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| **Council Expert Group onCouncil Decision 482****Third meeting – Geneva, 6-7 June 2019**  |  |
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|  | **Document EG-D482-3/8-E** |
| **10 June 2019** |
| **English only** |
| **Chairman, Council Expert Group on Council Decision 482** |
| PROGRESS REPORT RECOMMENDING POSSIBLE REVISION TO DECISION 482 CONCERNING COMPLEX/LARGE NON-GSO SATELLITE FILINGS ANDEXCEPTIONALLY COMPLEX GSO SATELLITE FILINGS |

This document contains the progress report of the Chairman of the Council Expert Group on Council Decision 482 to the Council. This progress report contains two parts:

Part 1: Recommendations on the possible revision to Decision 482 concerning complex/large non-GSO satellite filings;

Part 2: Recommendations on the possible revision to Decision 482 concerning exceptionally complex GSO satellite filings.

PART 1

recommendations on possible revision to Decision 482
concerning complex/large non-GSO satellite filings

**1 Introduction**

At its 2018 session, Council established a Council Expert Group on Decision 482. The terms of reference of this group contain three tasks:

* to further examine Procedures B and C described in Document C18/36, while taking into account considerations contained in Documents C18/36 (Addendum 1), C18/75, C18/83 and C18/90, as well as contributions submitted to its meetings;
* to focus its examination of Procedure B on the cases of complex non-GSO satellite filings and to prepare a report containing recommendations about the possible revision of Decision 482 with regard to complex non-GSO satellite filings for submission to the 2019 ITU Council for action;
* once studies of complex non-GSO satellite filings have been completed, and subject to the Bureau providing information to this Council Expert Group that support the need to take action, to consider whether the approach of Procedure B should also be applicable to the cases of exceptionally complex GSO satellite filings (i.e. filings that require a very significant amount of additional time and resources to process). The results of the studies on these GSO filings should be reported to the 2019 ITU Council in a separate report, for action as appropriate.

This Group, chaired by Mr. Nikolay VARLAMOV (Russian Federation), held three meetings on 27-28 September 2018, 28 February-1 March 2019 and 6-7 June 2019 in the ITU headquarters in Geneva.

Following a more detailed examination of Procedures B and C, this report contains recommendations on possible revision to Decision 482 concerning complex/large non-GSO satellite filings.

**2 Background**

Since November 2014, the Radiocommunication Bureau has received requests for coordination for non-geostationary satellite systems operating in the fixed-satellite service consisting of tens of thousands (from 70 000 to more than 230 000) of satellites in more than 1 000 orbit planes, as opposed to maximum values around 840 satellites when Decision 482 was initially agreed. According to Decision 482, processing fees are calculated on the basis of the number of cost-recovery units and, in cases where the number of units exceeds 100, a flat fee is charged. At the date of this Report, for some of the abovementioned non-geostationary satellite filings, the number of units reached up to 254 000 units.

The current structure of Decision 482 was essentially decided by Council 2005, on the basis of [Document C05/29](https://www.itu.int/md/S05-CL-C-0029/en) on cost recovery for the processing of satellite filings that is referenced in the Decision (see *considering* *ebis*). According to this document, the introduction of a ceiling in the amount that can be invoiced for satellite cost recovery was mainly based on the fact that, in absence of a ceiling, “some specific satellite network filings would continue to give rise to large number of units, resulting in invoices of very important amount that administrations would keep on not paying; the increase of overdue payments and unpaid invoices result in shortfall of treasury for the Union to be covered by other sources of funding such as assessed contributions”.

However, at the time of Council 2005, available statistics for non-geostationary satellite systems were limited (31 filings with an average of 45 units per filing, the maximum number of units for a single filing being 576) therefore the flat fee above 100 units was understood as an average between satellite systems of similar complexity and was adopted based on the value chosen for geostationary satellite networks. Prior to the period 2013-2014, this assumption proved to be valid (in the period 2005-2012, there were 46 filings with an average of 53 units per filing, the maximum number of units for a single filing being 639). Council 2005 did not envision the sharp increase in units occurring since 2013.

At its 2017 session, the Council instructed the Radiocommunication Bureau to submit a study on the technical issues arising in connection with processing of complex non-geostationary satellite (non-GSO) systems. Then, at its 2018 session, the Council adopted a revision to Decision 482 incorporating Procedure A (“Separately computing charges for mutually exclusive configurations and adding them”) and created a Council Expert Group on Decision 482 to work on Procedures B (“Limiting the flat fee to a maximum number of units”) and C (“Introducing an additional fee for cases subject to Article 22 epfd limits”).

**3 Description of complex/large non-GSO satellite filings**

In this document, complex/large non-GSO satellite filings are those that have an impact on the average processing time of satellite filings by the Radiocommunication Bureau. In the cost recovery structure contained in Decision 482, the cost recovery unit, which is defined as the product of the number of frequency assignments, number of classes of stations and the number of emissions, summed up for all frequency assignment groups, represents the measure of the size of a filing.

Prior to the 2013/2014 period, requests for coordination for non-GSO satellite systems had an average number of cost recovery units of less than 100. Following this period, the average number of cost recovery units for these systems increased to more than 12 000 units, with one CR/C published with 254 000 units.

Prior to the 2013/2014 period, the average delay in processing, examining and publishing requests for coordination for each non-GSO satellite system was approximately 4.5 months. Following this period, the average delay increased to 6.3 months while more difficult cases took up to 10.4 months to complete. Since 2017, the average delay remained within 6.3 months and these difficult cases were no longer received.

**4 Categories and types of complex/large non-GSO filings**

The technical details used to characterize the various categories and types of complex/large non-GSO filings are provided in Annex 1.

