with the objective of providing universal access to all countries and other relevant international and regional organizations to all types of space-based information and services relevant to disaster management. We express our appreciation to all the member States referred to in paragraph 134 of the 2007 Scientific and Technical Subcommittee report, that is A/AC.105/890, for their commitments and indications of official commitments to the implementation of the SPIDER programme. My delegation hereby appeals to all countries to support SPIDER because natural disasters, by their very nature, know no political boundaries, are oblivious to geographical size and do not respect any status we humans may bestow on ourselves as individuals or entities. We are sure that OOSA will pursue the implementation of SPIDER with vigour in order to achieve its intended goals.

Similarly, Mr. Chairman and distinguished delegates on space debris. No nation or people appreciate the impact of disaster more than those who have experienced one or have narrowly escaped one whether on terra firma or in space. My delegation believes that the inadvertent or conscious pollution of the space environment, in any manner, poses danger for and to all mankind and it is certainly not in concert with the _____ (*inaudible*) of the Space Treaty. Indeed, it is against the interest of those space-emerging countries who are investing their limited resources to be contributors to the space enterprise. The Nigerian delegation supports the call for a concerted effort by this Committee to mitigate space debris and for an incentive to investigate possible ways to remove existing space debris. In this connection, my delegation offers its appreciation to those member States that provided further insights into space debris mitigation and through their technical presentations on this subject during the forty-fourth session of the Scientific and Technical Subcommittee of COPUOS particularly France, the Russian Federation and the United States as well as to those other member States that are adopting various space debris mitigation approaches in concert with the Interagency Space Debris Coordination Committee space debris guidelines. My delegation is very pleased that the Scientific and Technical Subcommittee adopted the IADC guidelines by consensus at its forty-fourth session and we join other delegations in congratulating Mr. Claudio Portelli of Italy and other members of the working group on space debris for this constructive contribution to the work of COPUOS and its two subcommittees.

On near Earth objects, Mr. Chairman and distinguished delegates, given future human aspirations in space my delegation commends the efforts of the Scientific and Technical Subcommittee and its working group on near Earth objects for their accomplishments on this very subject at the forty-fourth session of the Scientific and Technical Subcommittee. We particularly express our thanks to the Chairman of the Working Group, Mr. Richard Tremayne-Smith of the United Kingdom, who is also the leader of a joint team on near Earth objects. My delegation has noted with satisfaction and support the intersessional work proposed by the Scientific and Technical Subcommittee upon the recommendation of the working group for the period 2008-2010 as contained in annex III of the 2007 Scientific and Technical Subcommittee report that is before all distinguished delegates. We note with satisfaction that the working group foresees a possible agreement on international procedures for _____ (*inaudible*) handling and will provide this Committee, through the Scientific and Technical subcommittee, a review of the progress and international cooperation and collaboration on observations of near Earth objects at the conclusion of its work.

Finally, Mr. Chairman and distinguished delegates on the use of nuclear power sources in outer space. In addressing the subitem within this agenda of our current session my delegation has reviewed carefully the report of the Scientific and Technical Subcommittee that is before us. While my delegation fully agrees that NPS applications used in space missions might be needed to meet the challenges and objectives of space exploration where alternative sources of energy may not be available. We also share the views of other delegations that serious consideration should always be given to the possible impact that missions carrying NPS on board will have on human life and the environment. My delegation takes this opportunity to commend the leadership of Mr. Sam Harbison of the United Kingdom who is chairing the work of the working group of NPS in outer space and therefore has set the stage for collaboration on the development of a safety framework for NPS in space between the working group and the IAS Commission on Safety Standards. My delegation is satisfied with the efforts of the working group to shorten the time frame for the accomplishment of this work and we look forward to contributing to its deliberations at its intersessional meeting which will begin at the end of this the fiftieth session of COPUOS. Mr. Chairman and distinguished delegates, thank you for your attention.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Abiodun for your statement and for the information you have provided. I would like to note in particular the very interesting work accomplished by the high level workshop, sponsored by UNESCO and the African Union, which was held at the beginning of June and in which you participated. I would also like to wish you every success for the regional African conference that you are organizing with the International Astronautical Federation in December in Abuja.

I will now call upon our distinguished colleague from Germany.

Ms. K. SCHICK (Germany): Let me start by giving my congratulations to the American delegation for the successful launch of the NASA shuttle and we hope that this shuttle will also bring the Columbus module in space at the end of this year.

The Federal Republic of Germany who, in the past, actively supported the work of the Scientific and Technical Subcommittee on the space debris mitigation guidelines noted with appreciation the adoption of these guidelines by the Subcommittee at its forty-fourth session. The adoption demonstrates the willingness of member States to pay attention to the problem of space debris and all related aspects and the common understanding for the necessity of further development of efficient space debris mitigation related technologies in order to contribute to a safe operation of current and future space missions. Germany was already implementing, through our national space agency DLR, space debris mitigation measures consistent with the IADC guidelines, the European code of conduct for space debris mitigation and the space debris mitigation guidelines of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space, A/AC.105/890 and Annex IV. We continue to constructively contribute to the international space debris mitigation efforts. Aiming at a draft resolution on space debris mitigation for the General Assembly of the United Nations should be the next step and the logic of consequence from past and recent efforts. This would be highly appreciated by the German delegation.

Also we are pleased by the new multi-year workplan for the development of an international technical-based framework of goals and recommendations for the safety of planned and currently foreseeable nuclear power source (NPS) applications in outer space. In addition, we would like to express our admiration for the cooperation between IAEA and the Scientific and Technical Subcommittee

in a joint expert group for the development of this framework. Thank you Mr. Chairman and distinguished delegates.

The CHAIRMAN (*interpretation from French*): Thank you for your statement on behalf of the German delegation. I think the Committee will gladly join in the congratulations you have extended to the delegation of the United States upon the success of the launch of the shuttle.

Moving on to the next speaker, it is the distinguished delegate of the Republic of Korea.

Mr. C-Y. HWANG (Republic of Korea): We are pleased to note that the forty-fourth session of the Scientific and Technical Subcommittee successfully completed its work. The Korean delegation would like to express its appreciation to the chairperson of the Subcommittee as well as the chairpersons of all the working groups for their excellent job. With the development of space science and technology over the past 50 years we noticed a wider application of the technology in our daily lives. Space technology will _____ (*inaudible*) more significant role in promoting sustainable development and fulfilling the Millennium Development Goals. In this regard my delegation would like to express its appreciation on the efforts of COPUOS and its member States to implement UNISPACE III. Important progress has been achieved such as the establishment of the International Committee on Global Navigation Satellite Systems and the working group on near Earth objects.

My delegation also welcomes that the Subcommittee, at its previous session, endorsed a new multi-year work plan on the near Earth objects for the period 2008-2010. My delegation has been participating in the action team on near Earth objects and we will continue to contribute to the fruitful discussion on agenda item at its next session.

With regard to space debris and nuclear power sources, my delegation notes that extensive and useful discussions were made throughout the forty-fourth session of the Scientific and Technical Subcommittee. In particular the programme of collegiance of space object with space debris drew more attention from member States than ever. On this note my delegation welcomes the adoption of the space debris mitigation guidelines of the Scientific and Technical Subcommittee at its forty-fourth session. With the adoption and implementation of the guidelines the stability in space will be _____ (*inaudible*).

Taking this opportunity my delegation would like to express its appreciation to the efforts of the Interagency Coordination Committee.

Concerning the space system-based disaster management support, my delegation supports the establishment and activities of the UN Platform for Space-based Information for Disaster Management and Emergency Response (SPIDER). The Korea Aerospace Research Institute has already contributed to a project of OOSA related to the use of space technology for disaster management in South-East Asia with a series of launches of KOMPSAT-2, KOMPSAT-3 and _____ (*inaudible*) Korea will be better prepared for disaster management and it will continue to increase its active participation in international efforts in disaster management. Thank you Mr. Chairman.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Hwang for your statement on behalf of the delegation of the Republic of Korea. I note in particular the active participation of Korea with its space resources in supporting the SPIDER platform.

We have no more speakers on the list for item 7 would any other delegation like to speak under item 7? The Netherlands.

Mr. A. ANCION (Netherlands): I would like to join previous speakers, my Korean and German colleagues when they were talking about space debris mitigation guidelines. The Netherlands also strongly supports these guidelines. Space technology in support of policy in a variety of fields is assuming an ever bigger role therefore the development and execution of policy is dependent of space missions and of the proper functioning of the entire space infrastructure. The increasing amount of space debris establishes an increasing threat not only for a safe and secure access to space but also to a well functioning space infrastructure. For this reason the Netherlands is glad to see that more and more member States of COPUOS are taking measures to limit space debris to a minimum. The agreement reached at the Scientific and Technical Subcommittee of COPUOS about guidelines can serve as a basis for reducing the spread of space debris thereby guaranteeing a safe future use of space, this deserves all our attention. For that reason we hope that the guidelines can be forwarded as a resolution to the General Assembly.

The CHAIRMAN (*interpretation from French*): I thank our distinguished colleague representing the Netherlands for his contribution. Any other requests for the floor. I see none.

