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Committee on the Peaceful Uses of Outer Space

Unedited transcript

542nd Meeting
Tuesday, 14 June 2005, 10 a.m.
Vienna

Chairman: Mr. A. A. Abiodun (Nigeria)

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

The CHAIRMAN: Good morning distinguished delegates and representatives. I now declare open the 542nd meeting of the United Committee on the Peaceful Uses of Outer Space.

This morning we will continue and suspend consideration of agenda item 7, that is Report of the Scientific and Technical Subcommittee on its Forty-Second Session, pending the reports of the Working Groups on Space Debris and the Use of Nuclear Power Sources in Outer Space, on their ongoing intersessional work.

We will continue and hopefully conclude agenda item number 8, Report of the Legal Subcommittee on its Forty-Fourth Session, and we will begin our consideration of agenda item 9, Spin-off Benefits of Space Technology: Review of Current Status.

We will also continue our consideration of agenda item 6, Implementation of the Recommendations of UNISPACE III.

At the end of this morning's meeting, there will be three technical presentations. The first of these presentations will be made by Mr. Hitoshi Yoshino of Japan and he will be addressing us on the subject titled "Spin-off of JAXA's Intellectual Properties". His presentation will be followed by another one from India and the title of the Indian presentation is "Ten Years of the Centre for Space Science and Technology Education in the Asia and the Pacific Region", by Mr. Sundararamaiah, who is the Scientific Secretary of the Indian Space Research Organization. Finally, Mr. Alexandre Khun and his colleagues from France will make a presentation on what they call "GAREF Aerospatial". This is essentially a young scientific club focusing in various aspects of space science and technology with particular emphasis on satellite, rocket and balloon experiments.

Distinguished delegates, I would like to inform you that the Ad Hoc Expert Group that is studying the possibility of creating a disaster management international space coordination entity will hold a meeting this morning in Room C0727 at 11.00 a.m. this morning.

Similarly, the Working Group on the Use of Nuclear Power Sources in Outer Space of the Scientific and Technical Subcommittee is currently holding its intersessional meeting in Room C0713.

And finally, the Working Group on Space Debris of the Scientific and Technical Subcommittee is also currently holding its intersessional meeting in Conference Room VII. These intersessional meetings began at 9.00 a.m. this morning.

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

Distinguished delegates, that is the schedule of our work for this morning.

Is there any question on that?

If not, it is my pleasure to invite Dr. Jae-Wan Lee of the Republic of Korea to address us on agenda

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item number 7, Report of the Scientific and Technical Subcommittee. Dr. Lee, you have the floor.

Mr. J.-W. LEE (Republic of Korea): Thank you Mr. Chairman. Mr. Chairman, at the outset, my delegation would like to express deep gratitude to Mr. Dumitru-Dorin Prunariu, Chairman of the forty-second session of the Scientific and Technical Subcommittee, for his excellent work and dedication in working towards the achievement of fruitful results. My delegation would like to make a brief comment on this agenda item.

This year, my country plans to launch a new remote sensing satellite, KOMPSAT-2, with one-metre panchromatic resolution and 4-metre multi-spectral resolution. It will be mainly used for environmental monitoring of the Earth, disaster management and study of natural resources. KOMPSAT-2 will provide clear images of the Earth to many domestic and foreign users. In this regard, my delegation would like to reiterate my Government's firm belief that international cooperation in sharing information gathered from remote sensing satellites in a non-discriminatory and timely manner is utmost important for the betterment of humankind and it will strengthen its cooperation with other countries.

My delegation shares the views expressed by many other delegations that there is a growing possibility of collision of space objects with space debris and an urgent need for taking global mitigation measures against them. In this context, we support the new multi-year work plan and the methodology to be used in preparing a United Nations document on space debris mitigation, as agreed upon at the last Scientific and Technical Subcommittee.

We are also pleased to note that many space-faring countries are implementing space debris practices consistent with the IADC Guidelines on Space Debris Mitigation on a voluntary basis. This issue should be considered also from economic as well as technical aspects. We hope that all possible ways and means, including technical support, will be explored so as to make the implementation of such Guidelines feasible for all Member States.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished delegate of the Republic of Korea for his statement.

And, distinguished delegates, that was the last inscription I have on agenda item number 7 for this morning. I believe we are going to close, we have already closed identification of the list of speakers for this particular agenda item and if there are no other speakers, and unless I am advised otherwise by the Secretariat, we may suspend or close, I am supposed to use the word "suspend", we suspend our consideration of agenda item number 7, distinguished delegates. Actually we are suspending this particular agenda item until we receive the reports of the Working Groups on Space Debris and the Use of Nuclear Power Sources.

Can I ask the Secretariat when we are going to get this? Please tell the house.

Ms. N. RODRIGUES (Deputy Secretary, Office for Outer Space Affairs): Thank you Mr. Chairman. With regard to the intersessional meeting of the Working Group on Nuclear Power Sources, which is currently ongoing, we expect that its Chairman might be in a position to deliver a progress report this afternoon, and Space Debris probably later this week.

Thank you.

The CHAIRMAN: What do they mean by later this week? Tomorrow? Thank you.

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

Distinguished delegates, we now move on to agenda item number 8, the Report of the Legal Subcommittee on its Forty-Fourth Session.

And the first speaker on my list is the distinguished representative of China, Mr. Guide Jia. Mr. Guide, please you have the floor.

Mr. G. JIA (China) *(interpretation from Chinese)*: Thank you Mr. Chairman. Mr. Chairman, we are very pleased to note that the forty-fourth session of the Legal Subcommittee has completed its work successfully and the Chinese delegation would like to express its satisfaction with the report of the Legal Subcommittee and its appreciation to the Chairman of the Subcommittee, as well as the Chairmen of all the Working Groups for their outstanding performance.

Now I would like to make a few comments on the report of the Legal Subcommittee as follows.

Mr. Chairman, on the question of the definition and delimitation of outer space, we have noted that various countries have made their efforts in this regard but as this is a complicated issue involving many different elements, it is hard to expect any consensus on it in the near future. We believe,

however, that this should not negatively affect the efforts by all the countries towards the peaceful use of outer space. We also agree that all the countries should continue to conduct consultation on this issue with a view to maintaining lasting peace and security in outer space and promoting its peaceful use.

Mr. Chairman, with regard to the preliminary draft Protocol on Matters Specific to Space Assets to the Convention on International Interests in Mobile Equipment, the forty-fourth session of the Legal Subcommittee considered two issues. The first one concerning the possibility of the United Nations serving as Supervisory Authority under the future Protocol, and the other concerning the relationship between the terms of the future Protocol and the rights and obligations of States under the legal regime applicable to outer space.

And the first question. We do not believe there are any legal obstacles against the United Nations taking over the function of Supervisory Authority. However, the pre-conditions for such a role should be that the United Nations should not be responsible for any costs associated with the exercise of such a supervisory function and should enjoy immunity from damages or compensation claims.

With regard to the relationship between the Space Assets Protocol and the legal regime on outer space, we believe that, in principle, the basic principles of the existing law on outer space should prevail. At the same time, we have noticed that the security and the guarantee system for space assets envisaged by the Protocol is based on international private law and civil and commercial law while the current legal regime governing outer space falls within the framework of public law. Therefore, it will be a very difficult and complex task to harmonize and integrate the two legal systems as they are independent from each other and each has got its own area of activities to regulate. We need to make a deep analysis of the compatibility between the two systems. In practice, pay careful attention to the possible contradictions and the conflicts that may arise in their real operation. In particular, a way must be found to clearly define the international responsibility to be borne by the government of a State for the commercial activities in space conducted by the non-governmental entities of their State, as well as the relationship between the rights and obligations of governments of States to which the parties participate in the international financing, security and guarantee for space objects belong.

Mr. Chairman, as to the status and application of the five outer space treaties, in view of the fact that the extension of the tenure of the Working Group is favourable to the wider application of those five treaties. We are in favour of the decision of the Legal Subcommittee and support the extension of the tenure of the Working Group.

Mr. Chairman, with regard to the practice of States and international organizations in registering space objects, we respect the provisions contained in the Convention on the Registration for Launching Outer Space Objects and support measures to improve its implementation and its effectiveness.

In accordance with the provisions of Article II of the Convention, the Chinese Government established in 2001 the Registry for Launching States of Space Objects which is administered and maintained by the National Space Agency of China.

In accordance with the provisions of Article IV of the Convention, the Chinese Government has provided the United Nations Secretary-General with information and data concerning space objects launched by China from 1970 to the end of 2003 and has updated the relevant data concerning APSTAR-1 and ASIASAT-1.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished delegate of China for his statement.

And I now invite Mr. Trebaol, the distinguished representative of France, to address us on agenda item number 8, the report of the Legal Subcommittee.

Mr. J.-Y. TREBAOL (France) *(interpretation from French)*: Thank you Mr. Chairman. Mr. Chairman, my delegation wishes first and foremost to renew its congratulations to Professor Marchisio for the skill with which he presided over the Legal Subcommittee's discussions.

During the session of the Subcommittee, the French delegation reiterated its desire to promote the application of the United Nations five treaties as broadly as possible. To this end, the work of the Legal Subcommittee is vital.

My delegation would also like to thank the Office for Outer Space Affairs for their decisive assistance in the Legal Subcommittee's efforts, particularly in this regard.

The French delegation carefully took note of the proposals of various delegations with regard with going back to the drawing board on the international space law conventional framework. And yet, we believe, that realism means that we must seek broader application, or as broad as possible application, of the existing treaties rather than committing our Committee to a path which might weaken it. Adoption last year by the General Assembly of the resolution on the application of the notion of launch State, resolution 59/115, is, in this regard, a very constructive model.

The French delegation would like to also re-extend its congratulations to Mr. Niklas Hedman, who was elected Chair to the Working Group on Registry of Space Objects. Given the remarkable role that he played heading the Working Group on UNISPACE III + 5 Review, we are convinced that he will very skilfully carry out the mandate conferred upon him. The French delegation will continue to actively support the work on registry. Thus, we presented during the last Legal Subcommittee's meeting the issues that are now arising in France in this regard, as a launch State, for the launches that have taken place from French Guyana, and as a Registry State, due to its space activities.

Given the positive evolution of the Group's work in the area of space debris, my delegation has accepted to postpone its proposal to see this subject grappled with in the Legal Subcommittee. Our common objective must be to effectively promote the curtailment of debris in a pragmatic manner. This is why a non-binding legal approach is favoured. At the appropriate, that is once the document on space debris has been completed by our Committee, it might be interesting for the Legal Subcommittee to examine regulatory provisions which have been adopted at a national level in this area in order to map various States' practices in this area.