**5 Procedures on how to review Decision 482 with regard to processing complex/large non-GSO satellite filings**

**5.1 Procedure A**

Council 2018 decided to implement this Procedure in Decision 482, as of 1st July 2018. The Radiocommunication Bureau indicated that, since this date, no coordination request of a non-geostationary satellite system including two or more mutually exclusive configurations has been received.

**5.2 Procedure B**

Council 2018 requested this Council Expert Group on Decision 482 to focus its examination of Procedure B on the cases of complex non-GSO satellite filings and to prepare a report containing recommendations on possible revision to Decision 482 concerning complex non-GSO satellite filings for submission to the 2019 ITU Council for action.

**5.2.1 Review/Examination of Procedure B relating to the cases of complex/large non-GSO satellite filings**

**Procedure B as presented in Document C18/36**

The current structure of Decision 482 was essentially decided by Council 2005, on the basis of [Document C05/29](https://www.itu.int/md/S05-CL-C-0029/en) on cost recovery for the processing of satellite filings that is referenced in the Decision (see *considering* *ebis*). At the time of Council 2005, available statistics for non-geostationary satellite systems were limited (31 filings with an average of 45 units per filing, the maximum number of units for a single filing being 576) therefore the flat fee above 100 units was understood as an average between satellite systems of similar complexity and was adopted based on the value chosen for geostationary satellite networks. Prior to the period 2013-2014, this assumption proved to be remarkably valid (in the period 2005-2012, there were 46 filings with an average of 53 units per filing, the maximum number of units for a single filing being 639). Council 2005 never envisioned the sharp increase in units occurring since 2013. Moreover, the extremely low ceiling on the processing fees encourages the unlimited creation of multiple system configurations.

On this basis, [Document C18/36](https://www.itu.int/md/S18-CL-C-0036/en) introduced Procedure B as follows:

*“(…) Procedure B would limit the flat fee to a maximum number of units (e.g. 1000 if the pre-2013/2014 period is chosen as reference). Beyond this maximum number, any supplementary unit would be charged at a value equal to the flat fee divided by the maximum number of unit (e.g. 1000). (…)”*

Such procedure would be applicable to categories C1 to C3 and N1 to N3.

It should however be noted that, according to [Document C05/29](https://www.itu.int/md/S05-CL-C-0029/en), the introduction of a ceiling in the amount that can be invoiced for satellite cost recovery was mainly based on the fact that, in absence of a ceiling, “some specific satellite network filings would continue to give rise to large number of units, resulting in invoices of very important amount that administrations would keep on not paying; the increase of overdue payments and unpaid invoices result in shortfall of treasury for the Union to be covered by other sources of funding such as assessed contributions”. Procedure B as presented in Document C18/36 does not take into account this aspect.

**Procedure B as presented in Annex 1 to Document C18/36(Add.1) and in Document C18/90**

Under the proposed Procedure B as contained in Document C18/36, there would be no upper bound to the proposed cost recovery fee increase. ITU-R Working Party 4A therefore proposed a mechanism “to limit the Cost Recovery fee as the number of units becomes very large” and suggested that “the Bureau may wish to consider a new second breakpoint number of units, where filings with more units than this new second breakpoint number do not incur any further increases in their Cost Recovery fee, in order to provide the similar benefits to the filing administrations as the current flat fee at 100 units provides. A graphical comparison of the current Cost Recovery, Procedure B, and WP 4A’s new second breakpoint are shown below in Figure 1.”

Figure 1

Graphical Comparison of Cost Recoveries

100

flat

fee

Units

CR Fee

start

fee

Now

break

point

100

flat

fee

Units

CR Fee

start

fee

Procedure B

corresponding

new upper

bound

CR Fee

Units

WP 4A

new second

breakpoint

**5.2.2 Impact of complex/large non-GSO filings on the activities of the BR relating to processing of these filings**

Noting that complex/large non-GSO systems are generally subject to coordination under Section II of RR Article **9**, their processing involves the following process, which is similar to GSO satellite networks:

1. Validation of data with respect to requirement in RR Appendix **4**;
2. Regulatory examination (including conformity check with Table of Frequency Allocation) under RR No. **9.35**/**11.31**;
3. Establishment of applicable coordination requirements under RR No. **9.36** (only for those networks that are subject to coordination), as appropriate;
4. Capture of the results of examination and publication in a BRIFIC under RR No. **9.38**.

**5.2.2.1 Validation of data**

Non-GSO satellite systems have additional data elements specified in Appendix **4** of the Radio Regulations compared to GSO satellite networks (orbital elements, phase angles of each satellite within each orbital plane, links between beams and orbits/satellites, orientation angles of beams, satellite antenna gain and spreading loss as a function of elevation angle, maximum and average beam peak eirp, etc.), which add to the complexity of the coordination examination.

For those non-GSO satellite systems that are subject to epfd limits contained in RR Article **22**, even more orbital parameters are required, including verifying whether the space station uses station-keeping to maintain a repeating ground track, and if the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other, specific precession rate etc.. In addition, several additional parameters are required for the calculation of epfd limits, such as the pfd/eirp masks, information on the exclusion zone etc. Procedure C is specifically addressing this issue.

Along with these additional data requirements, administrations often submit large amount of descriptions in the form of notes from administrations, for which the Bureau has to analyse, examine and translate for the publication in the special sections. Therefore the time required for the treatment for completeness and correctness of these complex non-geostationary satellite systems is significantly different.

**5.2.2.2 Regulatory examination**

Two main technical examinations have to be carried out when examining complex non-GSO filings under RR No. **9.35**/**11.31**, i.e. examining compliance with limits contained in RR Articles **21** and **22**.