Ladies and gentlemen, distinguished delegates, we have heard highly appreciative words regarding the space debris mitigation guidelines that were adopted at the forty-fourth session of the Scientific and Technical Subcommittee are now included as annex IV to the report of the Scientific and Technical Subcommittee on its forty-fourth session, that is document A/AC.105/890.

Now I would like to ask the Committee to approve the space debris mitigation guidelines.

May I take it that the Committee approves the space debris mitigation guidelines as contained in document A/AC.105/890?

I see no objections.

Thus the space debris mitigation guidelines, as contained in document A/AC.105/890, are approved by the Committee.

Thank you for adopting these guidelines, that is a very important stage in our work in this area which makes it possible step by step to gain control, get a handle on the issue of space debris while we are looking for a way to reduce space debris.

We will therefore continue and hopefully conclude our consideration of agenda item 7, report of the Scientific and Technical Subcommittee this afternoon.

Now, for one minute, I am going to call upon the Austrian delegation with some further clarification regarding the invitation for tomorrow.

Mr. S. MAYER (Austria): I just want to draw your attention to a small mistake in the invitation for the heurige tomorrow. The phone number, after the bracket, you need to insert a zero before the 1, so the correct number should read 435011503610, I repeat 435011503610. So now there should be no obstacle to sign up for the invitation, we look forward to seeing you tomorrow.

The CHAIRMAN (*interpretation from French*): I thank Austria for this additional information there is a correction of the phone number.

Ladies and gentlemen, distinguished delegates, I would now like to continue consideration of agenda item 8, report of the Legal Subcommittee on its forty-sixth session.

The first speaker on my list is the distinguished representative of Japan, Takashi Iwai.

Report of the Legal Subcommittee on its forty-sixth session (agenda item 8)

Mr. T. IWAI (Japan): Mr. Chairman, distinguished delegates, on behalf of the Japanese delegation I am honoured to have the opportunity to address the fiftieth session of the Committee on the Peaceful Uses of Outer Space. Japan is pleased to announce its support for the report adopted by the forty-sixth session of the Legal Subcommittee. I would like to express our sincere appreciation and respect for the excellent work of Mr. Raimundo González-Aninat, Chairman of the forty-sixth session of the Legal Subcommittee and Dr. Sergio Camacho-Lara, Director of the Office for Outer Space Affairs and his staff.

I would like to now turn to a couple of important topics discussed in the Legal Subcommittee. Japan is party to four space treaties, the Outer Space Treaty, the Rescue and Return Agreement, the Liability Convention and the Registration Convention. Japan consistently undertakes its space activities in compliance with these treaties. These treaties which form the legal framework for our current space activities are important in the sense that they provide a basis for the expanding scope of future space activities. This year is the fortieth anniversary of the Outer Space Treaty and I would like to briefly state here that we consider it highly desirable that all countries commit to these treaties, first and foremost to strengthening the legal framework for global space activities.

Japan is of the opinion that the practice of States and international organizations in registering space objects is the most important subject in this discussion particularly when registration is regarded as a basis to exercise national jurisdiction for the commercialization of space activities.

Concerning the elements of conclusions of the working group on the practice of States and international organizations in registering space objects made by the forty-sixth session of the Legal Subcommittee, I would like to express my deepest respect for the concerted efforts of all those who contributed to this task and we also thank the Chairman of this working group, Mr. Kai-Uwe Schrogl, for his excellent chairmanship. We have sent experts to aid in drafting activities in support of the content of this document which has been settled in the Legal Subcommittee.

The COPUOS Legal Subcommittee is charged with the important role of considering space law in order to ensure that all humankind can reap the benefits of space activities conducted in a free and fair manner. Japan intends to help the Legal Subcommittee achieve its distinguished goals like contributing to efficient and productive discussions. Thank you for your attention.

The CHAIRMAN (*interpretation from French*): I thank you, Mr. Takashi Iwai, for your statement and thank you for the very active contribution of Japan to the working group on registration.

Now I call upon our distinguished colleague representing the Czech Republic. Mr. Vladimír Kopal.

Mr. V. KOPAL (Czech Republic) (*interpretation from French*): Thank you Mr. Chairman. The previous speakers including my colleague, Dr. _____ (*inaudible*), have already expressed their appreciation of seeing you at the helm of this Committee. I would still like to associate myself with the many words of congratulations on behalf of the Czech delegation and on my own personal behalf. I would like to pay tribute and express my profound admiration of the way in which you steer the work of this Committee in particular the way in which you always comment on the highlights of each statement made by each delegation.

[*continued in English*] My delegation would also like to appreciate the excellent work of Dr. Sergio Camacho-Lara, his leading role in the Office for Outer Space and his great input to the work of COPUOS and its subcommittees. We have been doing it at each session of these United Nations bodies during the last five years and also before when he served as a dedicated Head of the Space Applications Section of the Office.

Dear Sergio, we will miss you, your readiness to meet our requests, your tact in handling all questions under discussion and also your quiet diplomatic skill in approaching sometimes rather difficult issues but we wish you full success in all your further endeavours.

Let me now make some observations on the issues and their results relating to item 8 of our agenda which my delegation considers the most significant. First of all, the delegation of the Czech Republic fully supports the efforts of COPUOS and its Legal Subcommittee to increase the number of States and international organizations adhering to the United Nations space treaties. The first and the most important amongst these instruments, the 1967 Outer Space

Treaty celebrates this year its fortieth anniversary. It laid down the foundations of international space law and its principles govern all space activities particularly those relating to international cooperation in the peaceful uses of outer space. Together with the other United Nations space treaties the 1967 Treaty established the legal framework for the whole present international legal regime of outer space. During the four decades of its validity the Outer Space Treaty has proven to be a respected and effective tool the fundamental principles of which may now be considered to be a part of general international law. Thus, it has become an important part of the international legal order of our times.

The discussions on the status and application of the five United Nations space treaties in the Legal Subcommittee and its working group on this subject contribute, for several years, to the fulfilling of the mandate of COPUOS in the legal field. My delegation particularly welcomes that, amongst other aspects, the working group should now also turn its attention to the fifth of the United Nations space treaties, the 1979 Agreement governing the activities of States on the Moon and other celestial bodies. At the last session of the Legal Subcommittee the working group agreed to consider a number of aspects relating to this topic including the identification of the benefits of adherence to the Moon Agreement.

As far as the item definition and delimitation of outer space and the character and utilization of the geostationary orbit is concerned, my delegation appreciates that, by the efforts of the working group under the able guidance of Professor Jose Monserrat Filho of Brazil, a new impetus has been given to the discussions on this topic, the consideration of which has been on the agenda of the Legal Subcommittee for many years.

At the last session of the Legal Subcommittee the observer for UNIDROIT, Dr. Martin Stanford, presented to the Subcommittee a detailed information about the development relating to the 2001 Capetown Convention on International Interests in Mobile Equipment and the protocols to this instrument. Of particular interest to the Legal Subcommittee has been his assurance that, after the adoption of the Air and now also the Rail Protocols, the draft space protocol should now become one of the priorities of UNIDROIT. Therefore, my delegation shares the view that it has been a sound decision to keep the item examination and review of the developments concerning the draft protocol on matters specific to space assets to the 2001 Convention on the agenda of the Legal Subcommittee.

At its last session, the Legal Subcommittee recorded decisive progress in the consideration of practice of States and international organizations in registering space objects, the only item which has been considered in the Legal Subcommittee under a work plan in recent four years. Under the excellent guidance of the chairman of the working group established for this topic, Dr. Kai-Uwe Schrogl of Germany, a comprehensive report was worked out including elements of conclusions of the working group. The Subcommittee recognized that those elements provided an important incentive for enhancing adherence to the 1975 Registration Convention and for establishing common practices for States and international organizations to follow in registering space objects. Moreover, the Legal Subcommittee agreed that the essential parts of the report constituted the basis for a draft resolution for submission to the General Assembly to be endorsed at this session of the Committee.

The delegation of the Czech Republic, which belonged to the group of States initiating the inclusion of the topic on the agenda of the Subcommittee in 2003, strongly supports the idea of submitting a draft resolution that would consist of the preambular paragraphs and the elements of conclusions of the working group on the subject as contained in the appendix to annex III of the 2007 Report of the Legal Subcommittee and now included in the document CRP.5 of 5 June 2007 to the General Assembly for its adoption. Such a step would become a visible result and a new stimulus to a further development of international space law and it would mean a substantive contribution to the celebration of the fortieth anniversary of the Outer Space Treaty on which principles it has been based.

At the same time, my delegation wants to express its satisfaction with the inclusion of a new item on the agenda of the Legal Subcommittee to be considered under a work plan during the years 2008-2011. We want that the discussions on national legislation relevant to the peaceful exploration and use of outer space be equally productive in elaborating a meaningful report including conclusions as has been the work on the topic of registration.

Finally, let me mention in the context of our contribution to the discussion on the report of the Legal Subcommittee that the delegation of the Czech Republic paid full attention to your working paper on future role and activities of the Committee on the Peaceful Uses of Outer Space, document L.268. Our delegation already had the opportunity to express its comments on your valuable suggestions relating to the

scientific and technical field. We would also like to submit some ideas on the proposals of the document relating to the work of COPUOS in the legal area. It is our intention to do so, not now but during the discussion on item 13 on our agenda, other matters. Thank you very much, Mr. Chairman for your attention.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Kopal for that statement. Thank you also for the very noteworthy contribution that you have made for the benefit of the working group on registry and thank you also for having moderated the small committee which, on the occasion of the Legal Subcommittee meeting, looked into the items that could be put on the agenda for next year and also I wish you well in terms of the work you will be doing in 2008 and 2009 chairing this group.

