

IWG-2 Views A and B on the US Preliminary View on Agenda Item 1.20

Agenda Item 1.20: To consider the results of ITU-R studies and spectrum identification for gateway links for high altitude platform stations (HAPS) in the range between 5 850-7 075 MHz in order to support operations in the fixed and mobile services, in accordance with Resolution **734 (Rev.WRC-07)**.

Summary

Members of IWG-2 considered proposed changes to the existing U.S. preliminary view on agenda item 1.20 contained in Document WAC/007. This preliminary view was developed prior to creation of the WRC Advisory Committee for WRC-11.

After thorough discussion, IWG-2 members were unable to reach agreement on the proposed modifications to the U.S. preliminary view on this agenda item. Consequently, two views on the proposed modifications to the U.S. preliminary view were developed.

View A (contained in Attachment A to this document) is supported by Aerovironment and Stratocomm and reflects the views of these companies. IWG-2 as a whole did not review and approve the text provided in Attachment A.

View B (contained in Attachment B to this document) is supported by SES Americom, Globalstar, Intelsat, ICO, Hughes Network Systems and DIRECTV and reflects the views of these companies. IWG-2 as a whole did not review and approve the text provided in Attachment B.

Beyond the substantive disagreements on the proposed modifications to the preliminary view, IWG-2 did consider two additional points and agreed they should also be conveyed through the WAC to the FCC. Specifically, that any discussion of possible identification of two channels of 80 MHz each in the range 5850-7075 MHz for HAPS gateway links is, under Resolution **734 (Rev. WRC-07)**, addressing possible identification for HAPS within the fixed service, and not identification of spectrum generally within a frequency band; and that there is a need for new electromagnetic compatibility studies for HAPS in the fixed service with respect to all other services with allocations in the particular bands, including other applications in the fixed service.

IWG-2 respectfully submits this document and the attached two Views to the WRC Advisory Committee for consideration.

ATTACHMENT A

View A regarding the US Preliminary View on Agenda Item 1.20

**RATIONALE FOR THE CHANGES TO THE PRELIMINARY VIEW (PV)
OF THE UNITED STATES REGARDING WRC-2011 AGENDA ITEM 1.20
(HAPS)
PROPOSED BY AEROVIRONMENT AND STRATOCOMM**

Executive Summary

- The current Preliminary View (PV) of the United States on HAPS was adopted before the establishment of the FCC's WAC, without the participation of any proponents of this emerging, commercially oriented, telecommunications technology and with no technical basis or support for its conclusions. As such, it will prevent the implementation and utilization of HAPS systems that would represent a new, desirable and cost-effective option for many countries around the world.
- The fundamental concern with the PV is that it incorporates wording that proposes a completely different and much more restricted regulatory status for HAPS gateway links than is contemplated by Agenda Item 1.20, which states specifically that studies and spectrum identification is to be "in accordance with Resolution 734."
- Specifically, Resolution 734 resolves that the sharing studies should be extended "with a view to identifying....channels... for gateway links...in bands already allocated to the fixed service, *while ensuring the protection of existing services.*" But the existing PV states that "The identification of any spectrum..." *should not constrain the use of [any such spectrum] by any application of the services to which they are allocated.*"
- Those differing statements imply vastly different regulatory regimes:
 - Any identification for spectrum for HAPS restricted to bands already allocated to the fixed service, where provisions of Article 9 for the coordination of satellite and terrestrial services would apply.
 - The use of the words "shall not constrain" implies a much more restricted regulatory regime. It would permit unrestricted expansion of other systems into areas currently being served by HAPS gateway stations. It would be totally unfair and unreasonable, would be detrimental to a HAPS operator and would destroy its business.

- The current PV -- through use of the word “constrain” – has effectively made the premature, technically unsupported decision that sharing is not possible, not only before any of those studies have been completed, and before ascertaining the levels of interference that might be caused, but even before considering the mitigation techniques that could be taken to reduce any possible interference to acceptable levels.
- The PV should be revised to reflect the exact wording of the resolution:

“The United States supports the studies for potential HAPS identification in the 5 850 – 7 075 MHz band. The identification of any spectrum for HAPS in the 6 GHz band should ensure the protection of existing services in the range 5850-7075 MHz and in adjacent bands.”