**Examination of limits contained in RR Article 21**

For GSO satellite networks, the power flux-density (pfd) is calculated from a unique orbital longitude towards the Earth’s surface at a varying angles of arrival to determine the pfd excess for each frequency assignment.

This would be to some extent similar in the case of a non-GSO satellite system, if it had only one altitude for all satellites across all planes. One non-GSO satellite would then be sufficient to compute pfd levels for the entire constellation. However, when non-GSO satellite systems have more than one altitude within the constellation, pfd calculations need to be performed for each of the different altitudes. If there is a pfd excess for one altitude, an unfavourable finding has to be given for this case, which imply that the beam would need to be split in order to correctly represent the relationship between orbits and beams and that groups will also have to be split in order to give findings to the frequency assignments accordingly.

Furthermore, some of the larger non-GSO satellite filings received had an unprecedented scale of complexity in terms of varying altitude and beam configuration which went beyond the capacity of the corresponding tables in the SNS database and had to be treated manually using other means, especially concerning modifications to coordination requests of non-GSO satellite systems.

In addition, when the non-GSO satellite system is notified with a single orbital altitude, it is still possible to specifically indicate which orbital planes or even distinct satellites will be operating with specific beams. In terms of regulatory examination, the work carried out to take into consideration such specific beam/orbit links may involve complexity levels similar to that of an examination of a non-GSO satellite system having different orbital altitudes.

Noting that, in the past, the orbital configuration of non-GSO filings was rather simple, the pfd examination was performed manually. However, in light of the increase of complexity of non-GSO filings, the Bureau is developing an internal tool to render the pfd examination process more automated.

**Examination of limits contained in RR Article 22**

This issue is specifically addressed by the proposed Procedure C.

**5.2.2.3 Establishment of applicable coordination requirements**

Based on RR Appendix **5**, coordination under RR Nos. **9.12**, **9.12A** and **9.13** (as well as RR No. **9.21/B**) is simply triggered by frequency overlap, therefore, as long as the number of groups contained in complex non-GSO filings remains limited, the increase in orbital complexity will not lead to an increase of workload to establish coordination requirements.

However, in order to identify the list of administrations for coordination and agreement seeking under RR Nos. **9.14** or **9.21**, the visibility of the non-GSO satellite system in respect of terrestrial services has to be determined. This factor depends on the combination of inclination angle and the altitude of the non-GSO satellites. Hence, the increased number of unique inclination angles in combination with altitudes contributes to the increased complexity in examination of non-GSO satellite systems.

**5.2.2.4 Capture of the results of examination and publication**

The complexity in capturing the results of examination is essentially driven by the number of different groups contained in the non-GSO satellite filing as result of the need to split groups to distinguish between frequency assignments receiving favourable and unfavourable findings.

**5.2.3 Review of Cost Recovery fees for complex/large non-GSO satellite filings according to Procedure B**

Based on information provided by the Bureau, the processing of a coordination request of a non-geostationary satellite system is mainly divided into three steps:

* Receivability examination (“as received”, completeness, correctness)
* Regulatory and technical examination (compliance with RR Article **5** and with limits listed in the Rule of Procedure on RR No. **11.31**, coordination requirements)
* Publication of the CR/C special section in a BR IFIC (capturing regulatory findings, publication)

As it was noted during the first meeting of the Council Expert Group that the use of an individual time tracking mechanism for processing satellite filings was implemented in the early 2000 but finally abandoned in 2005, the values provided in this section are estimates and not based on any actual time tracking.

Estimated percentages of time spent by the various categories of staff on the three abovementioned steps together with the estimated amounts of time spent in processing satellite filing(s) were provided by the Radiocommunication Bureau in Document [EG-D482-2/3](https://www.itu.int/md/S19-EGD482-C-0003/en).

Taking into account the data provided by the Radiocommunication Bureau, Procedure B could be amended as follows:

5.2.3.1 No change to the methodology and fee for values from 0 to 25 000 units (corresponding to 96% of non-GSO submissions according to statistics contained in the Annex to Document EG-D482-2/3), i.e.:

 a) From 0 to 100 units, a fee linearly increasing from the start fee to the flat fee as currently contained in Decision 482.

 b) From 100 to 25 000 units, the flat fee as currently contained in Decision 482.

5.2.3.2 From 25 000 to 75 000 units, a fee linearly increasing from the flat fee as currently contained in Decision 482 to twice this value.

5.2.3.3 Above 75 000 units (corresponding to 2% of submissions according to statistics contained in the Annex to Document EG-D482-2/3), a second flat fee, which would be twice the flat fee currently contained in Decision 482 (this value is chosen because the overall processing time of the remaining 2% of non-GSO submissions may extend up to 106% of the average time spent for 96% of the filings).

**5.3 Procedure C**

Council 2018 requested this Council Expert Group on Decision 482 to further examine Procedure C.

**5.3.1 Review/Examination of Procedure C**

Document C18/36 describes Procedure C as introducing an additional fee for cases subject to RR Article **22** epfd limits:

“*At Council 2005, cost-recovery discussions were mainly related to geostationary satellite networks. Moreover, even if epfd limits were adopted in 2000, no epfd validation software was available. Consequently, no statistics of costs related to epfd examination were available and hence considered when establishing the various values contained in Decision 482. Now that an epfd validation software is available and that epfd examinations have started, the Bureau will be in a position to compute statistics of processing time of epfd examinations. However, to produce such statistics, additional examinations need to be completed in order to have a representative set of data. Nevertheless, if the processing time of epfd examinations is confirmed by such statistics as not strongly correlated with the number of units (see sections 2.8 and 3 of* [*Document 4A/408*](https://www.itu.int/md/R15-WP4A-C-0408/en) *for an explanation of the reason why such a situation is likely to occur), a footnote applicable to categories C1, C2, C3, N1, N2, N3 and N4 could introduce a flat fee in cases where epfd examinations have to be performed (see Annex 3 for a proposal of such footnote).*”

**5.3.2 Major costs elements/factors in checking compliance with epfd limits**

Contrary to some out-of-band epfd limits (see for example RR No. **5.443B**), the examination of compliance with the epfd limits contained in several provisions of RR Article **22** involves the actual calculation of the epfd levels produced by these assignments. The overall process consists in several tasks:

1. Preparation of input data

 1.1. Completeness examination when the data is received (including exchange with administration, requests for clarifications etc.)