Next I would like to call on our distinguished colleague from the Republic of Korea, Mr. Kwang-yong Chung.

Mr. K-Y. CHUNG (Republic of Korea): In addition to the fiftieth anniversary of the launching of the first artificial satellite and the fiftieth anniversary of COPUOS, this year is also the fortieth anniversary of the adoption of the Outer Space Treaty. During this time significant technological and scientific advances have been made in the field of outer space. The expansion of space activities both in quantity and quality and the increasing role of the private sector in those activities might be the most noticeable aspects of these developments. COPUOS and its Legal Subcommittee have greatly contributed to addressing legal issues under the changing space environment and establishing the institutional framework to regulate and facilitate the peaceful uses of outer space. In this regard my delegation notes with satisfaction that the forty-sixth session of the Legal Subcommittee has held successful deliberations on many important agenda items. In particular, my delegation is pleased that the Legal Subcommittee has finalized its four-year work plan on the practice of States and international organizations in registering space objects. I would like to congratulate Dr. Kai-Uwe Schrogl on his excellent work as a chair for the working group. The working group has made several important recommendations such as those regarding the provision of coherent and additional information on space objects, registration by international organizations and joint launches of space objects. Given the vast expansion of space activities by private entities and international organizations, my delegation believes that those efforts of the working group will help enhance the effectiveness of the Registration Convention.

At the next session of the Legal Subcommittee we will have two new agenda items on capacity building in space law and information exchange on national legislation relevant to the peaceful exploration and use of outer space. Following the successful deliberation on registration practices, my delegation believes that the Legal Subcommittee will benefit from the discussion on these new and important topics.

In particular, my delegation would like to stress the importance of capacity building in space law. The Republic of Korea had the second United Nations workshop on space law in 2003 at the Korea Aerospace Research Institute in Daejeon. Since then, Korea had enacted the National Space Law and its regulations in November 2005 and the National Assembly is now deliberating the bill on compensation for third party damages caused by space objects. As the Republic of Korea has been achieving significant technical advances in space activities, both in the public and private sectors, the establishment of a legal system and institutional practices are most timely and applicable. My delegation believes that our deliberation on these agenda items especially the two new topics will help member States, both space-faring countries as well as non space-faring countries, better understand the legal aspects relevant to space activities thereby implementing the existing space treaties more effectively. Thank you.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Kwang-yong Chung for that statement on behalf of the Korean delegation and thank you for the marked interest that you display in the work of the Legal Subcommittee. I also note the quite considerable efforts exerted by your Government to create a legal framework for space activities in your country and I congratulate you.

Another delegation would possibly like to take the floor under agenda item 8 I ask? I see that China and South Africa would like to speak. China first please.

Mr. D. QI (China) (*interpretation from Chinese*): I wish to make a statement under this item and my colleague will, in the afternoon, make a statement on agenda item 7.

The Chinese delegation would like to extend its congratulations to the Legal Subcommittee on the successful outcome of the forty-sixth session. Now I would like to make some comments on the report of the Legal Subcommittee.

With regard to the item on status and application of the five United Nations treaties on outer space, we appreciate the efforts of the working group to promote the universal application of the five instruments and endorse the decision of the Subcommittee to extend the mandate of the working group. We will continue to take an active part in the activities of the working group and help it determine the next steps of its work.

China's position against outer space weaponization and arms race is constant and firm. The provisions of existing space treaties are seriously inadequate in prohibiting space weaponization and space arms race. Meanwhile, faced with the growing trend of commercialization and privatization of space activities, the existing space treaties are showing gaps in these aspects which must be bridged. China believes that without prejudice to the various basic legal principles and peaceful exploration and use of outer space we should consider taking appropriate measures, including concluding a comprehensive outer space treaty, to prevent the prospect of space militarization and to take up the challenge posed by commercialization and privatization of space activities.

As for the definition and delimitation of outer space, we are in favour of holding discussions and consultations on this issue by States with a view to maintaining rights and interests of States in outer space and fostering the peaceful use of outer space. Given the complexity of the issue and the difficulty of reaching agreement in the near future, we agree to the continuation of consultations of our member States on this subject.

Concerning the draft protocol on matters specific to space assets to the Convention on International Interests in Mobile Equipment, the protocol is a positive attempt in the area of commercialization of space activities. However, the protocol is facing the problem of how to interlink the private law related security guarantee system and the public international space law so further assessment is needed.

As for the relationship between the space assets protocol and the space law regime we believe that, in principle, the basic principles of the existing space laws should take precedence.

In relation to practice of States and international organizations in registering space objects, we note with satisfaction that the working group under the Subcommittee came up with elements of conclusions of the working group on practice of States

and international organizations in registering space objects. These elements of conclusions will contribute to the universality of the Registration Convention and uniformity of the registration practice as having an important reference value to States and international organizations when registering space objects.

The Chinese delegation endorses the submission of the outcome to the General Assembly, be it in the form of a General Assembly resolution or otherwise, this delegation will go along with the consensus.

Lastly, the Chinese delegation is strongly in favour of adding the item, capacity building in space law, to the agenda of the Legal Subcommittee. We will continue to collaborate with other countries through effective international cooperation to promote the universal adherence to the space law and application of the international space law and domestic space legislation activities. Thank you.

The CHAIRMAN (*interpretation from French*): I thank the distinguished delegate, the representative of China, for that statement and I thank him for active participation of China in the debate on the general legal framework.

I think we had also noted a request to take the floor from the representative of South Africa.

Ms. J. SCHNEEBERGER (South Africa): Regarding the work of the Legal Subcommittee, the South African delegation would once again like to express its appreciation to Ambassador González of Chile on his competent chairing of the Subcommittee.

The forty-sixth session of the Legal Subcommittee was particularly fruitful especially in view of the completion of existing items such as the registration of space objects and the elaboration of new agenda items for consideration by the Legal Subcommittee at future sessions. Thanks should also be expressed to OOSA, IISL and ECSL for organizing a seminar on capacity building in space law. In our view there were very many _____ (*inaudible*) for recommendations that were made and that can be taken forward on the very important issue of capacity building in space law and we are very pleased that the Legal Subcommittee has agreed to include, as a new agenda item for its forty-seventh session, the issue of capacity building.

In our view this agenda item can be used to bridge what may be called the space divide by:

(1) Taking forward the recommendations and suggestions made during the course of the symposium and the meetings of the forty-sixth session of the Legal Subcommittee;

(2) That member States should be encouraged to promote the progressive development of space law and its codification as well as the teaching and wider dissemination of space law. Member States should report back on the initiatives taken in this regard during the forty-seventh session and;

(3) Existing databases and capacity building initiatives in space law can be further elaborated and widely disseminated.

The South African delegation is of the view that the only way to successfully build on such capacity building initiatives is through intersessional activities. For our part we will follow-up on this issue during the African leadership conference to be held in South Africa in August this year and we look forward to reporting back at the meeting of the Subcommittee and this Committee on concrete outcomes in this regard next year.

We also believe that the issue of capacity building is of such importance that it should be a standing item on the agenda of the Legal Subcommittee and we look forward to considering this further at the forty-seventh session of the Subcommittee. Thank you, Mr. Chairman.

The CHAIRMAN (*interpretation from French*): I thank the distinguished colleague, the representative of South Africa, for that statement and likewise thank her for the contribution to the Legal Subcommittee that her delegation makes.

Any additional requests for the floor please under this agenda item? I see none.

May I now draw your attention to CRP.5, available solely in English, which is on the practice of States and international organizations in registering space objects. I will ask the Secretariat to introduce this document.

Mr. N. HEDMAN (OOSA): Yes indeed the Secretariat will introduce this document. Distinguished delegates, you should have before you Conference Room Paper 5 containing document A/AC.105/2007/CRP.5. The Legal Subcommittee this year endorsed the report of the working group on registration practice which is contained in annex III to the report of the Legal Subcommittee on its forty-sixth

session and that report of the Legal Subcommittee is contained in document A/AC.105/891. The Subcommittee at its forty-fourth session this year agreed that the appendix to the report of the working group contained in annex III together with the first six preambular paragraphs contained in paragraph 18 of the working paper submitted by the chairman of the working group in document A/AC.105/C.2/L.266 constituted the basis for a draft resolution for submission to the General Assembly to be agreed upon at the fiftieth session of the Committee. This Conference Room Paper 5, which you have before you, contains a compilation of the six preambular paragraphs and the elements on conclusions of the working group. Distinguished delegates, on page 2 of Conference Room Paper 5, you will have at the top of the page the first six preambular paragraphs as referred to. After the six preambular paragraphs you will have the elements of conclusions of the working group contained in the appendix to the annex of the Legal Subcommittee report as agreed by the working group and endorsed by the Legal Subcommittee.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Hedman for having introduced document CRP.5.