If I may, Mr. Chairman, I would also like to raise an issue of procedure in the interests of the Legal Subcommittee's efficiency of work. My delegation regrets the small amount of time that was able to be allotted to the Ad Hoc Group on Registry and we have already underscored our interest in this area. Despite the fact that the agenda was not as busy as it has been in the past, the Legal Subcommittee was able to spend only four times one hour to meet during the whole session. My delegation, therefore, suggests that the Bureaux examine means to provide more time to the Working Group. By way of example, the Secretariat might think about providing simultaneous interpretation for the work if there were only two working languages, the official working language that the Organization used, that might help. They might also take into account the legitimate concern of some delegations that they cannot be present in the Working Group's meeting when these are taking place at the same time as the plenary meetings. An interesting solution might consist in asking these Working Groups to make a daily report in the plenary of the state of affairs of their work. In this way delegations would be better informed of what is happening at a given moment in time instead of just hearing the report at the end of the Working Group's work.

Thank you Sir.

The CHAIRMAN: I thank Mr. Trebaol, the distinguished representative of France, for his contribution on agenda item number 8.

And the next speaker on my list is the distinguished representative of the United States, Mr. Ken Hodgkins. Mr. Hodgkins, you have the floor.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. My delegation has noted previously the positive developments in revitalizing the agendas and methods of work of COPUOS and its Subcommittees. The last session of the Legal Subcommittee demonstrated once again the encouraging results that have emerged from our efforts. Under the able leadership of its Chairman, Professor Marchisio of Italy, the Subcommittee produced some useful results and set the stage for further substantive discussion to take place on several agenda items in future sessions.

COPUOS and its Legal Subcommittee have a distinguished history of working through consensus to develop space law in a manner that promotes, rather than hinders, space exploration. The Legal Subcommittee played a key role in establishing the outer space treaties, the Outer Space Treaty, the Rescue and Return Agreement, and the Liability and Registration Conventions. Under the legal framework of these treaties, space exploration by nations, international organizations and private entities has flourished. As a result, space technology and services contribute immeasurably to economic growth and improvements in the quality of life around the world.

Notwithstanding the continued relevance of the core space law instruments, many States, including some members of COPUOS, have not become parties to those instruments. The United States has encouraged the Subcommittee to invite States to consider ratifying and implementing the four core

space law instruments cited above. And, of course, it should encourage States that have become parties to the core instruments to look at the sufficiency of their nation's laws to implement them.

At the most recent session of the Legal Subcommittee, some States raised the possibility of negotiating a new comprehensive convention on outer space. It is my delegation's view that such an approach would be misguided. The principles contained in the core space law instruments establish a framework that has encouraged the exploration of outer space and benefited both space-faring and non-space-faring nations. It is important that we not lose sight of how much has been, and continues to be, achieved for humanity's common benefit within this framework. The language of Articles I and II of the Outer Space Treaty, which is based in large part upon the Principles in General Assembly resolution 1962, establishes that the exploration and use of outer space is to be carried out for the benefit and in the interests of all peoples, that outer space exploration and use are open on a non-discriminatory basis, that there is freedom of scientific investigation in outer space and that outer space is not subject to national appropriation.

The United States fully supports these principles and believes that the Subcommittee should undertake activities that support the continued vitality of these principles, rather than those that call these principles into question. The United States remains convinced, in particular, that to entertain the possibility of the negotiation of a new comprehensive space law instrument can only serve to undermine these principles and the existing space law regime.

At the present time, the Subcommittee has on its agenda two items that build on its strength in addressing practical issues. The Subcommittee is continuing its consideration of the draft Space Assets Protocol to the UNIDROIT Convention on International Interests in Mobile Equipment. This Protocol offers an important opportunity to facilitate the expansion of the commercial space sector, as well as to enable a broader range of States in all regions and at all levels of economic development, to benefit from this expansion, both by having a better opportunity to acquire interests in space equipment and by acquiring services generated from space equipment.

UNIDROIT has held two productive negotiating sessions on the draft Protocol in which my Government has been pleased to participate, along with many other members of the Subcommittee and the United Nations Office for Outer Space Affairs. Another negotiating session will take place later this year.

My delegation would like to express its deep appreciation to Professor Vladimir Kopal of the Czech Republic, who chaired the Subcommittee's Working Group on the Space Protocol, and to René Lefeber of The Netherlands, who led the intersessional consultations on the possibility of the United Nations serving as the Supervisory Authority for the Space Protocol. Professor Kopal and Mr. Lefeber did an exceptional job in dealing with these complex issues.

We are disappointed, however, with the inability of the Subcommittee to reach consensus on the question of the Supervisory Authority. We see no legal or political barriers to the United Nations serving in this role under the Protocol. At this stage, those delegations that have objected to the United Nations as the Supervisory Authority have not offered detailed analysis of viable alternatives. As such, we would expect other options to be presented in detail at the next UNIDROIT negotiating session later this year.

The Legal Subcommittee is also continuing its consideration of the practice of States and international organizations in registering space objects. The Subcommittee's work to date on this topic has produced a useful exchange of information on State practices and laws relating to implementation of the core space law treaties. Niklas Hedman of Sweden should be congratulated for his outstanding performance as Chair of the Working Group on this topic. We look forward to the next steps in the Subcommittee's work on this topic which will focus on identifying common elements in States' registration practices and on ways in which practices might usefully be harmonized or improved.

Thank you Mr. Chairman.

The CHAIRMAN: I thank the distinguished representative of the United States for his statement.

And I now invite the distinguished representative of Belgium, Mr. Mayence, to make a contribution to agenda item number 8. You have the floor Sir.

Mr. M. MAYENCE (Belgium) *(interpretation from French)*: Thank you very much Mr. Chairman. I would like to take this opportunity of dealing with a particular item on the agenda to add my thanks and congratulations, in particular those expressed by France. I would like to address my thanks and congratulations to the Chair and to the

Secretary of the Office for Outer Space Affairs and also to Mr. Marchisio and to the Office for Outer Space Affairs. I would like to thank them for their efficient work and I do not want just the thing for the work that they do in the session. I think that parallel events, in particular, the seminars and the workshops that get organized as part of the work of the Legal Subcommittee, are particularly important and useful when it comes to developing our cooperation in terms of space law.

Mr. Chairman, I would like to take this opportunity to provide some extra information in addition to that provided in the Legal Subcommittee. Now, you will have noted that Belgium announced that it had acceded to the 1979 Agreement and we hope that our accession will be an example for other States.

And I would also like to announce, and this is a great pleasure for me to do so, that as from 10 June, the Belgium Parliament has adopted a national space law bill which should come into force by the end of 2005.

Thank you Sir.

The CHAIRMAN: I thank you Mr. Mayence, distinguished representative of Belgium, for your contribution to agenda item number 8.

And the next speaker on my list is the distinguished representative of Italy, Ms. Bini. Ms. Bini, you have the floor please.

Ms. N. BINI (Italy): Thank you Mr. Chairman for giving my delegation the opportunity to take the floor on agenda item 8.

Mr. Chairman, the Italian delegation followed with the greatest interest of the proceedings of the forty-fourth session of the Legal Subcommittee under the able chairmanship of Professor Marchisio. Among the issues and topics under consideration, we would like to underline discussions relevant to the UNIDROIT draft preliminary Protocol on Space Assets.

This delegation has already had the opportunity to express satisfaction with the substantial work undertaken by the Ad Hoc Open-Ended Working Group, coordinated by The Netherlands, on the appropriateness of the United Nations to act as Supervisory Authority under the draft Protocol.

Other(?) substantive issues under consideration have been thoroughly discussed also within the Working Group under agenda item 8, chaired by Professor Kopal. It is the commitment of these delegations _____ *(unclear)* for the United Nations to act as Supervisory Authority under the UNIDROIT draft Space Protocol. My delegation believes that, even though it was not possible to reach consensus on the appropriateness of the United Nations to act as Supervisory Authority, we _____ *(unclear)* substantive work has been carried out providing all delegations accurate information on a very complex topic.

As you already know, the Italian delegation also supported the proposal to keep this agenda item for the next session of the Legal Subcommittee under the new title "Examination and Review of the Developments Concerning the Draft Protocol on Matters Specific to Space Assets". In fact, our delegation strongly believes that the Legal Subcommittee should be kept abreast of any future developments relevant to the instrument of international law whose aim is to specifically facilitate financing of space activities.

The Italian delegation had particular interest in the debates that took place in the Legal Subcommittee under agenda item 9, Practice of States and International Organizations in Registering Space Objects. We welcome the election of Mr. Niklas Hedman from Sweden as Chairman of the Working Group set up under this agenda item which started its work this year. The Working Group had before it an excellent background paper prepared by the Secretariat which provided delegations with extremely useful information on practices relevant to registration of space objects. We believe that the Working Group touched upon and identified crucial issues associated with the specific notion of international space law, on which all delegations are invited to reflect and concentrate their deliberations during the next session of the Working Group in 2006.

We look forward to participating the pursuing of the substantial efforts hoping that the goal will be achieved of enhancing harmonization of space object registration practice as well as the application of the Registration Convention.

Finally, Mr. Chairman, would like to express its concern relevant to the difficulties the Legal Subcommittee is facing to find consensus on new agenda items. We deem that a network should be made by all delegations in this respect considering that the Legal Subcommittee is a unique forum in which all Member States have the opportunity to continue and

deepen analysis of application and development of international space law.

Thank you Mr. Chairman.

The CHAIRMAN: I thank you Ms. Bini of Italy for your contribution to agenda item number 8.

Distinguished delegates and representatives, that was the last speaker listed for this morning on agenda item number 8.

Do I have any other delegation requesting the floor?

I invite the distinguished representative of Greece, Professor Cassapoglou.

Mr. V. CASSAPOGLOU (Greece) *(interpretation from French)*: Thank you Mr. Chairman. I have a couple of brief remarks to make.

Firstly, I would like to talk about participation in the United States(Nations?) space treaties and I am thinking of a large number of States here and perhaps we should develop or draft a text at the General Assembly meeting which would explain the reasons for States to accede to the five treaties independently or irrespective of their level of technological or economic development. The reason is that the benefits, the spin-off of the exploration and use of space could be exploited by everybody, by all the countries of the world and it is not a prerequisite, therefore, that countries have their own space activities in *stricto(?) sensu(?)*. I am taking up on what the United States have just said, namely talking about countries that are unhappy with the United Nations taking on a supervisory or monitoring role under the UNIDROIT Protocol. It is important to say here, and we have been dealing with this for several years now, we were against this proposal but, at the same time, we suggested alternatives and personally I suggested either the ITU, it being a United Nations specialized agency, which would be extremely appropriate for such work as supervisory body or he suggested setting up an international ad hoc entity amongst signatory States to the Cape Town Convention and the Protocol and that amongst those States another entity should be set up and we suggested the World Bank, for instance, at the time. So there are proposals on the table and we can discuss these proposals. That is what I wanted to say Sir at this stage of proceedings.