Introduction

The establishment of WAC-2011 in January, 2009, is the first time the FCC has sought the views of industry on Preliminary Views (PVs) of the United States for WRC-2011. Therefore, the FCC's adoption of recommendations for Preliminary Views is one of first impression. Consequently, we urge the Commission to consider each PV on its own merits, that is, de novo, without giving any preference to the PVs that have been adopted by other government agencies.

For the first time ever, the FCC did not establish a WAC for this impending ITU Conference until two full years after the conclusion of the previous Conference, WRC-07, which adopted the Agenda Items that were to be considered at WRC-2011.

This is especially important in the case of WRC-2011 Agenda Item 1.20, on the possible identification of spectrum around 6 GHz for gateway links for High-Altitude Platform Stations (HAPS), the commercial and non-Federal Government implementations of which would clearly fall under the exclusive aegis of the FCC.

Preliminary Views on this Agenda Item were adopted by NTIA and the US State Department before the establishment of the FCC's WAC and without the participation of any proponents of this emerging, commercially oriented, telecommunications technology.

Following its adoption as a Preliminary View of the United States by the State Department in August, 2008, this PV on HAPS was presented at the September, 2008 meeting of PCC-II of CITELE, the Inter-American Telecommunications Commission. Unless that PV is revised, it will remain the US view at the next meeting of PCC-II in June, 2009.

The crux of our concern with the State Department's PV is that it incorporates wording that proposes a completely different and much more restricted regulatory status for HAPS gateway links than is contemplated by Agenda Item 1.20, which states specifically that studies and spectrum identification is to be "in accordance with Resolution 734."

Specifically, Resolution 734 resolves that the sharing studies should be extended "with a view to identifying....channels... for gateway links... *while ensuring the protection of existing services.*" But the existing State Department PV state that "The identification of any spectrum..." *should not constrain the use of [any such spectrum] by any application of the services to which they are allocated.*" Those differing statements imply vastly different regulatory regimes as discussed below.

Rationale

Beginning in 1965, the Fixed-satellite service now shares, on a Primary basis, some 19,325 MHz between 3400 MHz and 51.4 GHz with other Primary services (typically the fixed and mobile services)¹. Successful, efficient use of shared orbit and spectrum, has been made possible over the past 44 years through the use of Article 9 of the Radio Regulations which includes: The principle of First-come, First served; Advance Publication; Coordination and adherence to ITU-R Recommendations and certain other radio Regulations governing power limits and antenna standards, and which take into account the performance requirements and interference susceptibility of all systems using the shared bands.

On the other hand, the use of the words "shall not constrain" implies a much more restricted regulatory regime. The word "constrain" in the Radio Regulations is the antithesis of "to share"². Webster's New Collegiate Dictionary defines "constraint" as "to confine," "to hold back," "to bring into narrow compass." Those senses are carried over into the Radio Regulations as a term of art. Typically, the word constrain appears in more than 30 of the ITU's Radio Regulations, as limitations on a radiocommunication service, for example: "The use of band X by service Y shall not impose constraints on service Z" or "Service A shall not constrain the development and use of services B and C in band D."

Systems in all co-Primary services which have allocations in a band can now expand, extend and develop, but they cannot do so at the expense of previously

¹ As a Primary service, the FSS now shares 19,325 MHz of bandwidth with other co-Primary Services between 3400 MHz and 51.4 GHz, not counting: bands designated exclusively military by the US; those bands designated in the RRs for feeders to other satellite services; and ITU FSS allocations that are Regional rather than world-wide. If 160 MHz were to be identified for HAPS gateway links it would represent 0.0083 of the total, or less than one percent of the total current FSS shared spectrum allocation.

² To "constrain" one service in a band used by other services is tantamount to saying "you can use the spectrum as long as we are not using it and you don't interfere with our use now or in the future"

existing systems in any of the other Primary services. Unrestricted expansion of other systems into areas being served by HAPS gateway stations would be totally unfair and unreasonable, would be detrimental to a HAPS operator and would destroy their business

The sharing studies as envisioned by the ITU-R in Resolution 734 are underway in several countries including the United States, but without waiting for results of those studies, the United States -- through use of the word "constrain" -- has effectively made the premature, technically unsupported decision that sharing is not possible, not only before any of those studies have been completed, and before ascertaining the levels of interference that might be caused, but also before considering the mitigation techniques that could be taken to reduce any possible interference to acceptable levels.