So my next question to the Committee would be as follows. Is the Committee in a position to adopt the six preambular paragraphs and the concluding elements appearing on page 2, 3, 4 and 5 of document CRP.5? I see no objections.

So this preambular part and the conclusions are now adopted.

Starting therefrom, the Secretariat will be preparing a draft resolution text for the General Assembly on registration practices. The draft will go to the Fourth Committee of the General Assembly when they discuss our topics in October in New York.

Thank you, this is a major step in our legal work, it is important to this Committee and I would like to thank the Legal Subcommittee and the working group established by that Subcommittee that prepared this document which was so appropriately chaired by Kai-Uwe Schrogl, our colleague.

Distinguished representatives, I would like to congratulate you because we are really making headway. This makes it possible for us, prior to the technical presentation, to take agenda item 9, spin-off benefits of space technology: review of current status.

The first speaker on my list is the distinguished representative of the United States.

Spin-off benefits of space technology: review of current status (agenda item 9)

Mr. J. HIGGINS (United States of America): We once again would like to highlight the often understated benefits on Earth derived from our research in space. The United States is proud to share with the Committee some examples of new innovations spawned by its space programmes and successfully spun-off to private companies for use in upgrading the quality of life on Earth.

Industry scientists work with researchers at the Jet Propulsion Laboratory in California and NASA's Marshall Space Flight Center in the early 1990s to develop PRP or Petroleum Remediation Product. In 2004, a private company from Pittsburgh, Pennsylvania, further developed this technology and has rapidly expanded the uses of the original micro encapsulating technology. This company has brought into production and availability of PRP making it accessible to more clients and in a variety of different forms.

The basic technology behind PRP is thousands of micro-capsules, tiny vials of beeswax with hollow centres, water cannot penetrate the micro-capsule cell when oil is absorbed right into the beeswax spheres as they float on the water's surface. This way the contaminants, chemical compounds that originally come from crude oil such as fuels, motor oils or petroleum hydrocarbons are caught before they settle. This ecological wonder has been packaged for specific uses to create a variety of different commercial products for such things as maintenance of ship bilges and cleaning and containing areas contaminated by oil products.

In order to monitor the body temperature of astronauts during space flights, NASA teamed up with Johns Hopkins University to develop an ingestible thermometer pill called the Ingestible Thermal Monitoring System incorporating a number of space technologies including wireless telemetry, micro-miniaturized circuitry, sensors and batteries, the thermometer pill became commercially available in research, university and military markets in the late 1980s. Today, due to a heightened awareness of heatstroke risk among athletes, the product is well-received as a means to detect elevated core body temperature during sporting activities. Beyond the sporting world the ingestible capsules are now being used to monitor the core body temperatures of fire-

fighters as they battle blazes and divers as they work in deep cold waters. There will likely be more applications for this type of technology in the future.

NASA's Marshall Space Flight Center engineers are working on creating the regenerative environmental control life support system. A complex system of devices intended to sustain the astronauts living on the International Space Station and, in the future, sustain those who are living and working on the Moon or travelling to Mars. The devices make use of the available resources by turning waste water from respiration, sweat and other sources into drinkable water.

One of the devices that NASA has been working on is the water recovery system. NASA has teamed with the company that was the original designer of the life support devices for the space suits to develop the water processor assembly. This technology, combined with the waste water processor developed by NASA, makes up a water processing system that is about the size of two refrigerators and will support up to a six-member crew. The system is currently undergoing final test and verification. The water processor assembly is tentatively scheduled for launch in 2008. A private sector company owns the patents for the commercial use of this technology and has begun to offer it throughout the world. We expect it will bring positive changes in many areas where people lack access to affordable clean water.

In 1984 NASA initiated the Gravity Pro-B programme to test two unverified predictions of Albert Einstein's theory of general relativity. To test these predictions, the Space Agency and researchers at Stanford University developed an experiment that would check, with extreme precision, tiny changes in the spin direction of four gyroscopes contained in an Earth satellite orbiting at a 400-mile altitude directly over the Earth's poles. The researchers assessed using the Global Positioning System or GPS technology to control the attitude of the Gravity Pro-B spacecraft accurately. At that time the best GPS receivers could only provide accuracy to nearly 1 metre. The Gravity Pro-B spacecraft requires a system 100 times more accurate. Precision requirement led to the development and testing of a new real-time kinematic GPS technology. The focus of the researchers then shifted to using such technology to automatically land aircraft and then to automating precision farming and construction equipment. A group of Stanford University researchers created a private company and submitted a proposal to NASA's small business technology transfer programme. This is an excellent example of how technology developed for space

applications has been spun off to the private sector for applications never anticipated when the government research was initially begun.

In these and many other areas our space research has continued to spin-off technologies that provide unexpected and profound benefits for us all. The examples I have highlighted today are a direct result of the United States Government's vibrant civil space programme dedicated to active and productive collaboration with private industry and academia. The commitment of the United States to improve the quality of life on Earth provides the impetus for this world-wide dissemination of spin-off technologies for the benefit of humankind. To inform delegations of these and many other interesting spin-offs we have, once again, made available to each delegation a copy of NASA's publication "Spin-off 2006". Thank you.

The CHAIRMAN (*interpretation from French*): Thank you for that statement on behalf of the United States delegation and thank you likewise for the examples you gave of spin-off benefits that are practical in nature for society at large and space technology that have been developed in the United States. Thank you also for having handed out to the delegations the "Spin-off 2006" document.

I have no further requests from delegations to speak under this agenda item but I would inquire and look around the room. Any speakers on spin-off benefits of space technology? That does not seem to be the case.

So we have a little more leeway and time to call on one delegation and one observer that have not had a chance to do so to make their statement under general debate so I will be calling on the representative of Ukraine.

General exchange of views (agenda item 4)

Ms. N. ZUBACH (Ukraine) (*interpretation from Russian*): Thank you very much Mr. Chairman. Mr. Chairman, distinguished colleagues, on behalf of the Ukrainian delegation I would like to inform you of the work of Ukraine in the area of outer space exploration. Since independence, Ukraine has covered a long road of building its own space industry and space research programmes. This year we are completing the fulfilment of the third space programme and the fourth national space programme is being reviewed by the Government as we speak. The most important directions of that programme for Ukraine are deepening and expanding international cooperation, inter-State, intergovernment and interministerial ties

are growing. We try and introduce our space-related research to the international community and make our products available on the international market as well as use them for the benefit of our own economy.

Ukraine has taken an active part in various international programmes. To date, we have ratified the agreement between Ukraine and the European Union on cooperation with regard to building a civil global satellite navigation system. Also the Ukrainian National Space Agency, the French Centre for Space Research and a private corporation from our country have been taking part in projects approved by the intact General Assembly.

We have been involved in a number of international projects such as Sea Launch, Cyclone-4, Landlaunch and Dnepr. A number of Ukraine's corporations and businesses are involved in work on the International Space Station. Ukraine has also been actively involved in the work of a number of international organizations focusing on the use of outer space for peaceful purposes. Thus, Ukraine has participated with the Interagency Space Debris Coordination Committee of COPUOS and with the United Nations Office for Outer Space. In 2006, Ukraine hosted an international symposium on space law, the status of the application and future development of national and international space legislation attended by representatives of a large number of countries and Intersputnik and other international organizations. Ukraine has today the technology for designing and launching space objects, as of 1 June 2007, we have carried out 98 launches of Ukrainian-made launch vehicles that have set 180 satellites in orbit for various countries. In April of this year we launched the HIPSAT satellite designed and produced by Ukraine and, within the framework of the fourth national space programme of Ukraine, we plan to create a national satellite communications network to expand the Earth observation system we have. We are working on Cidic-2 spacecraft that will carry the necessary payload.

Ukraine's partners in space activities are the Russian Federation, Brazil, the People's Republic of China, the United States, Egypt, European Space Agency, CNES of France and others. My country is a member of the four main outer space treaties of the United Nations, they have been integrated into Ukraine's national legislation and domestic law.

Ukraine also comes out for the need to start working on a single comprehensive convention on outer space law that would take into account the latest trends in the development of space activities and space

technologies. In that connection, Ukraine, Russian Federation and Kazakhstan developed a questionnaire A/AC.105/C.2/L.259.

On behalf of the delegation of Ukraine, I would like to note the fruitful work of the Scientific and Technical Subcommittee on its forty-fourth session and the working group on registration as well as the Legal Subcommittee at its forty-sixth session on such issues as space debris, the practice of registration of space objects by States and international organizations.

Our delegation would like to, once again, emphasize the importance of setting up a United Nations Platform for Emergency Response, the so-called SPIDER platform, which would be an important step in the development of peaceful uses of outer space for the benefit of all nations.

Ukraine believes that the demilitarization of outer space is a paramount issue. We come out against the weaponization of outer space or the deployment of any type of weapons of mass destruction in outer space. We support the exclusively peaceful use of outer space for the benefit of all humankind and we are prepared to cooperate with other countries and organizations in promoting, maintaining the peaceful use of outer space. Thank you very much.

The CHAIRMAN (*interpretation from French*): I would like to thank the distinguished representative of Ukraine for her statement and I would like to note in passing that Ukraine's space programme continues to be extremely active and I congratulate you on having organized a workshop on space law in Ukraine, which you mentioned.