Thank you.

The CHAIRMAN: I thank Professor Cassapoglou for that brief intervention.

Does any delegation also wish to address us on agenda item number 8 or make any general comments on the contributions that have been made by other delegations on this particular agenda item?

If none, I will proceed and suspend … conclude? OK, and so we are going to conclude our deliberations now on this agenda item number 8. So if any delegation wants to speak before I put the gavel down, this is the opportunity to do so otherwise the next time you have a chance to address agenda item number 8 is when we are considering our draft report.

It is so decided.

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

Distinguished delegates, we have, therefore, concluded our consideration of agenda item number 8, the Report of the Legal Subcommittee on its Forty-Fourth Session, and I now open our consideration of agenda item 9, Spin-off Benefits of Space Technology: Review of Current Status.

The first speaker on my list for this particular agenda item is the distinguished representative of the United States, Mr. Higgins. Mr. Higgins, you have the floor please.

Mr. J. HIGGINS (United States of America): Mr. Chairman, 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.

In the area of medical research, a new contact lens derived from research performed onboard three Space Shuttle flights is capable of non-surgically reshaping the cornea during sleep. The lens was the first to be approved by the United States Food and Drug Administration for overnight corneal refractive therapy for the temporary reduction of myopia, or near-sightedness, with or without moderate astigmatism. When users awaken, they simply remove their contact lenses and experience clear, natural vision without having to wear daytime contact lenses or glasses. The technology allows for adjustment for normal changes in vision that occur as people age. As a result of

NASA research, consumers now have a non-surgical option to gain the benefits of device-free vision.

In consumer health, a low-calorie, all-natural alternative to table sugar and artificial sweeteners has evolved from a life detection experiment onboard NASA's Mars Viking 1 and Viking 2 landers. The experiment studied several nutrients in an effort to detect the presence of microbial life in Martian soil samples. The findings ultimately led to tagatose, which proved its advantages as an alternative for regular sugar. Tagatose is 92 per cent as sweet as table sugar and can be used a one-to-one sugar replacement, allowing it to be used in many prepared foods. Tagatose also browns like regular sugar during baking and does not have an aftertaste like some high-intensity sweeteners. It does not cause dental cavities or tooth decay and provides a safe sweetener for diabetics. Tagatose has found its way into many food items. It is currently being evaluated for incorporation into non-food items, such as toothpaste, mouthwash, throat lozenges and cough medicine.

Also in the area of health and medicine, several years ago a small United States firm developed a filter made of nano-aluminium oxide fibres. The original objective of these nano-filters, whose fibres were electropositive, was to attract and retain electronegative particles such as bacteria and viruses in water-based solutions. A typical use of the small filter is in the medical industry to filter unwanted impurities from syringes by screening out 99.99 per cent of bacteria, viruses and other macromolecules. NASA has partnered with the United States company to adapt the nano-filters into cartridges that are capable of filtering water for entire space crews. It is not difficult to see the application of such a filter cartridge to remove impurities for drinking water in areas on Earth where water is scarce and potentially contaminated. These filters are capable of sterilizing water from all microbiological pathogens. In addition, since the filters' absorption is based on the ionic charge of the macromolecules, the potential exists for separating proteins and other particulates on the basis of their charge differences. This signifies a major new thrust in biotechnology.

In another example, a fibre-optic sensor system currently used by NASA to measure the movement and forces exerted by its Robonaut humanoid robot has been adapted for oil, gas and sub-sea pipeline monitoring. Preventative monitoring of this nature is essential where failure could be catastrophic both economically and environmentally. Major oil companies have begun to apply NASA's fibre-optic sensor technology to evaluate fatigue on sub-sea pipelines, risers and offshore drilling and oil production rigs. Risk management software has also been developed to work with the sensors and calculate real-time service life evaluations and cumulative fatigue. Costly repairs and downtime are being avoid and the risk of potential environmental contamination from hydrocarbon spillage is being reduced.

In conclusion, Mr. Chairman, I note that the examples of space technology spin-offs 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 worldwide dissemination of spin-off technologies for the benefit of humankind. To inform delegations of these and many other interesting spin-offs, we have provided each delegation with a copy of NASA's publication "Spinoff 2004".

Thank you Mr. Chairman.

The CHAIRMAN: I thank you Mr. Higgins for that useful information on spin-off benefits of space technology.

The next speaker on my list is Ms. Kaneko of Japan. Ms. Kaneko, you have the floor.

Ms. M. KANEKO (Japan): Mr. Chairman, distinguished delegates, at the outset my delegation would like to express our condolences to the delegation of Chile for the earthquake which occurred yesterday in the middle part of Chile.

Mr. Chairman, on behalf of the Japanese delegation, I am honoured to introduce examples of spin-off efforts of space technology in Japan at this session of COPUOS.

In Japan, to reinforce the competitiveness of the Japanese space industry and to enhance space utilization, the Japanese Aerospace Exploration Agency, JAXA< established within the Agency the Industrial Collaboration Department. The Department will boost cooperation among the public, academic and private sectors. One of the primary missions of the Department is to promote the spin-off of various space technologies of JAXA, such as over patents and intellectual properties, to industry.

At last year's COPUOS session, we, Japan, introduced spin-off examples such as the system regarding disposal of waster materials for reducing organic waste and the Multi-Jointed Robot for

applications in nursing care for older people. We can also expect spin-off applications using the Free Piston Stairling Engine for co-generation and power sources and functionally gradient materials for heating elements.

These examples are but a few of Japan's space spin-off efforts. Aiming to generate additional successful spin-offs, JAXA has begun undertaking activities such as further promoting licensing carried out by business-academia collaboration coordinators, implementing JAXA's Venture Support Programme and Technology Transfer Programme for commercialization, and making JAXA's R&D facilities available for commercialization. These activities should help generate successful spin-offs.

Mr. Chairman, spin-offs of space technology should be promoted. The innovations they offer energize industries and can make significant contributions to improving the quality of life.

Thank you for your attention.

The CHAIRMAN: I thank you very much Ms. Kaneko for your contribution to agenda item number 9 and I also want to thank you for reminding us of the tragedy of the earthquake in Chile yesterday and distinguished delegates and representatives if you listened to your radio or watched your television this morning, we all heard of this particular tragedy and on your behalf I would like to convey our condolences to the delegation of Chile. Unfortunately, they are not here this morning with us but that nothwithstanding this particular expression of your condolences will be expressed in our report and conveyed to Chile as well, both in person and in writing.

That was the last speaker I have listed this morning on agenda item number 9.

Distinguished delegates, do we have any other delegation wishing to address this Committee at this time on agenda item number 9?

If not, we shall continue our consideration of agenda item 9, Spin-off Benefits of Space Technology: Review of Current Status, this afternoon. I invite delegations to please inscribe their names.

Implementation of the recommendations of UNISPACE III (agenda item 6)

Distinguished delegates, I would now like to continue our consideration of agenda item number 6, Implementation of the Recommendations of UNISPACE III.

As I mentioned yesterday, by now you should have received copies of two Conference Room Papers under this agenda item. The first is CRP.11, and that is the Chair's proposal on how the Committee can contribute to the work of the Commission on Sustainable Development, and the second, CRP.12, has come from the Office and actually it will be the strategy the Office intends to use to implement the recommendations of UNISPACE III, as requested by the General Assembly.

Before opening the floor for your comments on these documents, I would like to invite our distinguished Director of the Office, Dr. Camacho, to make an introductory remark on CRP.12.

Dr. Camacho, you have the floor.

Mr. S. CAMACHO-LARA (Director, Office for Outer Space Affairs): Thank you Mr. Chairman for the opportunity to briefly introduce this document.

As he indicated in General Assembly resolution 59/2, the Office was requested to examine the final action of the Committee and to indicate how it might be able to incorporate into its Programme of Work those activities that are identified in the report as those that would either be carried out by the Office or with the assistance of the Office. What we have done in the document that you have in front of you is to look at the final action, Chapter VI of the report, and to identify paragraph-by-paragraph where the Office was requested to take an action.

We have also considered some of the broader goals of the Plan with a view to see where the Office, where the Secretariat might be able to support the work of the Committee or activities by Member States or international organizations. From the document that you have in front of you, you will find references in brackets to paragraph numbers which are goals(?) in Chapter VI where the Office has been identified but you will also see that in some of those paragraphs its activities, that are not, or the Office has not been identified, it may be _____ addressed to the Committee, for instance, or to Member States and we have indicated what the Office might be able to do.

In the document you will also realize that there are three types of qualifiers as to the action, or type of action that the Office would be taking and in the sense of resources. Some of the activities can be accommodated within the Programme of Work of the

Office with no need for additional resources. And you will see also that there is an indication that there may be, or would have to be, some reorientation of priorities. Then you will see as well that there are some activities from actions that can be taken within the existing resources but would need also additional resources. The additional resources are either to voluntary contributions or regular budget. If they have to be the regular budget, then it is not for the Committee to decide that part. The Committee would only indicate what it thinks that the Office should be doing and if there are any regular budgetary implications. That is something that goes through the Fifth Committee.

And then there is one other category and that is those activities that could only be done if there were additional resources. So we have those that can be done without any additional resources, those that can be done with the resources that exist and voluntary contributions and those that can only be done if there are additional resources.

In the category of those that can be done within existing resources and require additional resources, most of what you will see are most of the indications in this document are those that can be done at least partially by the Office which means it may be just a superficial treatment of whatever item it happens to be, let us say, promoting awareness or disseminating information. We might be able to disseminate information to a limited extent, in good part, for instance, because we would not have the resources to do 5,000 copies of some document and distribute it so what we might be doing would be to put it on our website.

These are the type of proposals that you have in front of you that we would like to have you consider. There are some recommendations there also that the Office is making and that is if we are to have an impact on the objectives that we are trying to achieve, there will have to be then changes, we have to reorient some of the activities that the Programme carries out right now.

I will mention two types of activities. If we are to have any greater impact on bringing operational capabilities to developing countries which means actually taking the technology and putting it in place to support the programme support, then for that type of activity would be maybe to launch a pilot project that would _____ on capability in place. For that type of activity, the Office could not do it unless one of two things happen. Either we got substantial resources to do it or we do not do as many of our workshops and training courses. And you will see our recommendation is that we reduce the number of workshops and training courses and then we put additional efforts into launching pilot projects that actually will then leave an institution of capacity, it will be _____(?) on capacity.