HAPS need for Gateway Link spectrum

Gateway links are essential to connecting HAPS systems with terrestrial based networks for voice, data and video communications and to connect HAPS systems with the PSTN, with cell-phone providers, with world-wide providers of broadband communications and with television and sound broadcasters, that is, primarily for backhaul-type connectivity and not directly for end-user service links.

There are two reasons why additional spectrum in the 6 GHz band needs to be identified for HAPS gateway links.

One reason is the need to identify some additional spectrum for connecting user terminals with HAPS platforms, as in the case with the 47.2 – 47.5 and 47.9 – 48.2 GHz bands: Without the identification of an additional 2 x 80 MHz spectrum in the 6 GHz band, for gateway links, those two, 300 MHz-wide, bands must be used *both* for two-way links between platform and user terminals *and* for two-way links between platforms and gateway stations. That means that the capacity of a HAPS system to serve user terminals would be reduced by about 25%, since 2 x 80 MHz of its limited spectrum would have to be diverted to provide gateway links.

A second, and even more important reason for the identification of additional spectrum for gateway links, is when the spectrum for user-terminal/platform links is not authorized for use as gateway links. That is the case of HAPS platforms serving as base stations for IMT, as permitted by Resolution 221. The S-band frequencies identified in that Resolution are to be used exclusively for transmissions between the HAPS platform "base" station and the cellular telephone users: They cannot be used for the gateway links that would be necessary to connect those calls to the PSTN and for INTERNET access.

Furthermore, the only other spectrum identified for use by HAPS that could be used for gateway links is the 47 and 49 GHz bands. But those bands are severely affected by high-rain-rates and would be unusable or impractical in

tropical, humid parts of the world. However, the 6 GHz band now under consideration for gateway links would be quite suitable in such areas and would therefore be helpful in expanding cell phone and other service coverage to parts of the world with such climates that also have poor telecommunications infrastructure.

In both of these cases, in our view, the regulatory status of the gateway links must be the same as that of the platform/user terminal links.

If that was not the case, and systems of other services having allocations in the band identified for gateway links were allowed to expand *without restriction* into the same geographic areas in which gateway stations were already operating, there would be interference between HAPS and those other, new, intruding systems.

Spectrum in the 47.2 - 47.5 GHz and 47.9- 48.2 GHz bands has been identified for use by HAPS since WRC-2000. HAPS are essentially co-Primary with other services in these bands. That means Article 9, with its principle of “first-come, first served” applies and, with it, the procedures for Advance Notice (API) and Request for Coordination (AP4).

If HAPS gateways were required to cease operation to eliminate the interference, the entire HAPS system would be cut off from interconnection with the rest of the world. With that prospect, it is extremely unlikely that investors and operators would ever implement any HAPS systems.

Evolution of the current Preliminary View

The source of Agenda Item 1.20 is the text of Resolution 734 (WRC-07) which resolved simply:

to invite the ITU-R to extend sharing studies, with a view to identifying two channels of 80 MHz each for gateway links for HAPS in the range from 5850 to 7075 MHz, in bands already allocated to the fixed service, *while ensuring the protection of existing services [emphasis supplied]*.

The Draft PV of the Radio Conference Subcommittee (RCS) [of the IRAC, the Committee within NTIA/Department of Commerce representing government users of the radio frequency spectrum] adopted on August 7, 2008 added a phrase about adjacent bands. It stated:

Identification of any spectrum for HAPS in the 6 GHz band should insure protection of all services in the 5850-7075 MHz band, as *well as in adjacent bands [emphasis supplied]*.

It appears that by retaining the phrase “should insure protection of all services,” the concern of the RCS related only to interference between HAPS gateway

links and government allocations in adjacent bands, not to sharing of the HAPS band with other users of that band. Specifically, it is our understanding that the addition of the phrase about adjacent bands was over a concern that emissions from government high-power radars in lower adjacent bands could cause interference to HAPS Platforms or Gateway stations.

We believe that if radars comply with the existing Radio Regulations on out-of-band emissions in conjunction with a small guard band between 5850 MHz and the lowest frequency of any spectrum identified for HAPS gateway stations, there would be no unacceptable interference to HAPS, and we responded to the concern of the RCS by proposing to add the phrase “as well as in adjacent bands” to our revision of the PV.

Our proposed revision of the Preliminary View on HAPS is given in Annex 1.