I am now going to recognize our distinguished colleague from Algeria.

Mr. A. OUSSEDIK (Algeria) (*interpretation from French*): Mr. Chairman, Your Excellencies, ladies and gentlemen, the Algerian delegation is happy to see you at the helm of this fiftieth session of COPUOS. I would like to take this opportunity to assure you of our readiness to cooperate and to express our appreciation of the Office for Outer Space Affairs and its Director, Mr. Sergio Camacho-Lara, for the excellent preparation of our work here.

This session is being held under the sign of double commemoration, the fiftieth anniversary of the space era and there is an exhibition to that effect and the fortieth anniversary of the Outer Space Treaty. It gives us a chance to measure the progress accomplished to date to highlight the difficulties and

the challenges that we come up against in exploration of space and the development of outer space in the service of humanity. In this context, the Algerian delegation sees in the expansion of the membership of COPUOS which allowed Algeria to become a full-fledged member in 2002, a recognition of the importance of the mission and objectives of this Committee. Indeed, promoting space-linked activities specifically civil applications of space technologies contribute toward a better knowledge of outer space at various levels, accelerates also economic development, protects the environment, preserves peace and security around the world.

In this context, joining the international treaty and conventions on outer space is of particular importance because it is still the irreplaceable, essential legal framework governing all space activities. Algeria would like to take this opportunity to reaffirm its commitment to the balance between law and the various rights and obligations falling from these instruments. Member States commit themselves to exclusively peaceful use of outer space while benefiting from the right to develop national capacities in this area. In this regard the year 2006 saw the ratification by Algeria of various international legal instruments on outer space, on the one hand, the Convention of International Liability for Damage caused to Space Objects, on the other hand, the Convention on the Registration of Objects launched into Outer Space. Nationally speaking, Algeria has integrated the development of outer space law into our national legislation to improve the legal rules governing the use of space-based knowledge and sustainable management of resources, particularly the use of space technologies in the social and economic areas is something that calls for the mobilization of financial resources and the necessary equipment and material.

In this context the delegation of Algeria is encouraged by the interest shown by COPUOS in promoting space activities, in endorsing national centres charged with that work. We call on the Committee to continue expanding technical assistance and cooperation to countries, such as Algeria, that are striving to promote space technologies and applications in such areas as telecommunications and economic development.

At the regional level, Algeria works within the framework of the African Organization for Outer Space which is the appropriate framework for regional and interregional cooperation in the space area. The Algerian delegation would like to thank South Africa for progress accomplished in preparing for the second

African Conference on Outer Space which will be held in August 2007. The third regional conference will be held in Algeria in 2009.

Parallel to that, Algeria is involved in a number of initiatives within the framework of regional cooperation specifically the constellation of satellites for remote observation of the Earth with joint exploitation in terms of management of water resources through the use of space technologies. The constellation of African environment-related satellites is also something we take part in with South Africa, Nigeria and Kenya and the Arab constellation for observation of the Earth with countries of the Arab League.

Bilaterally, Algeria is happy to inform the Committee of having signed the memorandum of understanding between the Algerian Space Agency and its counterparts from South Africa, Argentina, China, the Russian Federation, France, the United Kingdom, India, the Republic of Korea and Ukraine. Discussions are underway with Spain, the United States of America and Canada.

The Algerian delegation welcomes the adoption, in 2006, of resolution 61/110 of the United Nations General Assembly putting in place the United Nations Platform for Space-based Information, Disaster Management and Emergency Response (SPIDER), the Office for Outer Space Affairs will be charged with coordinating this programme. The Algerian delegation believes that this resolution crowns the joint efforts of member States and COPUOS, provides a specific tool to promote international cooperation in the very important area of disaster management and preventing natural disasters. We would like to reiterate the commitment of Algeria to supporting this programme and our willingness to host one of the regional entities within its framework. It demonstrates the priority attached by Algeria to the prevention of natural disasters and to efforts to deploy space-related knowledge and technologies to mitigate the impact of various natural disasters and the African continent specifically. The observation and management of natural resources, rational and sustainable management of resources which would be essential to sustaining the fragile economy of various African countries fighting desertification, droughts, which is of special priority for our continent and for the entire planet in terms of the ongoing climate change.

In October 2007 Algeria will work with the Regional Centre for Space Science and Technology, with the support of the European Space Agency, to host an international workshop on the use of space

technologies to promote the adaptation of African countries to climate change. In the meantime, the Algerian Space Agency and the Civil Defence Agency work with the various regional organizations to put in place a regional centre for the prevention and management of natural disasters through the use of space technologies by applying the upshot of the regional seminar held in 2005 with the support of the Office for Outer Space Affairs and the European Space Agency.

In conclusion, the Algerian delegation would like to take the opportunity of this double jubilee to once again congratulate COPUOS on its accomplishments and call on it to continue its active promotion of applying the benefits of space technologies particularly in developing countries. We encourage donor States to provide the necessary adequate resources to make it possible for the Committee to continue pursuing its mission particularly helping countries that are only emerging as space-faring nations. Algeria is convinced that promoting the peaceful uses of outer space will make a substantial contribution to realizing the Millennium Development Goals through a better knowledge and a sustainable management of natural resources making it possible to fight against poverty and to preserve peace and security around the world which is increasingly interdependent.

Finally, I would like to pay tribute to Mr. Sergio Camacho for his excellent leadership of the Office for Outer Space Affairs particularly in the area of the application of space technologies in developing countries. We wish you every success in your future activities and hope that we will be able to work with you on other occasions and in other fora. Thank you very much.

The CHAIRMAN (*interpretation from French*): I thank Mr. Oussedik for his statement on behalf of the Algerian delegation. Apart from the very substantial programme that you have developed in your country, I would like to convey our best wishes on the international workshop on the use of space technologies to promote the adaptation of African countries to climate change to be held in October of this year. I note also that you have been very actively involved in preparing a regional agency for the prevention of natural disasters and mitigation of their aftermath, I know your country has been affected by such disasters and also in the application of the recommendations that have been issued by OOSA and the European Space Agency.

I now call upon an observer, National Space Society.

Ms. A. MOORE (National Space Society): Mr. Chairman, distinguished delegates and representatives, it is with great pleasure that I make this statement on behalf of the National Space Society to the Committee on the Peaceful Uses of Outer Space.

The National Space Society is a non-profit organization dedicated to promoting space exploration. With members and chapters around the world NSS is widely acknowledged as the pre-eminent grass roots voice on space issues.

The Society also publishes *Ad Astra* magazine, an awarding winning periodical chronicling the most important developments in space.

NSS seeks to promote social, economic, technological and political change to advance the day when humans will live and work in space. NSS makes special effort to increase public awareness of the United Nations role in promoting the peaceful uses of outer space and the implementation of the Vienna Declaration from UNISPACE III.

An active promoter of the annual United Nations World Space Week, local NSS chapters plan several activities for children, families and professionals. For example, one chapter sponsors an annual "Allies in Space" conference and, in November 2006, focused on the future direction of America's space exploration programme. Attendees heard remarks from Dr. Neil deGrasse Tyson, Director, Hayden Planetarium, American Museum of Natural History, Dr. Laurence Price, Orion Deputy Programme Manager from Lockheed Martin Corporation, Dr. Tom Hill, author and aerospace engineer technician and George Whitesides our Executive Director.

Public support for space is a major goal of this Society. To this end NSS takes pride in its outreach efforts to young people with its annual space settlement design contest, the space settlement art contest and scholarships to the International Space University.

The annual space settlement design contest is co-sponsored by NASA Ames. It is for 11-18 year olds from anywhere in the world. Individuals, small teams of two to six and large teams of seven or more often hold classrooms with teacher leadership may enter. Eleven to fourteen year olds and 15-18 year olds are judged separately except for the grand prize. Students develop space settlement designs and related materials which are sent to NASA Ames for judging. This year

the Society received over 100 submissions from over 600 students sponsored by 33 teachers from Canada, India, Iran, Romania, Slovenia, Uruguay, Venezuela, Turkey and the United States. The grand prize winning submissions for 2007 are APIS from Constanza, Romania, EVA Project from Maldonado, Uruguay and PINTA from Istanbul, Turkey.

In November 2006, the Society launched the space settlement art contest to generate new art work depicting space settlement, encourage artists in the creation of such art and raise public awareness about space settlement by maintaining an online space art gallery and featuring the best contest art in the NSS space settlement 2008 calendar. More than 100 entries were submitted, 70 of which were accepted and the judges faced a daunting task of choosing just 12 winning images for the calendar. The winning artists were from Germany, Poland, Spain, the United Kingdom and the United States. The winning works by category included the grand prize winner, *Return To Abalakin* by Alexander Preuss, Germany. In orbital settlements, *Islands of the Gods*, Richard Bizley, United Kingdom. Martian settlements, *Mars from a Young Perspective*, Javier Arizabalo, Spain. Asteroid settlement, *Slingshot to the Galaxy*, Dr. Chee Ming Wong, United Kingdom and *Moonbase Settlement*, *Moonbase Preparations* by Warren Turner, United Kingdom.