There is another one that we think is quite important. Our Technical Advisory Services _____ *(not clear)* were providing advice, for instance, in the area of space law. We have been getting a number of requests from institutions that would like the Office to assist them in establishing their national legislation and to do so, and in compatibility with the treaties. The Office cannot do that because we do not have, one, the budget to be going to the institutions, and, two, we do not have the human resources. The Office right now has its capability in human resources very much stretched to the limit. That means anything new and substantive has to be done at the expense of not doing something else. So what we are proposing is to do less of the workshops and more of these other two types of activities. So there will be a need to reorient and what we are proposing is that this should be a gradual reorientation. We have a number of commitments already with Member States and partners, the co-sponsors as well, and we intend to keep those commitments. But slowly, gradually, we are changing to resources for these two types. They do not necessarily have to be the only ones. We would also like to have your reviews as to what the Office should be doing in addition to what you will see explicitly what is called for in the final action. It is an amount of interpretation yet that the Committee needs to go through to see in the final action how it is going to proceed, where is the Committee going to go and when that happens then it is not only limited to this exercise, the Office will be observing the priorities of the Committee, we will try to move in that direction.

The resources will also remain limited. You will see that there is, in several of the paragraphs, this limitation that for something to be carried out, additional human resources would be necessary and there are two possibilities. One is to voluntary contributions which would mean if there is the money to hire someone, short-term contracts particularly depending on what needs to be accomplished, months, what they have a year, a year and a half, and then that is for a fixed type of task that once accomplished does not really need additional support.

For other activities, then it would be the regular budget type of personnel that would be needed because it would require maintenance. It would be an

ongoing exercise. This would be the case if the Committee wanted to have research done by the Office, which the Office is not doing right now, in response of some of the actions that are contained in the Plan of Action. The Committee has requested to have an interaction with, in particular the Commission on Sustainable Development, but there final action also has, and the Committee would be looking at the future conferences to try to make in input, a contribution to them, and that the Committee would be looking at the outcomes of the conferences to see where the Committee would recommend that or the type of recommendations that the Committee might make as the cost-base to be used in implemental(?) outcomes. That is going to require a fair amount of research if it is going to be done at the global Committee level. Member States are ready do that on an individual basis and sometimes by groups. But when addressing it, when it is addressed here, it would mean either additional reports to address it then the traditional way is that the Secretariat on behalf of the Committee send out a number of _____ to Member States and they all send their replies and then we compile them and then there just(?) become compilations that are put into a report.

The other way is that there is some research that is done to follow-up, for instance, in looking at the outcomes of conferences and the topics that they are going to be looking at. Somebody would be preparing, somebody from the Secretariat would be following the involvement(?) of the process or the conference can be outcome(?) and provide a document for the Committee where the Committee would have the background to the conference, the main outputs and a number of possible choices as to what the technology might be able to have an impact.

For that to happen on a regular basis, that would be more a question of having an established post so that there was somebody responsible carrying those type of activities.

The other point that I wanted to bring up is that since the new resolution was adopted last year, the Office has started to look at the Plan of Action to see what was going to be incorporated and we have incorporated already some of the actions that are being called for. The Office has been carrying out already and I just want to mention a _____ one that has been very visible and it is the support that the Office has been providing for the establishment of a disaster management space coordination organization. They have been working continuously with that effort before even being in _____(?) to this document. The same as for the establishment of an International Committee on GNSS. The same for the collaboration that it has with UNESCO. We have actually carried out some activities already. And what you have in front of you does not identify specific activities, these are categories of activities. You do not see references to a particular activity then you would see that they are categories and I just want to mention that we have already moved in that direction in quite a number of areas.

Then I wanted to address one last point and that is in reducing the number of workshops or training courses, we took into account that we have the Regional Centres. The Regional Centres are doing an excellent job. First of all, it is longer(?) training but they do workshops as well. And we will discussing with the workshops that they might be able to do additional workshops or training courses which would be in addition to the nine-month programme that they have. But for the Centres to do this, they will need resources. As it is, the Centres need resources. You know that a large weight(?) of supporting the Centres falls on the host government. And what we intend to do is then to launch a support campaign for the Centres, including a fund-raising campaign so that the Centres are stronger. They would be then taking up some of what they have even more, all the workshops that we might eventually be reducing. So when that comes we will be writing to governments and space agencies and industry and anybody else that we can think of and bring support to the Centres.

And, Mr. Chairman, I think that with this introduction to this document, I thank the Committee and I thank you for the opportunity to address the Committee.

The CHAIRMAN: Dr. Camacho, I thank you very much for that introduction. Before we continue, please I need to speak with the Secretariat.

Distinguished delegates, I open the floor for comments on the two CRP papers. In the case of the CRP.12, do you have any immediate general comments? You are invited to make such a comment but I need more than immediate general comments. I need a concrete response to the requests contained in that particular CRP. It is an enhancement of the activities of the Office and enhancing the responsibility of the Office, it will also enhance the delivery of services to Member States in need. And, as Dr. Camacho, has said, it would mean a realignment of some of the activities of the Office. It will mean additional resources, both money and personnel and it will mean also a shifting of responsibilities to the Regional Centres. As I said, these are real substantive

issues that require substantive input and not only substantive but supportive input from you. So if nobody is willing to talk about that right now, we can take it up and begin the serious consideration of CRP.12 in the afternoon.

I see the distinguished delegate of the United States. You have the floor Sir.

Mr. K. HODGKINS (United States of America): Thank you Mr. Chairman. Let me first express my appreciation to the Secretariat for preparing CRP.12 which I think is an excellent document that gives the Committee some very specific recommendations on how the Office for Outer Space Affairs and Space Applications Programme should be organized for the future. My delegation fully understands the need for additional resources for the Office in terms of personnel and money from the regular budget and I think that will need to be taken up through the normal budgeting process and the preparation of the biennial programme plan and budget. But I think the Committee does have a specific role to play is the question of realigning of the priorities of the Office.

Now, what struck me was the idea of putting less emphasis on the workshops and moving those resources to pilot projects which, in and of itself, sounds reasonable but I think what we need to consider, and perhaps the Office can give us some more guidance, is what exactly does that mean? In the case of the workshops, Member States who host or suggest hosting the workshops pick up a considerable amount of the resources that are devoted to those workshops. So the twelve to thirteen workshops a year really means that there is a considerable amount of money coming in from the host government or organization for those workshops. Now, that does not necessarily mean, and correct me if I am wrong, that does not necessarily mean that that money is always there to then just be moved some place else, that is to say, if you de-emphasize the workshops, it does not automatically translate into extra money for pilot projects because a country or organization that might be inclined to host a workshop and make a contribution might not be inclined simply to give the Office for Outer Space Affairs that equivalent amount of money for pilot projects that may or may not involve their experts. This is the way I am seeing this.

In order to change the emphasis, the Office for Outer Space Affairs has to be fairly confident that the money for pilot projects will be there. Now that in and of itself is a challenge because, as we well know, countries make contributions to the Space Applications Programme for very specific reasons and I do not think that the Committee is in a position to have a pledging conference where we all agree to come up with a certain amount of money to support pilot projects that may or may not involve our experts. What you have to look at very carefully, I think, is how the pilot project idea would be implemented and what happens in the event that there really is not enough money generated for pilot projects but you have already shifted human resources to put more of an emphasis on pilot projects and less on the workshops.

So that was, in my mind, the issue that jumped out immediately is what are the implications of this shift? And if we are all confident that that kind of a shift in emphasis could be done successfully, then I would have no objection, but I think we have to understand what, in my mind, is the basic point which is the money you have for twelve to thirteen workshops is not guaranteed money that will be there to be used for another purpose because if governments and organizations are specifically contributing money for a specific workshop and not just giving the Office for Outer Space Affairs the money for the Office for Outer Space Affairs to use as it sees fit.

Thank you.

The CHAIRMAN: I thank Mr. Hodgkins of the United States for his comment.

And do we have any other delegation wishing to make an immediate comment on CRP.12?

Now with that planning(?) from the Secretariat, but in my former capacity as the United Nations Expert on Space Applications, Mr. Hodgkins, let me try and respond to your concern.

When you go back to the history of the United Nations Space Applications Programme, it started in 1971, between 1971 and today, we have 34 years plus. The Programme started as being with two seminars a year. Now when I joined in, it was about four in 1977. When I left, we were having about eight to nine. Now we have twelve to eighteen. I want to take your mind back to 1987 or 1988, I do not remember the exact year anymore, but it was a year that will always live in my memory because I thought I lost my job back then. I was with an Egyptian delegate, who said, and I quote, "Mr. Abiodun, when you play(?), you have been talking about the problems this Programme has been experiencing, will you please tell us the exact nature of this Programme?" And I tried to dodge that question for one year until the Egyptians _____(?) our late Professor Carver, the man we eulogized yesterday, to

force me to respond. And I sort of believe that if I wanted to talk to you, and I do not put it in writing, I can deny everything I have said, it is only when there is no tape recorder recording my voice. Unfortunately, there is a tape recorder. Everything we are saying here is being recorded. So the Committee met and Professor Carver invited me to address the question because the Egyptians were insisting and I looked at all the delegates in the eye and I said, you really want to know the truth, you delegates are my problems. Why? Because all around the world, I organized six or eight meetings a year. There are conclusions and recommendations made at these meetings. I bring to them to you for your attention. What do you do? There _____ and read your report of this Committee since 1959(?) to date. You will see the Committee noted. I had told you then, in my capacity as United Nations Expert on Space Applications, that Member States who are putting these recommendations and the recommendations the Office is putting in the report. These are recommendations come from the work of the seminars and workshops and are these Member States expect more than the Committee noted. Stop noting, implement. The question is if you go back, when Maria Louisa(?) was with us in the Office for Outer Space Affairs I asked her to go back of all the reports of the Expert on Space Applications and in all the reports of our workshops and seminars and come up with the recommendations we have made. We can give you over a thousand recommendations. The Office can give over a thousand recommendations. The bottom line is that except for the new areas like GNSS and some other new areas the Office is talking to, when you look at all issues in sustainable development, the Office is saturated with recommendations.