 1.2. XML mask validation

 1.3. SNS data validation

 1.4. epfd validation scenario preparation

2. Computation of the epfd levels

3. Analysis and processing of the results

4. Publication of epfd results

The examination of the cases requiring longer run-time entails additional workload but the same steps apply. Factors affecting processing time for epfd examination include: total number of different scenarios, number of applicable limits, number of satellites used in each scenario.

In addition to these tasks, three main supporting activities are carried out:

A. Assistance to administrations

B. Maintenance and technical support of epfd validation software

C. Creation, maintenance and technical support of computer-aided tools

It has to be noted that a number of non-geostationary satellite systems subject to epfd limits contained in RR Article **22** are also subject to coordination RR No. **9.7B**. To establish coordination requirements under this provision, the epfd validation software has to calculate epfd levels for more than 40 very large earth stations. Since these earth stations have very large antennas (more than 10 meters in diameter) with antenna beamwidth of less than 0.2 degrees, the algorithm requires large amount of timesteps in the calculations to make sure that in-line events are obtained. For large constellations, this requires a very significant time to complete, even longer than RR Article **22** calculations.

On the basis of this above-described process, three main elements are driving the costs of examination of compliance with epfd limits contained in RR Article **22**: preparation of input data, software developments and software maintenance.

**5.3.2.1 Input data**

Following the availability of an appropriate software, the Bureau has initiated in 2017 the regulatory examination of previously published filings for which a qualified favourable finding was given in accordance with Resolution **85 (WRC-03)**, as well as newly received filings.

Since this process is relatively new, the time spent to complete task 1 above is currently longer than what could be expected for regular processes, notably because of a lack of harmonisation in input data, which requires more exchange with notifying administrations and more manual work than is normally the case for other examination carried out under RR No. **11.31**.

The need to harmonise, standardize and streamline the data items provided by notifying administrations on the basis of RR Appendix **4** data elements has been addressed by ITU-R Working Party 4A, together with the impact of the approval of revision 3 to Recommendation ITU-R S.1503 on 15 January 2018 (see [Circular Letter CACE/855](https://www.itu.int/md/R00-CACE-CIR-0855/en)), in the framework of preparation of WRC-19 agenda item 7 and has led to Issue H of this agenda item (see section 3/7/8 of the [Report of the CPM to WRC-19](https://www.itu.int/md/R15-CPM19.02-R-0001/en)).

Should WRC-19 decide to modify RR Appendix **4** it would reduce the time spent in preparing input data for examination of compliance with epfd limits of RR Article **22**.

**5.3.2.2 Software developments**

Based on the experience in addressing revision 2 to Recommendation ITU-R S.1503 and recent approval of revision 3 to Recommendation ITU-R S.1503 by Study Group 4 on 15 January 2018, the Bureau notes that software update may have to be conducted roughly every 4-5 years.

It is worth to mention that revisions to Recommendation ITU-R S.1503 are driven by contributions of the ITU-R membership and work conducted within ITU-R Working Party 4A.

Required costs for software updates stemming from revisions to Recommendation ITU-R S.1503 would largely depend on the modifications introduced by each revision. The relevant budget should be allocated to the Bureau.

Consideration should be given on whether such software updates should be:

a) incorporated in the regular cost recovery fee structure: this could only be based on historical data, that may or may not reflect the costs associated with future updates, or

b) discussed separately by the Council during the approval of biennal budgets: a possible procedure could be as follows: after the approval of a revision to Recommendation ITU-R S.1503, the Radiocommunication Bureau would prepare an assessment of the costs of the software update and present it to the next Council session approving a biennal budget so that the Council may decide on the appropriate level of budget required to implement this update.

**5.3.2.3 Software maintenance**

In addition to software developments, support contracts are also necessary to ensure a proper maintenance of the software. Noting that there are two independently-developed versions of the epfd validation software in order to be able to perform a cross-check of results before issuing regulatory findings, such support contracts are currently externalized (30 000 CHF per contract).

Considering the potentially longer lifecycle of the new version of the software corresponding to revision 3 of Recommendation ITU-R S.1503, support service may require a higher ceiling. It is expected that this ceiling may be established as 30 days per contractor which would result in 45 000 CHF per contract.

Such maintenance costs, which are anticipated to be recurrent, may be candidate to inclusion in the regular cost recovery structure fee, as per Procedure C. The value of the fee for each individual submission however depends on the anticipated number of submissions subject to epfd limits per year.

The following table lists the coordination requests and notifications of non-geostationary satellite systems subject to epfd limits of RR Article **22** that were received and published by the Bureau since 2007 (note: the regulatory deadline of some of these systems has already expired):

|  |  |  |
| --- | --- | --- |
| **Year of receipt** | **Coordination requests** | **Notifications** |
| 2007 | 1 | 0 |
| 2008 | 1 | 0 |
| 2009 | 0 | 0 |
| 2010 | 0 | 1 |
| 2011 | 2 | 1 |
| 2012 | 2 | 0 |
| 2013 | 4 | 0 |
| 2014 | 18 | 1 |
| 2015 | 12 | 0 |
| 2016 | 10 | 1 |
| 2017 | 13 | 0 |

If the four last years are considered representative of the expected levels of submissions in the future, an average number of submissions subject to epfd limits (and hence to Procedure C) per year could be chosen as 13.75. The flat fee of Procedure C could then be set at 6 545 CHF (value rounded by considering two support contracts of 45 000 CHF each) or 4 363 CHF (value rounded by considering two support contracts of 30 000 CHF each).