View of other governments and international bodies

The United States appears to be in a distinct minority of administrations regarding possible identification of 160 MHz of 6 GHz spectrum for HAPS gateway links³.

Consider the action relating to the US PV on HAPS taken by International ITU-R Working Party 5C at its November, 2008 meeting. The US contribution, Document USWP 5C/129, “Interference analysis modeling...”, was an extensive, detailed, technical document that analyzed sharing between HAPS and other services in the prospective band. At its beginning, this contribution quoted Resolution 734 which called for “ensuring the protection of existing services.” But it then added the following contradictory text -- not just mirroring - - but greatly expanding, the US PV:

“...without unduly constraining the future operations and expansion of FSS, FS and other services.”

That text clearly implies a vastly different regulatory regime than the one used for co-Primary services sharing a band.

The International ITU-R Working Party in Geneva in November 2008 deleted only that statement, while retaining all of the document’s technical contents and restored, verbatim, the language of Resolution 734. It also added the following text:

³ In this regard, the Report of the US Delegation to the 1948, Third Safety-of-Life-at Sea Conference is informative: “Do not press proposals which are clearly impossible of acceptance.” (“The Role of the United States in the International Telecommunication Union and Pre-ITU Conferences,” by Mildred L. B. Feldman, © 1975.

“Resolution 734, *recognizing h*) also indicates a *potential limit on future deployment of existing services which must be taken into account when examining sharing studies [emphasis supplied].*”

The current views of European Conference of Post and Telecommunications (CEPT) are also representative of international opinion on this issue. As noted in Document WAC/002(13.01.09) with regard to Agenda Item 1.20, the CEPT states that it “agreed to support extended studies, with the aim of *ensuring adequate protection of existing services including conventional fixed service stations.*”

The Asia Pacific Telecommunication Union (APT), long a supporter of HAPS initiatives, can also be expected to oppose any such “without constraining” language. APT was the initiator of the first Regional proposal leading to the need for HAPS gateway links and extension of the former Resolution 734 to call for certain sharing studies above 3 GHz

Feasibility of Sharing

Our revision of the PV does *not* claim that sharing is feasible: HAPS is an application in the fixed service, but it does not have the same interference creating and susceptibility characteristics of typical fixed service systems.

But the adoption of Agenda Item 1.20, by all the nations participating in WRC-07, and its focus on the 5750-7075 MHz band, supports the assumption that studies might well show that sharing *could* be feasible. To conclude that sharing is infeasible before those studies have been completed is not good spectrum engineering or radio-regulatory practice.

This proposal to revise the existing US PV is *not* the place to prove decisively that sharing *is* feasible and practical. But it is a place to provide a likely scenario that indicates that studies could show that sharing would be feasible and practical if coupled with appropriate limitations and restrictions on system technical parameters. Details of interference scenarios involving the Fixed-satellite service and the mitigation techniques that could be employed to reduce such interference are given in Annex 2.

Developers of HAPS technology in the United States and elsewhere in the world are described in Annex 3.

Decisions at WRC-07 Affecting Radio Regulations Containing the phrase “Shall Not Constrain the Development and Use of...”

WRC-07 Document 378, A Report from Committee 5 to the Plenary, included a “Report of the Director on the Activities of the Radiocommunication Sector” came to conclusion that Radio Regulations that include the wording “...shall not

constrain the development and use..." "is of an operational nature and that no regulatory action is expected from the Bureau." And further recommends to the Plenary that RRs containing "operational provisions" "do not affect the regulatory status of the services mentioned in these provisions.

Relevant extracts of that Report are given in Annex 4.

ANNEX 1 (to ATTACHMENT A)

**REVISION OF THE PRELIMINARY VIEW OF THE US ON
WRC-2011 AGENDA ITEM 1.20 (HAPS)
PROPOSED BY HAPS PROPONENTS IWG_-2**

AGENDA ITEM 1.20: *To consider the results of ITU-R studies and spectrum identification for gateway links for high altitude platform stations (HAPS) in the range between 5 850-7 075 MHz in order to support operations in the fixed and mobile services, in accordance with Resolution 734 (Rev.WRC-07)*

ISSUE: Different segments of the 5 850-7 075 MHz frequency band are utilized for fixed, fixed-satellite, and mobile services. Resolution 734 (WRC-07) resolves to invite ITU-R to extend the sharing studies, with a view to identifying two channels of 80 MHz each for gateway links for HAPS in the range from 5 850 to 7 075 MHz, in bands already allocated to the fixed service, while ensuring the protection of existing services.