What we really need is how to translate this documentation into practical, achievable, cost-effective programmes that can address the local problems concerned. Dr. Camacho has then proposed, let us take some of the money from these workshops and seminars and training courses, put them into the implementation of some of these recommendations. Now, we must not forget one thing, when a Member State says he wants to host a training course or a workshop, it does not give the United Nations a penny. All it does is take responsibility for the local expenses, that is the housing and the food of the participants, the local transportation, the publication or whatever contingencies may be needed to carry out the activity. Whereas, from its own budget for the Space Applications Programme, the Office now has to parcel out a little bit of its money for a workshop in Pakistan, a workshop in South Africa, a workshop in Morocco, one in Mexico, one in India, one in Germany and so on and so forth. If, now you are carrying out thirteen activities and you say, OK we are going to go back to the old eight or nine, that means then that the Office itself will not spend whatever it should have spent on those five activities and it can re-address that particular collection of money from this type of activities, to address a significant implementation of one or two recommendations as made as they decide to be appropriate. So this is the question, Mr. Hodgkins, it is not that because Member States themselves are no longer going to host these four or five things. That does not affect the budget of the Office but it urges the Office to do better. This is my own personal interpretation. I am not talking to the Office.

On the other hand, the countries that want to host the training course, whatever you do today, if I am the expert, I would tell you, OK Sir, look at all the recommendations we have in our file that we know we have come from hosting this meeting in your countries. Instead of spending this on talking again, why do you not make this as a _____(?) money for your projects in your country and in your region and we can get other Member States from your region to look at this same issue with the same eye. This is my own thought for whatever it is worth on this subject and Mr. Hodgkins.

Thank you very much.

And I want the Secretariat to actually to say to you they agree or disagree with me.

Yes, you have the floor.

Mr. S. CAMACHO-LARA (Director, Office for Outer Space Affairs): Thank you Mr. Chairman. Actually you put it very well. You said already part of what I wanted to add and I am happy to have the opportunity to amplify on my remarks and on the document, particularly with respect, and I will not repeat the parts that you said, that is completely correct.

The part that I do want to clarify is that we are not thinking of having in the Office enough money to run pilot projects. We were thinking when we say launch or to initiate the _____ *(not clear)* and the report the launch of pilot projects means what you were saying, Mr. Chairman. We would have the time, the human resources, and we would have some saved money so that we could bring parties together that would be the stakeholders of the project. As far as we would go, we are doing that right now. There are projects going on in Burkina Faso yet we are not financing(?). We put enough resources into that

and that is being run by AQUIMET(?), the national institution that is water-related in Burkina Faso and the European Space Agency. They are doing it. Our role in that was to bring the parties together and see that it from the top(?). And then we step back because we certainly do not have the resources to provide backstopping to a project. So when we see here pilot projects, it does not mean that we anticipated the Office will receive that amount of money.

Another that is new in the Office is the area of space law and we do get quite a few requests to provide technical advice and the Office cannot do that except if there happens to be a mission that is going to be undertaken and we can stop by. We cannot do special missions. We do not have money for that. We do not have money either to get maybe experts to go and provide their advice. The mandate and the Technical Advisory Services says to provide or arrange for the provision. That means that we do not have to do it ourselves but we do need to have the time to organize even the provision of those Technical Advisory Services.

Thank you very much Mr. Chairman.

The CHAIRMAN: Thank you very much Dr. Camacho. I know the Expert is asking for the floor. I am going to give you the floor later. In the meantime, I invite Professor Cassapoglou. Please be brief. Our time has gone.

Mr. V. CASSAPOGLOU (Greece): Thank you Mr. Chairman. I would like to speak after your colleague, the Expert, her speech.

Thank you.

The CHAIRMAN: … Belgium? Right. The Expert, a brief intervention, very brief.

Ms. A. LEE (Expert on Space Applications, Office for Outer Space Affairs): Thank you very much. I have three major points to share with you and that you, Mr. Chairman and Mr. Camacho, you have already covered the major points. And I would also like to express that I do feel why our distinguished delegate of the United States of America expressed such a concern because he has been a long-term support to our finance on various activities which I would like to express our gratitude to him right now.

And I have three points to resolve your puzzles here. This is not a decision made overnight. This has been going through lengthy discussions in the Group with the Director and with Member States, several of us. So maybe some of you that we have not had chance to share with you, please accept my apology that, however, we will continue cultivation this idea.

So the three major points I want to share. Number one is that as Mr. Chairman expressed to you that since 1971, we have been so far swamped with recommendations after the workshops. So I realize that there are so many things that the Member States want to do after the workshop, after you received training, you want to do something and we are not, unfortunately we were not able to support. So we thought that we have done a lot of good jobs in the past 10 years, particularly that we grow into that we believe that we are doing good so-called capacity-building. And now I ask myself and we ask ourselves, how about sustainable, sustainability in the future so what we want to do is that this is going to be a very gradual change. We propose that for the next two years we do a 20 per cent-80 per cent shift. Then the next, if it works well, the following biennium, we will do 40-60 per cent then 50-50. Under each period, we are going to do an evaluation, to make sure that we are heading the right way with you and also in considering of the recommendations from you.

So this is our approach. Right now, the Office has been very busy in trying to define, in defining the criteria of selecting out from so many recommendations. We do understand the local needs so we need to prioritize them, set the criteria and also the Office is also planning the management of those projects in the future in the long run. So you can tell that we are moving towards from capacity-building towards the sustainability. And in the meanwhile, the point I want to share is that the money. We do not have money as you all know but we provide some feed(?) money, as Mr. Director just explained about the Burkina Faso project. In the past year, we have been trying to gradually lead into towards this direction. One of the things that we did is to create to continue working with an existing task force. We have a few established so far and we can use the task force as the channel to implement those projects. And also related to the money that _____(?), I appreciate that you mention about the money right now put in for the workshops is not there, we cannot guarantee that money if we do not do workshops. So let me take the opportunity to pledge to all of you that would you please consider continue supporting with the money you have allocated for the workshops, please allocate it for the projects.

So that is another thing I plan to really announce to you somewhere later this year. I will

explain to you about our criteria, our ways of management and the money that right now used. If you host a workshop, you would put somewhere I would say between US$10,000 to US$50,000 to the workshop. The money is there allocated but if we just transfer it from supporting workshops, after seven days we say goodbye, we take a nice picture, we transfer from that to do a project that you can sustain within the long run.

That is all I want to say. Thank you.

The CHAIRMAN: Thank you very much Madam Expert.

I invite the distinguished delegate of Greece. Our time is gone. Please be brief Sir.

Mr. V. CASSAPOGLOU (Greece): Thank you Mr. Chairman. Mr. Chairman, I would like first of all to thank you for your clarifications made on that specific problem because I think, and for many times, for a long time, and on many occasions, we, I mean as the Greek delegation, we said, underlined the need to see a kind of re-organization from the institutional point of view, the re-organization of the functions and work of the Office because we know very well that from the very beginning it was a small, nevertheless a bureaucratic journey(?) and now is a real function of an operational organ. So we have to see the perspective of this Office. All of us recognize the very limited, not only financial, but also and maybe human resources within the Office and we need to see this Office, and that is the idea and on many occasions I quoted the example of a parallel activity which is the one of the Development Department of the ITU. There you have special funds to be spent for the so-called technical cooperation for the so-called Third World developing countries. So we have many examples now here in the Office. The only thing we can do is to ask from the UNDP, the United Nations Development Programme, maybe to finance some activities. But actually it is impossible without the State contribution of the interest of other States to give our, if I can say, the light(?) of our knowledge to the developing countries.

In my view, we need maybe within the framework of the proposals made by Professor Karl Doetsch during his presentation of last week, to see how we can a little bit reconstruct the functions of the Office and see how we can acquire necessary financial resources and funds to help it to realize its purposes and then its very human resources.

Thank you.

The CHAIRMAN: Thank you Professor Cassapoglou.

Sir, from Belgium, the distinguished delegate of Belgium.

Mr. M. MAYENCE (Belgium) *(interpretation from French)*: Thank you very much. I will be very brief Sir. My brief experience of this Committee means that I cannot necessarily suggest a solution to the issue that has just been raised by the Office, the Bureaux. But one thing that has struck me, and I have been in the COPUOS for something like five years now, and what I am struck by is the huge gulf that there is between the major and interesting work done by the United Nations on the one hand, and the word(work?) of space applications. And from the Belgian point of view or that of other European delegations, and we heard mention of the ESA here, we can see that the COPUOS work is for a few privileged individuals, the workshops and seminars and so on attract the same limited audience. They are a very expert audience but there is no particular link with other interested parties. And I would like to see the Director of the Office for Outer Space Affairs go to the ESA(?) and explain what he does because people know that there is a United Nations Space Applications Committee but they are scarcely aware of what it is up to. So that is a link that is missing and this would, no doubt, not(?) been a panacea but it would make progress. We have worked with applications with other United Nations agencies in terms of development, in the Environment Programme, for instance, but there is no link. That kind of link is not visible when it comes to what the Office for Outer Space Affairs is and what COPUOS is doing and this is, when I am thinking colleagues involved in telecommunications and so on, they do not know there is a United Nations Programme in the area of space applications and I think it is very important for these links, therefore, to be established and underlined in order to make sure that there is a future for what the Office for Outer Space Affairs is doing and in particular, when we are talking about space applications.

Thank you.

The CHAIRMAN: Mr. Mayence, thank you very much. Professor Cassapoglou, thank you. I am sure the Office has listened to both of you but with your permission, and I would like to make this the last comment on CRP.12 and we will pick it up again in the afternoon. I think we heard a discussion now, I reflected again, and I am able to understand Mr. Ken Hodgkins better. When I made my intervention, I

now(?) make one analysis or I will make it one of the elements. The Space Applications Programme is supported through three sources. One is the budget, the second is the mostly kind contribution by host countries and the third is the financial, the actual cash contribution that is provided, not necessarily by the host countries but by a country or an agency like the European Space Agency or like the United States or there are many other countries, Pakistan has contributed money in the past and so on and so forth, China has contributed money, Japan has contributed money, to organize activities, not necessarily in Japan, not necessarily in the United States and the ESA one not necessarily in Europe. And I think the concern Mr. Hodgkins is alleving(?) (leaning?) to is if you cut these activities that we are directly supporting, then we need to sit down and really see if you expect for their contributions from most individuals(?) ones we are supporting are being reviewed(?), if we are suppose to make crucial contributions, do not expect the money we are giving you for these activities that you are cutting out to immediately come to the substitute activities. I think particularly to the projects.

My only answer, Mr. Hodgkins and Secretariat, is that the Secretariat and those countries that are currently providing such funds and are now host countries, we need to sit down and develop a new mechanism of working together. This is what I see here.

And with that interjection on my part, let me suspend our discussion on item number CRP.12 until the afternoon.