**5.3.3 Non-recurring and recurring costs associated with checking compliance with epfd limits**

Concerning the main items driving costs of the process of examining conformity of certain non-GSO satellite filings with the equivalent power flux density (epfd) limits contained in RR Article **22**, three main factors have been identified:

a) a decision by WRC-19 under Issue H of agenda item 7 is expected to be the essential long-term solution to the improvement of input data (see sections 5.3.2.1 and 6);

b) software developments required by revisions to Recommendation ITU-R S.1503: the Council Expert Group recommends that such software updates should be considered by the Council during the approval of biennal budgets (see section 5.3.2.2);

c) software maintenance: such costs are expected to be recurrent so could be incorporated into the regular cost recovery structure fee, as per Procedure C. Methodologies for determining this flat fee, as well as examples, are proposed in section 5.3.2.3. Noting however the small amounts in question and the limited number of statistical values, this may also be deferred for further consideration.

**6 Other considerations**

The distinction between mutually and non-mutually exclusive configurations is currently made in a note provided by the responsible administration together with the submission of the filing. In that regard, the related proposed new data items in RR Appendix **4**, as outlined above, would help to clarify the information provided.

**7 Recommendations for consideration by 2019 session of ITU Council**

**7.1 Possible revision of Decision 482 with regard to complex/large non-GSO satellite filings**

**7.1.1 Procedure B**

1. It is recommended that the cost recovery methodology currently contained in Decision 482 (Modified 2018) be adapted to also address the case of complex/large non-GSO satellite systems as follows (see also Figure 2 below):

1.1 No change to the methodology and fee for values from 0 to 25 000 units, i.e.:

a) From 0 to 100 units, a fee linearly increasing from the start fee to the flat fee as currently contained in Decision 482.

b) From 100 to 25 000 units, the flat fee as currently contained in Decision 482.

1.2 From 25 000 to 75 000 units, a fee linearly increasing from the flat fee as currently contained in Decision 482 to twice this value.

1.3 Above 75 000 units, a second flat fee, which would be twice the flat fee currently contained in Decision 482 (this value is chosen because the overall processing time of the remaining 2% of non-GSO submissions may extend up to 106% of the average time spent for 96% of the filings).

Figure 2

Recommended Cost Recovery scheme

2 x current flat fee

CR Fee

Units

100

25 000

75 000

Current start fee

Current flat fee

Proposals for a possible revision of Decision 482 with regard to complex/large non-GSO satellite filings are provided in Annex 2.

2. Moreover, it is further recommended that the course of action outlined above should be used provisionally as of 1 July 2019 with a review after 2-3 years, if necessary, during which the related information/statistics could be collected and also the decisions of WRC-19 on relevant issues related to non-GSO satellite systems should be taken into account.

**7.1.2 Procedure C**

Decision 482 should not be reviewed/revised to implement Procedure C (related to epfd examination) at this point in time in view of possible related decisions to be taken at WRC-19.

Nevertheless, consideration should be given on whether the required costs for software updates stemming from revisions to Recommendation ITU-R S.1503 should be:

a) incorporated in the regular cost recovery fee structure: this could only be based on historical data, that may or may not reflect the costs associated with future updates, or

b) discussed separately by the Council during the approval of biennal budgets: a possible procedure could be as follows: after the approval of a revision to Recommendation ITU-R S.1503, the Radiocommunication Bureau would prepare an assessment of the costs of the software update and present it to the next Council session approving a biennal budget so that the Council may decide on the appropriate level of budget required to implement this update.

Annex 1

Categories of complex/large non-GSO filings

As mentioned in section 3, the existing cost recovery structure set forth in Decision 482 defines the cost recovery unit as the product of the number of frequency assignments, number of classes of stations and the number of emissions, summed up for all frequency assignment groups. This definition does not however take into account the complexity and size of the orbital parameters of non-GSO filings. This Annex 1 describes four parameters that can be used to categorize complex/large non-GSO filings.

**A1.1 The size of the constellation**

Since 2013, the Bureau has been receiving increasingly larger constellations of satellites in the requests for coordination for non-GSO satellite systems. Satellite systems consisting of tens of thousands of satellites (from 70 000 to more than 230 000 satellites) have been published in CR/C special sections.

Even for APIs, the Bureau has been receiving recently APIs for non-GSO satellite systems using frequency bands that are not subject to coordination, which contained thousands of satellites. When these are submitted at the notification stage, the examination procedure will be significantly more complicated than say, a cubesat, which is currently being charged with the same flat fee as any non-GSO satellite systems using frequency bands that are not subject to coordination.

**A1.2 The number of different orbital altitudes within the filing**

When non-GSO satellite systems have more than one altitude within their constellation, then RR Article **21** pfd calculations need to be performed for each of the different altitudes. If there is a pfd excess and an unfavourable finding is given, the beam would need to be split in order to correctly represent the relationship between orbits and beams, then the group would also need to be split in order to give findings to the frequency assignment accordingly.

Furthermore, some of the larger non-GSO satellite systems that were received had an unprecedented scale of varying altitudes and beam configurations, which went beyond the capacity of the SRS database tables and had to be treated manually using other means, especially concerning modifications to coordination requests of non-GSO satellite systems.