The Society also sponsors an annual scholarship competition through the International Space University, the international interdisciplinary institution founded to develop young space leaders. Based in Strasbourg, France, the University holds its annual summer programme in a different location each year. This year the summer session will be held in Beijing, China. The Society had 32 applications for \$10,000 funds, the largest field ever, with roughly half the applications from the United States and half were international. The 2007 winners going to the Beijing session are Karina _____ (*inaudible*) and Amanda Stiles.

Each year the Society holds the International Space Development Conference, or ISDC, where members from around the world convene to hear presentations from leading experts in space-related subjects and to network with other space enthusiasts as they chart the course for the future of space travel. The 2007 ISDC theme was "from old frontiers to new" celebrating 50 years of space flight. In the words of the NSS Executive Director, George Whitesides, the fiftieth anniversary of the launch of orbital space flight is a moment to reflect on the achievements of the past five decades and to redouble our efforts towards the

future. At last the prospect of commercial human space flight is at hand, opening the promise of space flight for people of all nations. With the spectre of global climate change looming as well as national disasters like hurricanes, tsunamis, earthquakes and volcanic eruptions, space has never had a greater role to play in improving the quality of human life and security on Earth.

Further, long-range technologies like space solar power suggest the promise of carbon-free, pollution-free energy from space in near limitless quantities. These and other technologies deserve investment from world governments as we seek to answer the challenges facing humanity over the next 50 years. The leadership of the United Nations on the critical issue of near Earth orbit decision processes for mitigation action is welcome and a very positive development.

Finally, the promise of space education for inspiring the next generation of global scientists and engineers is boundless and must be strongly supported. The National Space Society looks forward to working with COPUOS and the United Nations as we continue to bring the benefits of space to the people of Earth. For further details on these and other programmes I invite the distinguished Committee members to visit the NSS website, www.nss.org. Thank you for your attention.

The CHAIRMAN (*interpretation from French*): Thank you Madam Amanda Moore for your statement on behalf of the National Space Society. I will make just a brief comment, this is the fiftieth anniversary of the Committee not the forty-ninth as the document seems to say. Thank you very much for the extensive activities you reported on, on behalf of the National Space Society.

I would now like to turn to the technical presentations planned for this morning. We will start with a presentation by our Ukrainian colleague, Mr. Ventskovskiy. His presentation is on space disposal of nuclear waste. Mr. Ventskovskiy you have the floor.

Mr. O. VENTSKOVSKIY (Ukraine): Thank you Mr. Chairman. Good afternoon everybody for your kind attention is a rather exotic topic but I am going to prove it is not because, in our view, it is already on the agenda of almost all the countries dealing with nuclear waste and not only.

I am going to report on the ideas and concepts related to the nuclear waste disposal to space.

Everybody knows probably that peaceful nuclear power engineering is under intensive development and propagation throughout the world. Analysis of the world experience revealed that a safe handling of the radio-active waste is among the three key problems of the nuclear power engineering along with its safety and economic indices.

With that, a main trend of the technical policy is the field of handling the radio-active waste of nuclear power stations is to develop an up-to-date infrastructure which will make possible to provide a safe collection primary and deep waste reclamation up to the condition suitable for transfer of the radio-active waste to the specialized enterprises for long-term storage or final waste burial. It should be emphasized that the heat or non-nuclear power engineering causes more significant damage to the environment than nuclear power stations. As an example, we give you the comparative characteristics of the fuel consumption and environment pollution by heat power stations and nuclear power stations. With reference to Ukraine with an equal amount of generated electricity of 28 billion kW/hour. Another evidence of the harmful effect the heat power stations have on the environment.

I am also going to present to you the data on the total capacity of nuclear power stations in some countries. Let me start first from the fraction of nuclear power stations in the total power engineering in some reference countries. You can see that sometimes this percentage is very, very high and look at the absolute figures, if you can differentiate, they are also very impressive. At present, the total nuclear waste could be divided into three groups according to the harmful effect it has or the potential hazard for human activity. The lower level activity waste, mid-level activity and high-level activity.

The low and mid-level activity waste is transformed in a solid form and after this the waste is placed in the near surface burials. The programme of isolation of high active radio-active waste is a much more complex one. The technology of waste inclusion into solid matrixes is under development now. These matrixes are glassy forms or crystal ones intended for the subsequent burial in the land at the depth of approximately one kilometre. However, such a method cannot exclude completely the _____ (*inaudible*) of waste in the human life. There are no ways to guarantee, for example, of maintaining the leak-proofness of containers with radio-active waste during 100 years because of possible earthquakes and tectonic displacements. The last research made by material scientists and engineers gives evidence of an increased corrosion rate of a discharged nuclear fuel storage

containers. The probability of attempts of terrorists to damage the underground storage cannot be excluded as well. It is reasonable that such storage require a constant _____ (*inaudible*) during the whole lifetime. In some countries such as France, Great Britain and Russia after keeping this discharged nuclear waste in nuclear power stations, primary storage, the discharged nuclear fuel (DNF) is reclaimed at radio-chemical plants. I should say that the reclamation process of the DNF coming from nuclear power stations is the evident future of all States which develop nuclear power engineering. The progress achieved in such countries as France, Great Britain, during the last years in the _____ (*inaudible*) of re-processing of low level activity and mid level fractions of radio-active waste can reduce, to some extent, the problem of security. However, in the judgement of specialists it minimizes the volume of non-isolated radio-active waste but does not solve the problem on the whole. Whatever the method using _____ (*inaudible*), the discharged nuclear fuel is processed the substances with a very high radio-activity level remain in a small amount. Indeed, this comparatively small amount of substances which are very harmful for the Earth's biosphere be proposed to be removed for ever from our planet.

In the year 2006, French and Ukrainian specialists have conducted a joint pilot study concerning the possibility of removal of long-living fraction of radio-active waste into space. The research results revealed the potential possibility to build a rocket space system of the radio-active waste removal on the basis of a modified Ariane-5 and they need three SLV launch vehicles.

What are we talking about? The launch vehicle can deploy spatial waste orbital removal stage with long-living radio-active waste into reference circular orbit around the Earth. Then an orbital upper stage system provides injection into orbit of burial with the help of its own propulsion system. I should say that the long-life high activity waste with a half-life period of hundreds of thousands of years might be stored in space. This will allow, I would like to stress once more, to forever free the Earth's biosphere from the most harmful part of highly radio-active waste. At the same time the waste with rather small half-life period will still be subject to vitrification and packing in special containers for geological burial. Accumulation will stop for high activity radio-active waste on the Earth's surface.

Of course, the problem of radio-active waste removal into space by means of launch vehicle systems requires joint efforts of experts from the nuclear industry and the ones in the field of space industry. For

example, one should decide on the following issues. This harmful waste, after processing at radio-chemical plants, should be separated somehow from waste with small half-life period, then this waste should be placed in capsules to be transported and inserted into containers for launch vehicle removal.

I can at least, just to give you an idea of some problems which have to be resolved during the cooperation of these scientists and specialists from different fields. I would add here specialists in the law, international law and space law and many others. For example, as a choice of the composition of elements removal into space under the hypothesis of the set of requirements for a treatment level of waste of nuclear power station reactors and permissible levels of radio-active radiation from capsules, build a payload for the space removal modules. The termination of the required reliability and safety indices in estimate of the parameters of the rocket module with radio-active waste during its functioning from the launch to going into final orbit. Study and choice of the means and methods confirming the reliability and safety indices of the rocket space elements of the common system for the removal of radio-active waste. The choice of a burial place or full destruction of the radio-active waste. The versions of this choice can be asteroids, far out orbits beyond the bounds of the solar system or heat in the area of solar protuberances.

Again to give you idea about the approximate figures of the amount of waste to be removed. Since the ideological measuring process is impossible to achieve in practice therefore a real amount of high-level radio-active waste subjected for removal into space is slightly more than 73 kilograms per 1 gigawatt of generated electrical power.

Such composition is mixed with a ceramic mass and placed in a capsule being part of an orbital stage of the launch vehicle. This capsule is placed on the orbital stage, the last one, the latter is designed in such a way that the capsule provides the maintainability of the capsule integrity for all the nominal and _____ (*inaudible*) nominal situations. The orbital stage with the capsule containing this composition is mounted on the launch vehicle and pre-launch processing operations are conducted. The preliminary calculations performed at the pilot stage of research might be possible to estimate a number of launches of the Zenit launch vehicle for removal of the composition chosen.

I will give you a reminder of what Zenit-3 SLV is. Another option being considered is Ariane-5 and, as you may know, in addition to the famous Zenit

or Sea Launch project developed by Ukraine. This year we are about the start the new, also very exciting, project called Landlaunch and Zenit-3 SLV to be launched from the Baikonur Cosmodrome could ideally suit for the purpose of the nuclear waste removal.

Some figures of the launch forecast. You can see in this table the amount of nuclear waste produced by some countries yearly. The corresponding number of launches by these three launch vehicles to be performed per year. As you can see the number is not very high. Moreover, if we consider, let us say Ariane-5 launch vehicle, this number could be two or three times less per year. So these are quite reasonable figures.