Now CRP.11 is before you. I put it together as my own contribution to the request by the General Assembly on our Action Plan. We discussed this already. I believe it is straightforward and I am asking for its adoption by you.

Do I take it that CRP.11 is agreeable to the house? And we bear our response on that issue?

It is so decided.

Distinguished delegates, in accordance with paragraph 8 of resolution 5/92 (59/2?), the General Assembly requested this Committee to include items in the agendas of its future sessions, starting from its forty-ninth session, that is next year 2006, items on its possible contribution to the work of those entities that are responsible for convening United Nations conferences and/or for implementing their outcomes.

Now, because we have lost time, I think I am going to skip this and we will come back in the afternoon to address that subject. I now like to save time for the technical presentations we have before us.

Technical presentations

That being the case, and if you did not object, I now turn to our presentations for this morning. Presenters have only one hour, three of them. Therefore, you have 20 minutes. If you want us to ask you questions, do not spend all your 20 minutes allotted to you. If you do not want to have any questions from us, that is it.

So the first presenter is Mr. Hitoshi Yoshino of Japan addressing "Spin-off of JAXA's Intellectual Properties".

Mr. Yoshino, you have the floor.

Mr. H. YOSHINO (Japan): Thank you Mr. Chairman, distinguished delegates. On behalf of the Japan Aerospace Exploration Agency, JAXA, I am honoured to present details of the theme of activities we are currently promoting for space technologies we have developed at this session of COPUOS.

In _____(?) the promotion of research activities for space and aviation technology and other related research activities, we are now promoting the transfer of some of the results of our research achievement to the private sector for commercialization. A _____(?), financial year 2004 to 2008 for the period we are seeking to regenerate various patents that carry commercial and business value and which are marked focused.

For the patents generated under this approach, we are actively undertaking licensing activities to transfer them to the private sector. Like the generation of patents, we are also aiming to increase a number of licence deals and also to create quality deals having a further impact in the market and society.

The financial(?) year(?) we are aiming through the generation of IP and the licences carried out this way is to contribute further improvement of industrial competitiveness of Japan based on our intellectual properties and technologies.

Regarding the generation of intellectual property, as I have already explained, we aim to increase the number of and improve the quality of our IP portfolio. Improvement in quality means the

targeted creation of IP that aims to meet market needs and requirements.

For our aim to increase a number of licensed deals and to create valuable deals, we are promoting our licensing activities, jointly _____(?) business-academia collaboration coordinators and the taking advantage of such supportive schemes like the JAXA Venture Support Programme and the Technology Transfer Programme.

For the purpose of promotion of our licensing activities, we are actively collaborating with professional organizations and personals having much experience and expertise in technology transfer activity and business.

In addition to this, we are also active in encouraging and providing our engineers and researchers with opportunities such as seminars to improve their capabilities to draw up business plans for technologies they are developing to facilitate technology transfer to private sectors.

JAXA's Venture Support Programme is a supportive scheme that we _____(?) to our _____(?) to start a venture business that is based on intellectual property owned by ourselves.

The Technology Transfer Programme is another supportive scheme offered to commercialization activities carried out jointly between our researchers and private companies.

The aims of the Technology Transfer Programme are to mitigate financial risks and share the burden of technical problems in finding solutions and to jointly consider other issues that may emerge during the _____(?) commercialization process. And then finally to encourage the private companies in the joint promotion to commercialize the technologies.

Under this scheme a maximum of 20 million Japanese Yen is granted for each project adopted for up to two years.

I would like to inform you that some results have been already generated based on this theme.

For the period between September 2003 and the end of last year, 18 projects were adopted and nine contracts have been so far made. A few successful examples are listed here in this slide. Technology originally developed for continuation processing equipment of organic waste technology in space where the private(?) garbage disposal system in daily life. A technology originally developed to detect space debris, a _____(?) astronomic addressing software, a technology originally developed for numerical simulation analysis system for super-computers was applied for software for medical display technology. And some other new examples are listed here.

Lastly, please allow me to explain our current IT portfolios and the level of our activities.

At present, we have approximately 600 registered patents and approximately 400 patents pending. In each year, we applied for approximately 100 patents on average. For the year 2004, we applied for 109 patents. We have so far made approximately 260 contracts with private companies and for the last six years, we have made 24 contracts a year on average.

As explained, we, JAXA, are giving significant importance on the transfer of the results of our research achievements to the private sectors. Based on this approach, it is our intention to continue to making the utmost effort to promote these activities for the purpose of both contributing to industry and society.

Thank you very much for your attention.

Mr. C. AREVALO (Colombia) (First Vice-Chairman) *(interpretation from Spanish)*: I would like to thank Mr. Yoshino for his presentation and I would like to ask the room if there are any questions for him.

I see there are none. Therefore, we will continue with the next presentation which is of Mr. Sundararamaiah of India who will make a presentation called "Ten Years of the Centre for Space Science and Technology Education in Asia and the Pacific".

Mr. Sundararamaiah, you have the floor Sir.

Mr. V. SUNDARARAMAIAH (India): … 10 years of this Centre. In fact, only last year we help present some of the _____(?) data(?) and _____ *(unclear)*.

As you know, this Centre has come into being in 1995 with three places. At three campuses in India, one at Dehradun, where the remote sensing and GIS courses are given, and two campuses in Ahmedabad, a Space Applications Centre and Physical Research Laboratory, offering such terms as _____(?) space and atmospheric sciences. And it has good _____(?) with several international organizations,

as you see, OOSA, UNESCAP, UNESCO and so on, and they respond _____ *(unclear).*

And this Centre is governed by three types of mechanisms. At the lowest level is the Coordination Committee which is basically the host country with the Centre. They meet once _____ *(not clear)* and sort the diverse problems. Although that is a _____(?) Committee which reports to the Governing Body.

These are the four campuses you see here. This is Dehradun. This is Ahmedabad. Both are really specifically built for the CSSTEAP. There are two campuses. This is the IIRS campus where the courses are conducted and the technical(?) laboratories(?) space sciences are conducted.

As I said, the Advisory Committee is the technical arm of the Governing Board. It consists of internationally-known experts in 11 subjects, as you can see here, being the latest _____(?) of the Advisory Committee, people from all countries who are known in their field, are invited to be members of this. They meet once in a year. They review the technical and other aspects of the Centre including its performance and reports to the Governing Body.

This is the view of the last meeting in May where, the said Committee is chaired by the United Nations, in Dehradun on 9 May. And the Governing Board is the principle policy-making organ, making the Organization's policies. At present, there are 14 countries and two observers. The list of the countries is here. And the executive functions are exercised by the Director of the Centre.

This is the last 11 May meeting of the Governing Board at Dehradun.

I would like to report that the Government of India supports almost 90 per cent of the requirements of the Centre. There are roughly half a million US dollars per year direct grants about $6 million there has been provided. The infrastructure facilities like labs, buildings, office buildings, hostels, all are specifically built for the Centre and state-of-the-art laboratories in the buildings, hostels for the international occupants have been provided. And the entire expertise in the faculty, 90 per cent of it comes from the Department of State. Teaching staff from this region(?) about 70 to 80 per cent. Other scientific institutions and universities in India provide around 10 to 20 per cent and international scholars provide about five per cent. Actually, the international scholars are invited for some of that purpose to make use of the _____(?) and ask them to give some expertly tips and the Centre subsequently will plan the next ones(?) and really appreciate it.

And also the linkages to the main institutions and universities is coordinated through the Indian Space _____ *(not clear).*

This how the money goes. About 80 per cent of the money goes to the academic activities, planning the courses and the work _____ *(not clear)* for the administration. And, of course, the most _____(?) course, the most expensive course are the ones in GIS followed by SATMET-SATCOM.

An international hostel with modern facilities have been built both in Dehradun as well as in Ahmedabad recently. Until now they were sharing in rather available facilities. These are very well appreciated. They have kitchenette facilities as well as a choice of Indian food. They have good recreation facilities _____ *(not clear).* To see the new campus at Ahmedabad, the swimming pool and hostel and _____ *(unclear)* occupancy(?) in the Dehradun International Hostel.

On the educational front, I just said they offer four courses, each nine months. Three, three months common curriculum and three months specialization and three months at project. Of course, these projects vary for different courses. Some course will be three months and some courses are slightly more. But _____(?) the length of the courses is about nine months. At the end of this, _____(?) are awarded by the Post Graduate Diploma. If they follow this up with the project in their home country, they are eligible further to apply for an M.Tech degree by Andhra University, they will get an M.Tech. About 25 per cent of the people, scholars who have come out of the courses have applied and successfully got their Masters in technology. The education curriculum closely follows what is required by the United Nations, _____(?) for all the Centres.

A brief _____(?) of the facilities in each of them. In the remote sensing and GIS at Dehradun, state-of-the-art computer systems and software, including ground truth data collection and analysis facilities are available.

At the Ahmedabad Space Applications Centre, SATCOM, comprehensive facilities are available with an access to our Department of Space Facilities, _____(?) first time experience on how actually things work. In fact, one of the attractions that students see is the field visits to all the

ISRO(?) Centres, every batch is taken for about a week or so all around the country, to all establishments where they really see in practice what they study.

Similarly, meteorology and global climate course facilities is also very strong, computer systems, meteorological reports(?) are available and students do the modelling(?).

And the Atmospheric Science, there are several places where they can visit, observatories, like the balloon(?) _____ *(not clear)*, meteorological institutions. This is again, probably this is the second most sought after course after the remote sensing. _____(?) come to the SATCOM.

So far the Centre has conducted about 21 nine-months post graduate courses, nine of them in remote sensing and GIS. This is a three (year? – *not clear*)-year course and the other ones for ultimate years, SATCOM, SATMET and SPACE SCIENCE. In addition, they have conducted about 16 short courses and workshops until now. And the one good thing about this, every course has a project. Three hundred and thirty projects have been successfully carried out, most of them on the topics of relevance to their home countries, not necessarily what the Dehradun or Ahmedabad, most of these courses package will undertake the work on some problem which is applicable back home. Approximately about 600 participants from 46 countries have undertaken.

And then publication of activities is encouraged in the Centres in the form of newsletters, brochures and memoirs(?). At the end of each batch, it is very nicely brought out(?), and, of course, it is available on the website of the Centre. The break-up of the students who have come through all the courses, as you see _____(?) courses and short courses in remote and GIS is quite large, around 180 of the total, followed by the SATCOM, about 60, SATMET about 72.