Prior to the 2013/2014 period, the number of different altitudes in a request for coordination for a non-GSO satellite system is 1. After that period, there are several non-GSO satellite systems that have multiple (up to 7) different altitudes.

**A1.3 The number of different orbit inclinations within the filing**

In the period prior to 2013/2014, the number of unique inclination angles for a non-GSO satellite system was, on average, one. However, following this period, the number of unique inclination angles received went up to 20 for some non-GSO satellite systems.

**A1.4 Number of mutually exclusive configurations**

For requests for coordination for non-GSO satellite systems, WRC-15 allowed administrations to submit satellite systems with more than one set of orbital characteristics. However, they should indicate that the different sub-sets of orbital characteristics would be mutually exclusive, and the set of orbital configurations that would finally be put into operation will have to be determined at the notification stage, at the latest.

This provides the notifying administration with the flexibility to coordinate the frequency assignments using different orbital configurations, but to notify and bring into use only one configuration. However, this requires the Bureau to examine them in practice as separate satellite systems, especially in terms of epfd examination.

Prior to 2013/2014, all non-GSO satellite systems submitted to the Bureau contained only one configuration. Since then, Bureau has received non-GSO satellite systems with up to 10 mutually exclusive configurations.

The consideration of this factor led Council 2018 to incorporate Procedure A in Decision 482.

Annex 2

draft revision of DECISION 482 (modified 2019)

**Implementation of cost recovery for satellite network filings**

The Council,

*considering*

*a)* Resolution 88 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference on the implementation of cost recovery for satellite network filings;

*b)* Resolution 91 (Rev. Guadalajara, 2010) of the Plenipotentiary Conference on cost recovery for some products and services of ITU;

*c)* Council Resolution 1113, on cost recovery for the processing by the Radiocommunication Bureau of space notifications;

*d)* Document [C99/68](http://www.itu.int/itudoc/gs/council/c99/docs/docs1/068.html) reporting on the Council Working Group on implementation of cost recovery for satellite network filings;

*e)* Document [C99/47](http://www.itu.int/itudoc/gs/council/c99/docs/docs1/047.html) on cost recovery for some ITU products and services;

*ebis)* Document [C05/29](http://www.itu.int/md/S05-CL-C-0029/en) on cost recovery for the processing of satellite network filings;

*f)* that WRC-03 and WRC-07 adopted provisions referring to Council Decision 482, as amended, under which a satellite network filing is cancelled if payment is not received in accordance with the provisions of this decision;

*g)* that WRC-07 significantly revised the regulatory procedures associated to the fixed-satellite service Plan contained in Appendix 30B that entered into force as of 17 November 2007;

*h)* that the date of entry into force of Decision 482 (modified 2005) was 1 January  2006,

*recognizing*

the practical experience of the Radiocommunication Bureau in implementing cost-recovery filing charges and the methodology as reported to the Council at its 2001 to 2007 sessions in accordance with Decision 482 as revised by the Council,

*decides*

1 that all satellite network filings concerning advance publication, their associated requests for coordination or agreement (Article 9 of the Radio Regulations (RR), Article 7 of Appendices 30/30A to the RR, Resolution 539 (Rev.WRC-03)), the use of the guardbands (Article 2A to Appendices 30/30A to the RR), requests for modification of the space service plans and lists (Article 4 of Appendices 30 and 30A to the RR), requests for the implementation of the fixed-satellite service plan (former Sections IB and II of Article 6 of Appendix 30B to the RR up to 16 November 2007), and requests for the conversion of an allotment into an assignment with modification which is beyond the envelop characteristics of the initial allotment, the introduction of an additional system, modification of the characteristics of an assignment in the List of Appendix 30B to the RR (Article 6 of Appendix 30B to the RR as from 17 November 2007) shall be subject to cost-recovery charges if, and only if, they have been received by the Radiocommunication Bureau on or after 8 November 1998;

1*bis* that all satellite network filings concerning notification for recording of frequency assignments in the Master International Frequency Register (Article 11 of the RR, Article 5 of Appendices 30/30A to the RR and Article 8 of Appendix 30B to the RR) received by the Radiocommunication Bureau on or after 1 January 2006 shall be subject to cost-recovery charges if, and only if, they refer to advance publication or modification of the space service plans or lists (Part A), requests for the implementation of the fixed-satellite service plan or requests for the conversion of an allotment into an assignment with modification which is beyond the envelop characteristics of the initial allotment, the introduction of an additional system, the modification of the characteristics of an assignment in the List of Appendix 30B to the RR, as appropriate, received on or after 19 October 2002;

1*ter* that all requests for the implementation of the fixed-satellite service plan (former Sections IA and III of Article 6 of Appendix 30B to the RR) shall be subject to cost-recovery charges if, and only if, they have been received by the Radiocommunication Bureau on or after 1 January 2006;

1*quater* that all requests for consolidation of frequency assignments in the MIFR of different GSO networks submitted by an administration (or an administration acting on behalf of a group of named administrations)at the same orbital position into frequency assignments of a single satellite network received by the Radiocommunication Bureau on or after 1 July 2013, shall be subject to cost recovery charges,