To conclude my presentation, I would like to describe our vision of what should be the next stages of the work. Of course, one should first develop as a concept of removal of nuclear power station radioactive waste. One should conduct scientific research work on the development of the orbital stage and the containers. To develop and construct this orbital stage and container for the removal of nuclear waste and make a demonstration launch, again to be realistic, I can tell you that the necessary technologies and technical base has already been created in Ukraine in particular and we claim that we will be ready, with sufficient financial support, to make this demonstration flight and to show the feasibility of the approach, in case of abnormal situations even, in 3 or 3.5 years time. Develop in the end and design and construct and produce a rocket space complex with orbital stage and container for the removal of high-level radio-active waste.

Development of the concept will be the first step on the way to removing long-life radio-active waste from the planet and I would like to finalize by saying that the global scale of this problem dictates the expedience of combining the forces of advanced countries in development and construction of the rocket space systems and their share participation as investors but the goal is very noble and we can hope that our planet Earth will be safer when this very harmful amount of radio-active waste is removed from the surface. Thank you very much for your kind attention.

The CHAIRMAN (*interpretation from French*): I would like to thank Mr. Ventskovskiy for that statement on a subject which regularly reappears, use of space launchers to dispose of nuclear waste. It is not just technical in nature of course it also has to do

with risk and risk assessment which is not an easy matter. Thank you for your presentation in any event.

Any questions please for Mr. Ventskovskiy on that statement from delegations? I see none.

I next call on Mr. Veshchunov of Intersputnik.

Mr. V. VESHCHUNOV (International Organization of Space Communications (Intersputnik)): Thank you Mr. Chairman, ladies and gentlemen, first of all I would like to avail myself of the opportunity to most cordially facilitate all the delegates on the occasion of the jubilee fiftieth session of their COPUOS.

Undoubtedly satellite telecommunications is one of the most important applications of outer space activity and the spin-off benefit of space technology. Modern world is unimaginable without rapidly developing high-end satellite communication systems that offer a broad range of various services. Digital TV and high-definition TV, high bitrate data transmission, broadband access to the Internet backbone, mobile video, telemedicine and e-learning are just some of the services supported by telecommunications and broadcasting spacecraft.

Exactly 50 years ago, mankind entered into the era of satellite telecommunications by launching the first man-made spacecraft. Booming satellite technologies led to the manufacture of telecommunications and broadcasting satellites including those for commercial use. This trend resulted in the deployment of international satellite telecommunication systems with global and regional coverage and consequently in the establishment of international operators of such systems.

In the 1970s and 80s there came into existence a number of international and regional satellite operators such as Intelsat, Inmarsat, Arabsat and Eutelsat. At the same time, namely in 1971, the governments of nine nations of the socialist block resolved to establish the Intersputnik International Organization of Space Communications. The Organization's goal was to procure and develop an international satellite communications system in the interests of member States and third countries. Today Intersputnik has 25 member governments of countries all across the world from Latin America to South and South-East Asia and from Europe to the south of the Arabian peninsula.

In the earlier 90s Intersputnik started to operate its telecommunications space segment on a

commercial basis. Intersputnik's core business is leasing under the appropriate agreements with partner operators, satellite capacity to interested customers. Currently, the Intersputnik system is used by over 100 public and private companies the world over, including Nigeria, Guinea, United States, Israel, Pakistan, Madagascar, Indonesia, as well as Russia, India, Cuba and other Intersputnik member countries. In this context it would be proper to stress that direct non-discriminatory access to the space segment is guaranteed practically for any user anywhere on the globe.

Intersputnik offers satellite resource on 11 spacecrafts owned by partner operators and located in the geostationary orbit from 11° West to 140° East. Intersputnik's largest supplier of satellite resource is the Russian Satellite Communication Company (RSCC), Russia's national satellite operator. RSCC operates a fleet of advanced express-series spacecraft built by Russia in cooperation with Alcatel a major payload manufacturer. Under agreements with Eutelsat, Intelsat and Asia broadcast satellite ABC, this is a new satellite operator in the market, Intersputnik is able to provide the resource of the satellites owned by these operators. Discussions are in progress with the Indian Space Research Organization (ISRO) concerning our organization's participation in the promotion of the capacity of Insat, India's domestic satellite system.

I would like to describe just some examples of major international projects with the participation of Intersputnik as a satellite capacity provider. In cooperation with Gilat Satcom Limited there was deployed a satellite internet network in rural and remote areas in some African countries. Having about 1,000 VSAT terminals, this network provides several million people with broadband access to the Internet. Together with Russia's Modern Academy of Humanities, Intersputnik is developing an innovative satellite e-learning project. The network incorporates a large number of VSAT terminals to form a single chain uniting hundreds of educational establishments in Russia, other CIS countries, Latin America and South-east Asia.

In cooperation with India's domestic telecommunications operator, Bharat Sanchar Nigam Limited (BSNL), Intersputnik has recently launched a similar project in India using a Russian express-series satellite. Currently, both parties are discussing expanded cooperation in this socially vital field.

These are just some examples of projects with Intersputnik participation that are based on the capacity

the Organization's space segment. At the same time, Intersputnik's current business is not limited to plain provision of satellite capacity.

By virtue of its intergovernmental status, Intersputnik has, through the Notifying Administration of the Republic of Belarus, filed with the International Telecommunication Union (ITU) on behalf of Intersputnik member countries, a number of frequency assignments in several geostationary orbital positions. Access to this unique resource allows the Organization to participate in quite ambitious projects aimed at expanding its own space segment and at the same time establishing domestic satellite telecommunications systems in the Intersputnik member countries. I would like to briefly describe the most important ones:

Procurement and deployment of a telecommunications satellite at 17°E slot position with African coverage. Analysis of the satellite telecommunications market in Africa proves that demand for capacity shows a steady upward trend. Therefore, Intersputnik resolved to procure, launch and operate an advanced spacecraft covering the whole of Africa. This satellite will make all types of advanced communications services accessible to practically the whole population of Africa thus improving the people's well-being and fostering further economic growth in Africa.

Another project, Intersputnik is planning to launch a similar project using additional satellite networks filed by Intersputnik at 75°E orbital slot where a high-power telecommunications satellite can be deployed to cover rapidly developing markets in South and South-East Asia, Near and Middle East as well as the CIS.

Establishment of Ukraine's domestic satellite telecommunications system. The Government of Ukraine has recently approved a project to establish Ukraine's domestic satellite system using a Ukrainian telecommunications and broadcasting satellite. Today, the Government is reviewing a comprehensive commercial proposal presented by Intersputnik that offers for this project its orbital slot at 3°W.

Establishment of Azerbaijan's domestic satellite telecommunications system. It is quite possible that this project will use the 27°E orbital slot of Intersputnik. A relevant proposal has been presented to the Government of Azerbaijan for review. Intersputnik is prepared not only to make its slot available for joint use but also to act as a system integrator of the project.

You will recall that over the last several years the largest international intergovernmental organizations dealing with satellite telecommunications have gone private. In accordance with the strategy of Intersputnik's step-by-step privatization, the Board and the Operations Committee of our Organization resolved to establish a commercial subsidiary called Intersputnik Holding Ltd. This company is a group of satellite telecommunications operators including regional companies licensed to provide services in a given region.

Together with Intersputnik Holding Ltd., Intersputnik presently can offer the whole range of satellite communications services including ground and satellite segments, communications channels, installation and maintenance of regional and international networks owned by governments and private customers. Negotiations are about to be completed for the purpose of establishing joint telecommunications companies in Kyrgyzstan, Tajikistan and Azerbaijan. Intersputnik Holding has already procured a telecom operator company in Russia. Established not long ago, Intersputnik's subsidiary has outbid competitors and was awarded a contract by Russia's largest alternative operator Golden Telecom. In cooperation with European partners, the company has secured contracts for the installation of networks in Nigeria, Guinea, Armenia, Turkey, Kazakhstan and Turkmenistan.

Finally, I would like to mention that Intersputnik is engaged in intensive international activity and constructively cooperates with a large number of intergovernmental and nongovernmental organizations. Enjoying the status of a Permanent Observer at the United Nations Committee on the Peaceful Uses of Outer Space, Intersputnik actively participates in the activity of its Legal Subcommittee. Intersputnik also participates, supports and participates in the United Nations Secretary General's Global Compact initiative. A long-time member of the ITU Radiocommunication Sector, Intersputnik was also involved in the establishment of the Asia-Pacific Satellite Communications Council and, just several weeks ago, acceded as an observer to the Regional Commonwealth in the Field of Communications, an organization of the Telecommunications Administrations of the CIS, Baltic, Central and East European countries. Intersputnik participates in nongovernmental organizations such as IAF, the International Institute of Space Law, Global VSAT Forum and other organizations.

In conclusion I would like to wish the jubilee session of the Committee every success. Thank you very much for your attention.

The CHAIRMAN (*interpretation from French*): I would like to thank Mr. Veshchunov for his statement and the presentation on Intersputnik, his organization.

I call on delegations are there any questions or queries to the speaker? I see none.

Next we will be taking the third technical presentation. We will again be hearing Mr. Ventskovskiy who comes from Ukraine and he will be speaking on Yuzhnoye Design Office technologies in the national and international space programmes.

Mr. O. VENTSKOVSKIY (Ukraine): Thank you so much, Mr. Chairman. Ladies and gentlemen, dear colleagues, a presentation concerning my company's Yuzhnoye State Design Office technologies have been used in national and international space programmes.