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BACKGROUND:

Previous WRCs (WRC-97, WRC-2000, WRC-2003 and WRC-2007) have undertaken initiatives to examine HAPS types of applications in various frequency bands. Due to the fact that all previous studies were carried out in frequency bands significantly higher than 5 850-7 075 MHz, new electromagnetic compatibility (EMC) studies will have to be initiated and conducted. The EMC studies will have to address HAPS ability to coexist with mobile, fixed satellite services and other applications in the fixed service, as well as with the radiolocation service, which is allocated in bands adjacent to 5850 MHz and remote sensing systems which operate in the 6475-7075 MHz band under RR No. 5.458. Until those studies are complete, the Regulations governing the use of the two, 6 GHz 80 MHz-wide channels that may be identified for HAPS gateway links cannot be specified.

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U.S. VIEW:

The United States supports the studies for potential HAPS identification in the 5 850 – 7 075 MHz band. The identification of any spectrum for HAPS in the 6 GHz band should not constrain the use of the 5 850-7 075 MHz band or the adjacent bands by any application of the services to which they are allocated. ensure the protection of existing services in the range 5850-7075 MHz and in adjacent bands.

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ANNEX 2 (to ATTACHMENT A)

INTERFERENCE AND INTERFERENCE MITIGATION TECHNIQUES

The following interference paths could exist, between HAPS gateway links the Fixed-satellite service in the 5850-7075 MHz band. Similar paths would exist between those links and other systems in the Fixed service, and many of the

same mitigation techniques and technology could be employed to reduce that interference.

**The 775 MHz band from 5850 – 6700 MHz,
(The FSS is allocated only in the EARTH-TO-SPACE (UP) DIRECTION:
The following interference paths could exist between HAPS and the FSS:**

HAPS spectrum for Gateway links also in the UP direction

Interference path 1: From HAPS gateway transmitter to FSS space station receiver

Interference path 2: From FSS earth station transmitter to HAPS platform receiver.

With HAPS spectrum for Gateway links in the DOWN direction

Interference path 3: From HAPS platform transmitter to FSS space station receiver;

Interference path 4: From FSS earth station transmitter to HAPS gateway receiver.

**The 375 MHz band, 6700- 7075 MHz,
The FSS is allocated in both the EARTH-TO-SPACE (UP) and
SPACE-TO-EARTH (DOWN) DIRECTIONS:
The following interference paths could exist between HAPS and the FSS**

For FSS in the EARTH-TO-SPACE (UP) direction, same situations as above,
interference paths: 1, 2, 3 and 4:

For FSS in the SPACE-TO-EARTH (DOWN) direction, with Gateway links in the
UP direction:

Interference path 5: from HAPS gateway transmitter to FSS earth station receiver and

Interference path 6: from FSS space station transmitter to HAPS platform receiver;

For FSS in the DOWN direction, with Gateway links also in the DOWN direction:

Interference path 7: from HAPS platform transmitter to FSS earth station receiver and

Interference path 8: from FSS space station transmitter to HAPS gateway receiver.

Finally, amending the International Radio Regulations to identify a band for HAPS gateway links does not mean that all of these interference paths will necessarily be created. Note that Administrations can choose which services will be allocated within their own territories, as well as whether any frequencies identified for HAPS in the Radio Regulations may be used there, subject, of course, to the condition that services protected by the International RRs must be protected at the border and in space.)

Interference Mitigation Techniques

Interference path 1 can be mitigated by siting the Gateway station so that its main-beam does not point at a specific FSS space station, and that its sidelobes are greatly reduced in compliance with a standard to be adopted. Aggregate interference from all HAPS gateway stations within line-of-site of an FSS Space station must be considered.

Interference path 2 can be mitigated by orienting the FSS Earth station so that its main beam does not point at the HAPS platform, that its sidelobes are reduced in compliance with a standard to be adopted and that it takes advantage of natural and artificial site shielding.

Interference path 3 can be mitigated by requiring the sidelobe performance of the HAPS platform antennas to be greatly reduced and conform to a standard to be adopted. Aggregate interference from all HAPS platforms within line-of-sight to an FSS Earth station must be considered.