2 that for each satellite network[[1]](#footnote-1) filing communicated to the Radiocommunication Bureau, the following charges [[2]](#footnote-2)shall apply:

a) for filings received up to and including 29 June 2001, Decision 482 (C-99) applies; these filings are charged at publication in accordance with the fee schedule in force at the date of publication;

b) for filings received on or after 30 June 2001, but before 1 January 2002, Decision 482 (C-01) applies; these filings are charged at publication with a flat fee in accordance with the fee schedule in force at the date of receipt, and an additional fee (if any) according to the fee schedule in force at the date of publication;

c) for filings received on or after 1 January 2002, but before 4 May 2002, Decision 482 (C-01) applies; the flat fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice, and the additional fee (if any), calculated in accordance with the fee schedule in force at the date of publication, is payable after publication of the notice;

d) for filings received on or after 4 May 2002, but before 31 December 2004, Decision 482 (C-02) applies; the flat fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice, and the additional fee (if any), calculated in accordance with the fee schedule in force at the date of receipt, is payable after publication of the notice;

e) for filings received on or after 31 December 2004 but before 1 January 2006, Decision 482 (C-04) applies; the flat fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice, and the additional fee (if any), calculated in accordance with the fee schedule in force at the date of receipt, is payable after publication of the notice;

f) for filings received on or after 1 January 2006 but before 1 January 2009 except those received under Appendix 30B as from 17 November 2007, Decision 482 (C-05) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice;

g) for filings received on or after 1 January 2009, including those received under Appendix 30B as from 17 November 2007, but before 14 July 2012, Decision 482 (C-08) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice;

h) for filings received on or after 14 July 2012, but before 1 July 2013, Decision 482 (C-12) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice;

i) for filings received on or after 1 July 2013, Decision 482 (C-13) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice;

j) for filings received on or after 1 July 2017, Decision 482 (C-17) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice;

k) for filings received on or after 1 July 2018, Decision 482 (C-18) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice;

l) for filings received on or after 1 July 2019, Decision 482 (C-19) applies; the fee, calculated in accordance with the fee schedule in force at the date of receipt, is payable after receipt of the notice,

3 that the fee shall be regarded as a charge for a satellite network filing. There will be no charge for modifications which do not result in further technical or regulatory examination by the Radiocommunication Bureau, except modifications under 1*quater* above, including but not limited to the name of the satellite/earth station and its associated satellite name, name of the beam, responsible administration, operating agency, date of bringing into use, period of validity, associated satellite (and beam) or earth station name;

4 that each Member State shall be entitled to the publication of special sections or parts of the BR IFIC (space services) for one satellite network filing each year without the charges referred to above. Each Member State in its role as the notifying administration may determine which network shall benefit from the free entitlement;[[3]](#footnote-3)

5 that the nomination of the free entitlement for the calendar year of receipt by the Bureau of the satellite network filing based on the formal date of receipt of the filing shall be made by the Member State no later than the end of the period for payment of the invoice in *decides* 9 below. The free entitlement cannot be applied to a filing previously cancelled for non-payment;

6 that for any satellite network for which the advance publication information (API) was received prior to 8 November 1998, there will be no cost-recovery charges for the first coordination request referring to that API, regardless of when the Radiocommunication Bureau receives it. Any modifications received on or after 1 January 2006 shall be subject to a charge in accordance with *decides* 2 above;

7 that there will be no cost-recovery charges for any Part A submission involving the application of Article 4 of Appendices 30/30A received by the Bureau prior to 8 November 1998 or Part B submission involving the application of Article 4 of Appendices 30/30A where the associated Part A was received prior to 8 November 1998. Any request for publication in Part A received after 7 November 1998 under §4.3.5 up to 2 June 2000 and then §4.1.3 or §4.2.6 of Appendices 30/30A and corresponding Part B submitted under §4.3.14 up to 2 June 2000 and the §4.1.12 or §4.2.16 of Appendices 30/30A shall be subject to a charge in accordance with *decides* 2 above;

7*bis* that there will be no cost-recovery charges for any submission under §6.17 of Article 6 of Appendix 30B where the associated submission under §6.1 of that Article was received prior to 17 November 2007;

8 that the Annex (Schedule of processing charges) to this decision should be reviewed periodically by the Council;

9 that the payment of charges shall be made on the basis of an invoice issued upon receipt of the filing by the Radiocommunication Bureau and sent to the notifying administration or, at the request of that administration, to the satellite network operator in question within a period of a maximum of six months after issue of the invoice;

10 that any subsequent cancellation received by the Radiocommunication Bureau within 15 days of the date of receipt of the filing shall remove the obligation to pay the fee;

11 that publication of special sections or parts of the BR IFIC (space services) for the amateur-satellite service, the notification for recording of frequency assignments for earth stations, for the conversion of an allotment into an assignment in accordance with the procedure of former Section I of Article 6 of Appendix 30B, the addition of a new allotment to the plan for a new Member State of the Union in accordance with the procedure of Article 7 of Appendix 30B and submissions under resolves 3 and 4 of Resolution 555 (WRC-12) shall be exempt from any charges;

12 that the date of entry into force of Decision 482 (modified 2019) shall be 1 July 2019;

13 that the provisions of this decision need to be revised when further data from time recording are available,

*recommends*

that should Council[[4]](#footnote-4)\* revise the schedule in the Annex, any credits that may arise should be applied by the Bureau to subsequent invoices as requested by administrations,

*encourages Member States*

to develop domestic policies that will minimize the occurrence of non-payment and consequential revenue loss to ITU,

*instructs the Director of the Radiocommunication Bureau*

1 to enhance the Radiocommunication Bureau's electronic notice form software (SpaceCap) in order to enable the calculation of the best estimated charges associated with a satellite network filing of any type prior to its submission to ITU;

2 to submit an annual report to the Council on the implementation of this decision, including analyses of:

a) the cost of the different steps of the procedures;

b) the impact of the electronic submission of information;

c) enhancement in quality of service, including, among others, reduction of the backlog;

d) the costs of validating filings and requesting corrective action thereto; and

e) difficulties encountered in applying the provisions of this decision,

3 to inform the Member States of any practice used by the Radiocommunication Bureau to implement the provisions of this decision and the rationale for that practice.