And here if you see, as I told you, remote sensing and GIS is a year course, that is an ultimate. Initially we did not many students in the space science but _____(?) still continues. And here, you can see that quite a few countries have _____ *(not clear)*

As I said, after the initial one-year after they did the Diploma(?), they are eligible for a Masters in Technology degree. We have arranged through affiliation through Andhra University and there were _____ *(not clear)*. The only problem with this _____(?) is quite a few students know they are capable and they return to back home in order to continue and we talked most to students who can benefit by giving fellowships in the country itself. We call it a Space-2(?) Fellowship where they can do the M.Tech at the Government of India's(?) expense in the country. We just started and about eight students are currently waiting _____ *(not clear)*.

These are the plans for the future. Consolidate, expand the research, improve the quality of education, especially with the Internet modules. As I said, the region-specific project are encouraged.

To sum up, with the consistent support of the host country and the encouragement from the Office for Outer Space Affairs, the Centre is helping capacity-building in the region. More countries in the region can benefit, and strengthening the financial support will help organizing more courses for the region. Basically today we have some limitation of the number of the courses and candidates whom we can take. Once you have more finance, one can do that.

Thank you very much.

(Note from typist: this speaker was difficult to understand)

Mr. C. AREVALO (Colombia) (First Vice-Chairman) *(interpretation from Spanish)*: Thank you very much. I very much appreciate the very interesting presentation made by Mr. Sundararamaiah. I would like to ask the room if anyone has any comments or questions, any additional ideas to express.

I see there are none.

Then we will continue with the next presentation which is that of Mr. Alexandre Khun from France. He will make a presentation called "GAREF Aerospatial". You have the floor Sir.

Yes, I was giving the floor to France first who will make some brief comments by way of introduction.

Mr. J.-Y. TREBAOL (France) *(interpretation from French)*: Mr. Chairman, just a few words, Sir, if I may, before the young people make their presentation in the context of space and society, space and education. We wanted these youths to make the presentation of their activities themselves so I would just request your indulgence. These are not professionals and they are not in show-biz and as they have come a great distance, so I am just asking if you

might authorize this that we could have some pictures taken of them during the presentation, if we may Sir.

Thank you.

Mr. C. AREVALO (Colombia) (First Vice-Chairman) *(interpretation from Spanish)*: Yes, I entirely agree, and as I am currently in the Chair, I think it is fine and spontaneity of young people will make it a very interesting presentation indeed and we fully endorse it and please go on.

Mr. A. KHUN (France) *(interpretation from French)*: Thank you very much Mr. Chairman. Mr. Chairman, ladies and gentlemen. It is a pleasure for me to present the activities of the Aerospatial Club of young French people, GAREF Aerospatial.

This is something which has been written by Charles _____(?) and myself, my name is Alexandre Khun and we supervise the _____ *(not clear)* one of the oldest members of the Club.

In the 1960s, people got very passionate about space scientific activities and development in the area of science and technologies and this was the result of the space race and this led to groups of amateurs interested in space coming up out(?) and they wanted to try to do their own experiments. Initially, these groups brought together students who had very sound scientific training but there were accidents as a result of the fact that there were makeshift thrusters used. The National Centre for Space Studies, which is the French Space Agency, played a vital role here when it came to scientific clubs and they gave advice when it came to safety and so on and they provided thrusters and they also made sure that launching campaigns could happen nationally in situations of entire safety and this can be to especially for young people. And there are now 100 such space clubs in France and about 500 projects are implemented every year by the CNES and its partners. These projects, sometimes just telling schoolchildren and children about things and sometimes go as far as real scientific experiments carried out by students, I am thinking of experimental rockets, balloon probes and so on. Amongst the French clubs, the GAREF Aerospatial, it is atypical. It was set up in 1964 in Paris and it was supported, it is supported by major partners such as the Paris Municipality and the CNES and I would like to underline the role of a number of players in France, young people, the CNES and its partners, and I will then focus on three kinds of experiments, satellite, balloon and rocket, that have been undertaken by the Club. One of them took place on an institution(?) initiative, that is involving the CNES. This was the satellite experiment, TZ(?) launched in 1981 which was launched by Ariane LO-4 and a second one which was a simpler one which involved small initiation balloon probes, this is the HORIS(?) Project. And then thirdly, something undertaken by young people which is _____ *(unclear)*, this is the ATALAUNT(?) experimental rocket launched in 1998.

I would like to start by describing the particular role played by the CNES for young people. Its public establishment responsible for dealing with issues of space in France and it has a duty, therefore, to provide education in this area and education is a major priority for the CNES. And a special department has been set up for this. This is the Space Culture Service which deals with education and young people. Its aim is to talk about space and its applications to young people and to use space as an item involved in education apprenticeship, I am thinking of experimental method and so on and teamwork and other such phenomena. Now, this body has close links with the National Education System, with the Planet Science Association, a system which is the umbrella organization for all aerospatial space clubs in France, and with cultural partners such as the Cite(?) l'Espace in Toulouse and some museums and the idea is to help young people learn about these things.

The CNES provides the young people with all kinds of opportunities and they are appropriate to the various different age ranges. These are micro-rockets, mini-rockets, experimental rockets, stratospheric balloons and so on and they are implemented under its control, in partnership with the Planet Science Association.

The CNES, via the Nova(?) Space Company, on a biennial basis, organizes flights, parabolic(?) flights on the Airbus A-300-0G and it also allows for micro-gravity experiments to take place. These are open to young people. There are two opportunities _____(?) per year. On the one hand, people at school and the other for students and for space clubs. There are three projects involved in each flight and each project can only fly once.

Exceptionally, when it is worth it, when the experiment is worth it, the CNES can also include an amateur club experiment in a professional launching campaign, for instance, for the use of stratospheric balloons or the launching of rockets at the Guyane Space Centre in Kuru(?) and this is something that has been on various different occasions by my Club, the GAREF Aerospatial, and we are going to be talking about the experiments later on.

In addition, foreign clubs can also take part in our national campaign, or European-level campaigns, and they are organized jointly by the CNES and the Planet Science Association and the important thing here is to keep to safety rules and procedures, and normally speaking, there are two or three clubs from abroad that take part every year. For instance, at the recent Space Festival, there were Brazilian, Canadian, British, German, Belgian and Japanese clubs represented in 2005.

Now, before going into the three kinds of experience (experiments?) that have been undertaken with the help of the CNES, I would like to talk about my club, the GAREF Aerospatial.

This was a club which was set up in Paris in 1964 on the initiative of young people who were very excited about high-technology in space. And in 1975, it was set up as a scientific club for young people as part of the municipality in Paris and it is a member of the National Association Planet Science. It is designed for all young people between the ages of 15 and 24 who, irrespective of their level of schooling, the only criterion is how motivated they are. GAREF is notable for being managed by its members. They are in charge of their own projects and they, in a communal way, carry out all kinds of activities during their leisure time and these can be quite simple and they can be quite high-level space projects. I am thinking of design of balloon probes, experimental rockets and also scientific and technical regular visits and also going out into the field.

This has been going on for 40 years. It has been rigorous. It has been well-managed and a number of experiments which have received awards have taken place and, therefore, we have been able to acquire the support and the competence of our partners. I am thinking, on the one hand, the Paris Municipality, the Mayor's Office, which finances some of our activities. Secondly, the CNES, which, as part of its young people's policy, advises the members on their projects and provides help with the logistics in operations when it comes to launching sites and also provides for safety measures. And there are a number of other companies, public and private companies, like France Telecom, the SNPE, the _____ *(unclear)*, the DGALRBA and so on which are involved on a one-off basis in projects. The association is a good way to empower young people and to teach them to work in a team and methodically and rigorously. This is an excellent starting point when it comes to student life and subsequently for professional life.

I would now like to talk about the actual experiments that we have done at the GAREF Club. The first is a satellite experiment called "TZ(?)" which took place as a result of a national competition. In order to promote the European launch of Ariane and to tell young people about it, the CNES organized the Ariane 80 competition in 1978. This was a national competition which involved 800 students and schoolchildren, or students rather, from 27 different educational regions and there were two categories, one artistic and the second technical. The jury was presided over by Mr. Hubert Cryan(?), who is the President of the CNES, and it included Professors Aujay(?), Coulon(?), Denice(?) and Levie(?). On 26 November 1978, the Paris GAREF got the first prize for a proposal which was to do with to look into the electronic density of the plasma in the ionosphere between 200 and 2,000 kilometres from the Earth. And this led to the most complicated experiment ever undertaken by GAREF Paris to this day. The entities which supported the Club, I am thinking of the research and development part of France Telecom, CNET, the CNES, and the Paris Municipality provided extra funding throughout the experiment and this was true when it came to logistics and material required for launching.

The aim of the experience was to measure the density in the electrons of plasma in a part of the ionosphere when markers are ionized by the rate(?) by solar ultraviolet radiation between 200 and 2,000 kilometres from the Earth. This experiment allowed us to look at the influence of solar activity on the ionosphere and after a number of weeks, we decided to put this experiment in the CAT, the Ariane Technological Capsule, which is part of the Ariane L)4 flight and we got the necessary authorization from the European Space Agency.

During the development of the experiment, an engineer from the CNES in Toulouse was in charge of the interface problems, interface issues when it came to the Ariane Technological Capsule, the CAT, and this was placed on the Madik(?) satellite. And what you can see here is the various different components in the capsule that I have just mentioned.

Scientifically speaking, the experiment was supported by the CRPE in Orleans, which is the Research Centre on the Physics of the Terrestrial and Planetary Environment, and the members of the GAREF Club received advice and were able to undertake a number of plasma container tests in order to check that the measurement instrumentation was working properly.

The system is made up, in fact, of a quadrapolar probe with two transmitting parts and two receiving parts and when it came to measurements, the frequency was between 200 kHz and 10 MHz which is sent to the emitting probes, the transmitting probes, and this allowed us to determine the density of plasma in the ionosphere.

An onboard computer pilots the transmitter and the receiver and stocks the data. The data are subsequently via a tele-commanded order sent to Earth by a tele-measure system, 150 MHz and 2,500 bits per second. And I think it is important to note here that we were the first to satellize a computer based on a 6,800 micro-processor.

The whole thing was designed by young people. I am thinking of the transmitter, the receiver, the computer and the power system. The CNES provided the batteries, the tele-measurement transmitter and the tele-commanded receiver, the remote control receiver. The GAREF was helped by when it came to training in space technologies, and so I am thinking of vibrations, permit(?) vacuums and so on, they were helped by the CNES in Toulouse. The total mass of the experiment onboard the Technological Capsule of the L05 flight was 35 kilograms, 21 kilograms being counted for the batteries, and the expected range was 14 days. This led to the TZ experiment being launched in Kuru(?) during the launching _____ *(not clear)* in December 1941. In December 2001, on 20 December at 1.29, the LO4 Ariane satellite rocket took off as part of the Madik's(?)-A mission. And 15 minutes later, the TZ experiment was in elliptical(?) orbit between 200 and 36,000 kilometres from Earth with a revolution time of 636 minutes. And for 18 days, we were able to receive the data from this mission.