As you may know, Yuzhnoye company is the leading Ukrainian space company located in Dnipropetrovsk city which is just on the map and it was created back in 1954 and by the time it was the main producer, in the former Soviet Union, of the intercontinental ballistic missiles (ICBMs). It was named after Mikhail Yangel one of the company's first Designer-General and, for the time being, it is one of the largest research and design organizations developing rocket and space technologies.

Here you can see the major building in Dnipropetrovsk city and our preferral of course first of all is launch vehicles but also satellites and I am going to give you some figures on the number of satellites being designed and produced by the company in cooperation with the Yuzhmash plant. Yuzhmash is a machine-building plant which is located virtually on the same territory as the Yuzhnoye Design Office but, due to historical reasons, they are two different entities existing shoulder-to-shoulder since the early 50s.

Amongst other directions of our activities are launch services, analytical and design efforts and we also participate in the national economic activities due to the fact that we process a lot of high-tech and, according to government instructions, we produce some peaceful items such as trolley buses, windmills, tractors etc. etc.

During the 53 years of existence we have produced six generations of intercontinental ballistic missiles and then, in the late 70s, we more and more switched to the production of the peaceful launchers and there were produced several generations of launchers, most famous of course the Zenit launch vehicle but also the Cyclone series of vehicles, Cyclone-2, Cyclone-3 and Cyclone-4 is coming in Alcantara, Brazil. I am going to say you a few words a bit later. But also Dnepr launch vehicle which is a converted intercontinental ballistic missile well known under the code SS-18.

We successfully participated in the famous lunar programme of the Soviet Union by creation of the so-called Block-E which is intended for the deployment into the Moon orbit and further on to the Moon surface and successful return with the astronauts or cosmonauts back to the orbit and back to Earth. One should say that this module was 23 times tested in the real space conditions. Also well known is our participation in the creation of the famous Buran launch vehicle with these strap-on boosters.

We have different launch facilities for our launch vehicles, one is located in Plesetsk, Russia, Baikonur, Kazakhstan and the famous sea launch which is on the former oil platform, some 1,400 miles to the south of Hawaii. One of the disadvantages for Ukraine is the absence of the space port and, to compensate somehow for this disadvantage, we are actively promoting the idea of air-based launch have not in possession in our country the heaviest in the world aeroplane which is well known _____ (*inaudible*). We have developed a very interesting concept and now I will _____ (*inaudible*) air-based launch and now actively working on its implementation.

Among the achievements of the company are 900 launches of the space vehicles were performed, 70 types of spacecraft and space launch systems were developed and more than 400 satellites of Yuzhnoye design deployed into orbit. Here just to remind you the set of launchers we have at our disposal. As I told you just half an hour ago after Zenit-3SL, which is used for sea-launch projects, Zenit-3SLV is coming up in Baikonur with land launch.

Brief overview of the spacecraft we have designed and produced mainly for Earth observation purposes, for scientific research but, as you have heard from the previous presentation, we intend to design and produce our own telecommunications satellite according to the next, already fourth, national space programme which should launched in 2011. I have

already told you about Yuzhnoye space activities in general terms and, essentially, it is launch services provision and design and production of the launch vehicles and spacecraft.

We have identified several regions in the world which are prospective for our cooperation and you can see that virtually all the globe is covered by these circles. We are developing very intensive contacts and, historically, we have very intensive contacts with our Russian colleagues, with our American colleagues, to a lesser extent till the very last time it was Europe, maybe it comes as a surprise but, again due to historical reasons, our first international joint ventures appeared with our American friends and, only later on, our ever closer ties have been developed with our European colleagues. We are attentively looking at South America, in particular with Brazil, we are going to implement and we are implementing in fact with the creation of the joint venture the exciting project of creation of the launch system called Cyclone-4 in Alcantara, just near the Equator, to launch Cyclone-4 which is a new type of vehicle based on Cyclone-3 famous vehicle, very reliable, with a new upper stage which will allow for delivering of payloads amounting up to 2 tonne to the geo-transfer orbit.

We are also active recently in Africa, the Egypt-Sat project has been mentioned by my colleague this morning. The spacecraft was completely designed and built at Yuzhnoye after we won the tender for this spacecraft creation back in 2001 and, in addition, we have trained a number of Egyptian specialists and we continue to lend support to our Egyptian colleagues in maintaining this spacecraft in terms of its control. As you remember it was launched just a couple of months ago on 17 April.

Of course, the Asia-Pacific region is a very fast growing region and with very ambitious countries over there and we are also trying to build contacts with these countries.

The launch project is too well known to spend some time on it. Dnepr international project, in fact was the Dnepr launch vehicle which launched this above-mentioned Egypt-Sat, two months ago and we still expect three or four more flights this year. One is going to happen maybe even this week.

Land launch international space project is being implemented in cooperation with our Russian colleagues and with the Sea Launch consortium. Before the end of this year, most probably already in summer, the two stage version of Zenit-3SLV will be launched in the interest of the Russian Ministry of

Defence and presumably in the first quarter of next year the full version of the land launch vehicle will be launched with the payload which is to be disclosed.

Cyclone-4 was already mentioned just some ideas about the general view of the launcher. The telecommunications spacecraft has already been mentioned and stage 2 earth observation spacecraft to be designed, produced and launched presumably next year was also mentioned by my colleagues earlier this morning.

Egypt-Sat once more, the launch date. Of course in order to achieve these successes which I have mentioned we needed to create the key components for the space systems and we are proud that we have a series of outstanding engines and propulsion systems on the whole developed and produced at Yuzhnoye in cooperation with Yuzhmash. Some of them are presented here and it would be essential to mention that this propulsion system is being used as the upper stage of the European Vega project. You might have heard that the European Vega light launcher should be first launched next year.

We have developed a number of advanced materials and technologies. For example explosion energy welding technology which allows to weld completely different materials which it is impossible to imagine how to weld without this kind of technology. It is a unique technology in the world and it allows us to get some completely new materials with completely new qualities. There are many, many others.

I have already mentioned Block-E, intended for the lunar mission and, in fact, all the technologies and all the unique experience we got during the design of this unit is still there and we are actively promoting our abilities and capabilities for the new lunar missions being prepared elsewhere in the world.

You have just heard about the nuclear waste disposal project, I reported on it forty minutes ago.

Another exciting project I would like to mention is the so-called "key to the sun" space project. The idea is not new but it consists in the theoretical possibility to concentrate sunlight and to send them back to the Earth for heating, etc. but we managed to develop this concept till the very details and now continue to do so in cooperation with our German colleagues from the Astrium company.

Another very interesting project which is space patrol. It intends, in fact, to fill the niche still existing with the creation of the telecommunication

system of rapid response to phenomenal extraordinary situations which are happening every day in different points of the world. Essentially it is a constellation of 5452 spacecraft, very simple design but the idea is very interesting. In fact, be it trucks with hazard materials or very important materials, be it a human being with his or her own problems like heart problems or blood pressure problems, we claim that with this constellation in orbit we could deliver very fast response to any problems which could occur virtually anywhere on the Earth.

Earthquake prediction space system. We call it _____ (*inaudible*) in Ukrainian or warning in English. Essentially it aims at collecting the evidence of early precursors of earthquakes in the ionosphere of the Earth and for this purpose we suggest one main satellite to be created and two auxiliary satellites and we have shown already, preliminary, theoretically, that this kind of precursors could be successfully identified and in fact we started this work back in the late 80s with our French colleagues and as a result you might know that the Demeter satellite is successfully working on the orbit for already three years but of course further research is necessary here.

To conclude, we consider a number of tasks for expanding our international cooperation and we have identified as key areas of interest for the company and we have prescribed the whole master plan of respective space technologies to be developed and we are actively looking for investments in order to make all this possible.

Here just as a summary you can see the main developments already in place and coming up and if you need some more details on what I have presented on particular projects that could be of interest to you I am at your complete disposal here tomorrow and today. Thank you.

The CHAIRMAN (*interpretation from French*): Thank you Mr. Ventskovskiy for your presentation on the output of the Yuzhnoye Design Office.

Any questions or comments on the presentation we have just heard? I see none. Thank you again Mr. Ventskovskiy.

Ladies and gentlemen, distinguished delegates, I will shortly adjourn this meeting of the Committee. I would like to inform you of our schedule of work for this afternoon. We will reconvene promptly at 3 p.m. At that time we will continue our consideration of agenda item 7, report of the Scientific

and Technical Subcommittee at its forty-fourth session. We will also continue our consideration of agenda item 9, spin-off benefits of space technology: review of current status. I will also suspend the plenary meeting at 4 p.m. so that the symposium on space and water can begin.

At the end of this afternoon's meeting, at 6 p.m., the United States of America will host a reception in the Mozart Room of the VIC Restaurant.

I would also like to invite you to the screening

of two documentaries during lunch time today, both are provided by the United States. At 1.45 p.m. there will be a documentary entitled, For all mankind: Apollo 11. At 2.15 p.m. another documentary will be screened on the 45 years of space exploration by NASA. You are all warmly invited to view these documentaries.

Any questions or comments on this schedule of work? I see none. The meeting is adjourned. I will see you here at 3 p.m.

The meeting closed at 12.46 p.m.