Interference path 4 can be mitigated by siting an FSS Earth station sufficiently far from a Gateway station (receiver), by reducing its antenna sidelobes in the direction of the Gateway station and by taking advantage of natural and artificial site shielding.

Interference paths 5-8 also need to be analyzed since the upper segment of the band, 6700-7075 MHz is also under consideration for use as HAPS gateway links.

ANNEX 3 (to ATTACHMENT A)

US AND FOREIGN DEVELOPERS OF HAPS TECHNOLOGY

There are at least five US companies developing HAPS systems and flight hardware. Several other companies around the world are also developing and promoting HAPS technology.

Aerovironment, Inc.

Aerovironment, Inc. developed several unmanned, solar-powered aircraft, one of which, Helios, set an altitude record for an airplane in sustained, level flight of over 96,000 feet. Helios also demonstrated its capability to act as a HAPS platform high above a metropolitan area to act as a: cell phone base station; a High-Definition television broadcasting station; and as a provider of two-way broadband communications – all of those services to an unmodified, stock, cell phone or to user terminals equipped with a 12-inch dish.

Aerovironment, a major manufacturer of unmanned aircraft, is also the developer of “Global Observer,” an unmanned, hydrogen-powered airplane that could provide not only the wide variety of telecommunications services listed above, but could provide a multiplicity of functions for state, local and the national government and commercial services, from a high-altitude, loitering aerial platform: optical relay and sensing (crime surveillance, traffic information and control, natural disaster information, etc. etc.) and chemical sensing at all altitudes up to seventy or eighty thousand feet, etc.

StratoComm Corporation

StratoComm is also a US based company that designs, builds, deploys and operates HAPS based systems for worldwide applications using stratospheric airships as the platform. StratoComm is a world leader and innovator in stratospheric airship and payload design and technology and is developing solutions for numerous customers around the globe. Their current focus is primarily in developing countries for underserved areas and populations.

StratoComm is now engaged in the implementation of a pre-HAPS transitional system, which is intended to provide multi-mode wireless communications to a large part of Cameroon in Africa.

Other High-Altitude Aircraft Programs in the US

The descriptions of the following programs have been excerpted from Internet websites solely to indicate current HAPS technology developments and do not necessarily imply endorsement of, or agreement with, any other sections of this

Attachment or the revision of the PV being proposed by Aerovironment and StratoComm.

Lockheed Martin

The Lockheed Martin High Altitude Airship (HAA™), an un-tethered, unmanned lighter-than-air vehicle, will operate above the jet stream in a geostationary position to deliver persistent station keeping as a surveillance platform, telecommunications relay, or a weather observer. The HAA also provides the Warfighter affordable, ever-present Intelligence, Surveillance and Reconnaissance and rapid communications connectivity over the entire battle space. The technology is available now and ready for integration and flight test.

This updated concept of a proven technology takes lighter-than-air vehicles into a realm that gives users capabilities on par with satellites at a fraction of the cost (1 to 2 orders of magnitude less). The HAA will also integrate reconfigurable, multi-mission payload suites. HAA is significantly less costly to deploy and operate and other airborne platforms, and supports critical missions for defense, homeland security, and other civil applications. Its operational persistence eliminates the need for in-theater logistic support. In position, an airship would survey a 600-mile diameter area and millions of cubic miles of airspace.

In April 2008, the HAA program transferred from the Missile Defense Agency to the U.S. Army Space and Missile Defense Command (USASMDC), located at Huntsville, AL. The USASMDC is continuing the development and demonstration of the HAA to align with the USASMDC mission. USASMDC is the Army specified proponent for space, high altitude, ground-based midcourse defense and serves as the Army operational integrator for global missile defense; and conducts mission-related research and development. USASMDC conducts space and missile defense operations and provides planning, integration, control and coordination of Army forces and capabilities in support of U.S. Strategic Command.

The eventual commercial applications of the HAA are just as numerous and just as varied as those proposed by all the developers of HAPS technology and systems around the world.

Boeing, Lockheed Martin and Aurora Flight Services

The “Vulture” a hydrogen-powered high-altitude long-life (five-year) aircraft is being developed under a DARPA contract with Boeing, Lockheed Martin and Aurora Flight Services.