As regards results, TZ carried on to function perfectly until the batteries ran out on 8 January 1988. A number of plasmaspectra were interpreted as a result of this. We were helped by the CRPE engineers here and a number of good results were obtained. And the experiment came to an end when the entity re-entered the atmosphere on 21 November 1988.

This is a very good sample of the role that the CNES plays in France when it comes to encouraging scientific activities amongst young people when an experiment justifies this and this had international repercussions. Hundreds of articles were published and a lot of television programmes were broadcast. And it was also a very good way of promoting space leisure, if you like, and encouraging people to take an interest in space activities.

And we are now going to look at a number of video scenes which will illustrate the experiment. Could we please go ahead with that?

Video

I am sorry. I know it was not a very high quality video. So apologies for that.

The GAREF Aerospatial teams have, therefore, carried out some major prestigious experiments over the last few years but they have also used techniques which are more accessible to young people, I am thinking of balloon probe pods, and the three most recent experiences are HORIS(?)-1, 2 and 3 experiments involve small pods, low-weight, these are about 10 dm cubed and weighing less than two and half kilograms, and they carried out flights which lasted two or three hours and reached altitudes of 30,000 metres. They were launched jointly by the CNES and the Planet Science Association between 2002 and 2004. The main scientific objectives were observation by digital photography from the Earth and from the horizon and categorization(?) of the Earth and of the horizon, categorization(?) of the atmosphere, in particular continuous measurements of temperature and pressure altitude and GPS position. All these experiments represent an ongoing development in terms of science and technique. Each of the experiments used electronics which were entirely designed by GAREF teams and the electronic modules were all piloted by a miniature kind of computer, PC-104, for instance, and for tele-measurement or remote measurement, we used a miniature transmitter in S-Band plus 30 DBM up to 2,235(?) MHz and a flat aerial, circular polarization aerial. In order to deal with and process and stock these data, the members of the team used special software and the transmission of the digital photographs, and you can see some on the screen in real-time, they are of very high quality, meant that a number of applications such as observation of the dense layers of the atmosphere and organization of human facilities on the Earth, but it also allowed us to measure the radius of the curvature of the Earth. And I could say, in conclusion, that despite limited dimensions, the last three balloons have given rise to very interesting results, given their technical nature.

Now another video where you can see more about these HORIS(?) projects.

Video

I now am going to talk about the Attalant(?). This is an experimental rocket. The TZ experiment was, to some extent, an CNES initiative, thanks to a competition which we won at my club. On the other hand, Attalant(?) was actually a GAREF initiative but it was given its scale and given its technical nature, we had to have special help from the CNES and we had a launch at the Guyane Space Centre and it took six years altogether, between 1992 and 1998.

Following the success of the experimental rockets which were launched at the beginning of the 1990s, the team decided to set up an experiment that was on a bigger scale in order to study the flight perameters of a rocket which would reach Mark III and this is the biggest and fastest experimental rocket ever built by amateurs in Europe. A number of people were involved in this project. The three main partners were the Paris Municipality, when it came to a general contribution, France Telecom, the R&D Department in particular provided a room(?) of measurement and aerial equipment, the CNES was involved when it came to logistics, especially in terms of remote measurement and radar. And a number of companies were involved, such as the SNPE for the thruster, Enirah(?), which is the National Office for Space Study and Research and they were involved in optimizing the trajectory of the rocket, the LRBA, the Ballistic and Aerodynamic _____(?) Laboratory with regards to centrifugal vibration and collision tests, Parichut(?) for parachutes, Aerospatial in Kuru, the actual launching Ariane-Espace for the stocking of the thruster and for the cutting rope(?) and a company Deutsch and Endeveco(?).

The aim of this project was to look at a Mark III rocket in flight and to look at various difference including the air friction, rotation acceleration, vibration, the development of the internal pressure in the thruster, in order to check the way it is functioning, atmospheric pressure and measurement of constraints on the structure of the rocket in order to check the process of manufacture which have been developed by the GAREF(?). All the data were remote transmitted by a remote transmitter in S-Band between 2,235 MHz plus 37 DBM with a rate of 38 kilobits per second. And we used a thruster weighing 74 kilograms with 44 kilograms of fuel and we had to be very careful about the fire safety here and that was something that was done by the Space Centre in Guyane. As regards the electronics, again something which we did in its entirety, we used 21 sensors with 10 electronic cards (cars?) using an interfaced technique. And we also included a remote measurement at transmitter.

The launch took place between the 4 and 20 February 1998 in Kuru at the Guyane Space Centre, and given the size of the experiment, we had to follow some very strict safety rules, similar to an Ariane launch, and we had to use CSG operational means, including the Jupiter(?) Control Room. The launch took place on 13 February 1998 at 15 hours local time at the Fusesun(?) site, five kilometres from the Ariane site. It reached Mark 2.6, that is about 3,200 kilometres per hour, after 2.7 seconds, and it continued its flight and reached an altitude of 18,350 metres after some 56 seconds. And after separation, thanks to the core(?) that I mentioned earlier, it came back via parachute and was recovered by a helicopter which was provided by the Fire Service in Paris. It was recovered eight kilometres from the launch area. And the duration of the flight was just over 20 minutes, 20 minutes 0.29 seconds. The trajectory was followed by a CSG _____(?) orbit returning(?) to radars.

As regards results now of this experiment. The real culminating altitude was very close to what we had actually calculated, thanks to a programme which we put together, and our margin of error was less than 350 metres per hour at an altitude of 18,350 metres. Our margin of error was 350 metres altogether. And the only thing we would not take into account was the influence of winds.

From the aerodynamic point of view, the trajectory was an optimal one because it did not actually deviate from its trajectory. It reached its highest point and the carbon epoxy compound resisted the mechanical constraints of the flight which were equivalent to four tons during the thrust phase.

The accelermetric(?) measurements are plus 51G and the deceleration measurement of minus 5.3G was measured.

The temperature measures that were taken at different points of the cone were satisfactory, demonstrating a temperature of 234 degrees centigrade at the point of the cone and about 150 at the generator point.

As for any project, the technical point that there is also the administrative management which was very cumbersome but it is clear that the results of such an experiment, in addition to studying, it is absolutely vital when it comes to the current economic context and it is all worth the effort that we put into to making sure it was a success.

And I would like to conclude by saying that the policy of the CNES in France with regards to young people has meant that a large number of amateur space clubs have been able to get involved and they are able to get involved in their own experiments relevant to space and they can do this in complete safety. And this is something which encourages people to take interest in science and in particular in space. And given that the space sector has a long future in front of it, such activities are ever more necessary.

And I would like to end by showing you my last video which shows the Attalant(?) experiment which I have just shown you and I would like to thank you very much for your attention.

Video

Mr. C. AREVALO (Colombia) (First Vice-Chairman) *(interpretation from Spanish)*: I would like to make some final remarks on this subject. I think we were all quite impressed by the presentation. We were struck not only by the content but also the form and on behalf of the Committee, we would like to congratulate you and the young people who have come with you, the GAREF Aerospatial Group. We have been able to see a unique example of how space science and technology can be made accessible to young people. And I would also like to say that it is very important for institutions participate in this kind of partnership, and you underscored that very well. And further, I would like to highlight the role played by CNES in this area. It is important to support young people and we see that not only is CNES playing this role but we saw other important institutions playing this kind of role in partnership during this presentation. Space is a support for education and not just education playing the role of support to space and we saw how that works in both directions in this presentation. You showed that very well and the experimental nature was sought after and promoted, not only by *in situ* science. You know that in Latin America, we have similar types of activities under way and I think it is very important as well.

And finally, I have a remark which is about the importance of the foreign clubs and the establishment of international networks. That is vital. I think that it is important for us and it is important that your example be known to young people in other countries as well and I am sure that this might happen next year. Already we have put the issue of young people on the agenda for the Space Conference of the Americas next year. There will be important Latin America-wide experiments being conducted and we will be highlighting that at the Space Conference of the Americas. So I can but end by encouraging you to continue as you have been doing, continue along this path and be rest assured that you will be accompanied by young people from other countries.

Are there any other questions? Would anyone like to make any comments or ask any questions about this presentation?

As I see it is not the case, then I will pass the baton of the chairmanship back to our Chairman.

The CHAIRMAN: Distinguished delegates, before I adjourn our meeting, let me go back to last Thursday. And last Thursday, Karl Doetsch reminded us as follows. In future, it will not be enough to restrict our attention simply to space applications on Earth. It is clear that our future has a complement in space and it is this complement that will increasingly capture the attention of future generations, not only because of the unique desire to explore, but more importantly because of the significance that _____(?) resources will eventually play in life on Earth. We have just witnessed a clear example of what Karl Doetsch was talking about. And I want to thank CNES and GAREF youth club for this particular contribution to the Committee of the matured where the youth have come to make an impact and I am sure they made a significant impact.

So on their behalf and on behalf of the other two presentations and the speakers, the Committee thanks all of you.

Now distinguished delegates, I would now like to adjourn this meeting but before doing so, I would like to inform delegates of our work schedule for this afternoon.

We will promptly meet at 3.00 p.m. and at that time we will resume our consideration of agenda item 7, that is the Report of the Scientific and Technical Subcommittee on its Forty-Second Session, to hear a progress report from the Chairman of the Working Group on the Use of Nuclear Power Sources in Outer Space on its ongoing intersessional meetings.

We will also continue our consideration of agenda item 9, Spin-off Benefits of Space Technology: Review of Current Status, and subsequently begin our consideration of agenda item 10, Space and Society, with emphasis on space education.

We will also continue our consideration of agenda item 6, Implementation of the

Recommendations of UNISPACE III. At the end of our afternoon's session, there will be also three technical presentations by representatives of Japan, UNESCO and a presentation on the KEO Project.

Also this afternoon, the Working Groups on Space Debris and the Use of Nuclear Power Sources in Outer Space of the Scientific and Technical Subcommittee will continue holding their intersessional meetings. I understand that these meetings will start at 2.00 p.m. in their respective rooms.

Are there any questions on this schedule of work for this afternoon?

If not, I thank you very much for your attention this morning and look forward to seeing you at 3.00 p.m.

The meeting is adjourned.

The meeting adjourned at 13.05 p.m.