Non-US Companies and Organizations

Other companies active in the development of HAPS systems include Swiss-based Stratxx (with Swiss, German and other participants) and the Russian-based Astelcom, which is in charge of the Russian Ministry Program for development and operation of a HAP network. Siemens, one of the participants in that program, is developing the telecommunications equipment for deployment and operation of wireless broadband networks such as WiMAX (wireless DSL) and UMTS (mobile 3rd generation) and has received authorization for operation in the 1910-1980 and 2110-2170 MHz bands. Japan and South Korea also have extensive HAPS development programs and the latter two have large research institutions devoted to HAPS technology and system implementation. Sky Station Australia has also a service and potential regional launch program.

HAPS work continues in the HAPCOS group of organizations coordinated by the University of York in the United Kingdom in a program previously funded by the European Union and involving academic and research institutions in several European countries.

Additional interest in HAPS elsewhere in the world was evidenced at WRC-07 by the several countries who added their names to the RRs relating to the use of the 27 and 31 GHz bands by HAPS in Regions 1 and 3 (5.537A and 5.543A): Bhutan, Cameroon, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Kazakhstan, Lesotho, Malaysia, Maldives, Mongolia, Myanmar, Uzbekistan, Pakistan, the Philippines, Kyrgyzstan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam. Russia and the CIS (now RCC) have been there since WRC03.

REFERENCES

Lockheed Martin HAA: www.lockheedmartin.com/products/HighAltitudeAirship/Index.htm

Google "VULTURE" or go to: www.aurora.aero/downloads/communications/pdf/apr_199.pdf; www.the-register.co.uk/2007/10/25/ink_storm_for_hydrogen_strato_bot_runner.up; www.aviationnews.eu/?p=1832; and; www.darpa.mil/TTO/solicit/BAA07-51/VULTURE_BAA_FINAL.pdf

EXTRACTS OF DOC 378

World Radiocommunication Conference (WRC-07)
Geneva, 22 October - 16 November 2007

PLENARY MEETING

Document 378-E
12 November 2007

Chairman, Committee 5

TENTH REPORT FROM COMMITTEE 5 TO THE PLENARY

(REPORT OF THE DIRECTOR ON THE ACTIVITIES OF THE RADIOCOMMUNICATION SECTOR)

Agenda item 7.1

Committee 5 considered the proposals under Agenda item 7.1 with respect to the Director's Report and came to the following conclusions:

Issues included in Part 2 of the Director's Report

1 Article 5

1.1 Application of Nos. 5.219, 5.220 and similar provisions

Committee 5 agreed to recommend to the Plenary to confirm the Bureau's understanding that, in Nos. 5.219 and 5.220, the wording "... shall not constrain the development and use of ..." is of an operational nature and no regulatory action is expected from the Bureau.

Committee 5 also agreed to recommend to the Plenary to confirm the Bureau's understanding that Nos. 5.286C, 5.392 and 5.532 contain operational provisions that do not affect the regulatory status of the services mentioned in these provisions.....**[unrelated remainder of document, deleted]**.....

Akira HASHIMOTO

Chairman, Committee 5

ATTACHMENT B

View B regarding the US Preliminary View on Agenda Item 1.20

Proposals made on behalf of HAPS proponents to modify the previously agreed Preliminary View of the United States with respect to Agenda Item 1.20(WRC-11) are opposed by the companies indicated in the cover letter. The HAPS proponents have proposed changes to the Background and the U.S View sections.

These changes are not supported by U.S satellite interests which use and are developing additional uses of the Fixed Satellite Service (FSS) allocations under examination in this agenda item. Opposition to the proposed changes is based on the following:

A. Background

1. There is an implication in the proposed changes that the availability of 2 X 80 MHz in the band 5850-7075 MHz is a foregone conclusion. Such a conclusion may not necessarily be correct given that studies have not been concluded with the incumbent services and associated users in the band.

2. The existing US View on this agenda item was previously considered in a Public Advisory Committee, and subsequently negotiated with the Executive branch through its representatives, and accordingly submitted to the CITEL PCC II which serves as the regional coordinating body for preparation of proposals to World Radiocommunication Conferences (WRC).

B. U.S. View

US satellite interests have a variety of systems operating in the referenced band. In addition, they continue to develop their use of the band based on proven systems and technology. Therefore, any new entrant in the band must not only protect those existing systems, but also not constrain their future development and expansion. In consequence, the existing P.V. should not be modified.