ANNEX

**Schedule of processing charges to be applied to satellite network filings
received by the Radiocommunication Bureau on or after 1 July 2019**

| **Type** | **Category** | **Flat fee per filing (in CHF)( 100 units, if applicable)e)** | **Start fee per filing (in CHF)(< 100 units)** | **Fee per unit (in CHF)(< 100 units)** | **Cost-recovery unit** |
| --- | --- | --- | --- | --- | --- |
| 1 | Advance publication (A) | A1 | Advance publication of a non-geostationary-satellite network not subject to coordination under Sub-Section **IA** of Article **9**; Advance publication of inter-satellite links of a geostationary-satellite space station communicating with a non-geostationary space station provisionally not subject to coordination in accordance with the Rule of Procedure on No. **11.32**, §6 (MOD RRB04/35).Note: Advance publication also includes the application of No. **9.5** (API/B special section) and will not be separately charged. | 570 | Not applicable |
| 2 | Coordination (C) | C1\* | Coordination request for a satellite network in accordance with No. **9.6** along with one or more of Nos.  **9.7**, **9.7A, 9.7B**, **9.11, 9.11A, 9.12, 9.12A, 9.13, 9.14** and **9.21** of Section **II** of Article **9**, §**7.1** of Article **7** of Appendix **30**, §**7.1** of Article **7** of Appendix **30A**, Resolution **33** (Rev. WRC-03) and Resolution **539** (Rev. WRC-03).Note: Coordination also includes the application of, Nos. **9.1A**, **9.53A** (CR/D special section) and **9.41**/**9.42** and will not be separately charged.Note: For coordination requests of a non-geostationary satellite network where the notifying administration has indicated that the different sub-sets of orbital characteristics would be mutually exclusive, the processing charges are separately computed for each of the sub-sets and thereafter added to produce the processing charge of the satellite network. | 20 560 | 5 560 | 150 | Product of the number of frequency assignments, number of classes of station and the number of emissions, summed up for all frequency assignment groups |
| C2\* | 24 620 | 9 620 |
| C3\* | 33 467 | 18 467 |
| 3 | Notification (N)a) | N1\*d) | Notification for recording in the MIFR of frequency assignments to a satellite network subject to coordination under Section **II** of Article **9** (with the exception of non-geostationary-satellite network subject to No. **9.21** only).Note: Notification also includes the application of Resolutions **4** and **49**, Nos. **11.32A** (see footnote a), **11.41**, **11.47**, **11.49**, Sub‑section IID of Article **9**, Sections 1 and 2 of Article **13**, Article **14** and will not be separately charged.  | 30 910 | 15 910 |
| 57 920 | 42 920 |
| N2\* |
| 57 920 | 42 920 |
| N3\* |
|  |  | N4 | Notification for recording in the MIFR of frequency assignments to a non-geostationary-satellite network not subject to coordination under Section **II** of Article **9,** or subject to No. **9.21** only. | 7 030 | Not applicable |
| 4 | Plans (P) | P1 | Part A Special Section for a proposed new or modified assignment in the Regions 1 and 3 List or feeder-link Lists of additional uses under §**4.1.5** or proposed modification to the Region 2 Plans under §**4.2.8** of Appendices **30** or **30A**; or Part B Special Section for a proposed new or modified assignment in the Regions 1 and 3 List or feeder-link Lists of additional uses under §**4.1.15** (except Part B special section related to the application of Resolution **548** (WRC-03)) or proposed modification to the Region 2 Plans under **4.2.19** of Appendices **30** or **30A**b). | 28 870 | Not applicable |
| P2d) | Notification for recording in the MIFR of frequency assignments to space stations in the broadcasting-satellite service and its associated feeder-link in Regions 1 and 3 or Region 2 under Article **5** of Appendices **30** or **30A**b). | 11 550 |
| P3 | Coordination request in accordance with Article **2A** of Appendices **30** and **30A**. | 12 000 |
| P4 | Request for the conversion of an allotment into an assignment with modification which is beyond the envelop characteristics of the initial allotment, or for the introduction of an additional system, or for the modification of an assignment in the List in accordance with §6.1 of Article 6 of Appendix **30B**; or request for inclusion of assignments into the List for converted allotment with modification which is beyond the envelop characteristics of the initial allotment, or for an additional system or for modified assignments in the List in accordance with §6.17 of Article 6 of Appendix **30B**c). | 25 350 |
| P5d) | Notification for recording in the MIFR of frequency assignments to space stations in the fixed satellite service under Article **8** of Appendix **30B**. | 20 280 |

a) Fees for Categories N1, N2 and N3 are applicable to the first notification of assignments that also contains a request to apply No. **11.32A**. If the application of No. **11.32A** is not requested, 70% of the indicated fees will apply, with the remaining 30% to be charged to a subsequent request, if any, for application of No. **11.32A**.

b) Under this category, taking account that a filing for the broadcasting-satellite service and its associated feeder link in Region 2 includes both the downlink (AP30) and the feeder link (AP30A), which are examined and published together, the total fee application to such filing shall be twice the fee indicated in the column “Flat fee per filing”.

c) Fees for a request in accordance with §6.17 of Article 6 of Appendix **30B**also contains a possible subsequent request (resubmission) in accordance with §6.25. A request in accordance with §6.17 of Article 6 of Appendix **30B**for a submission treated as that under §6.1 in accordance with §7.7 of Article 7 shall not be charged.

d) For cases of consolidation of frequency assignments in the MIFR of different GSO networks submitted by an administration (or an administration acting on behalf of a group of named administrations) under Article 11 of the Radio Regulations, category N1 shall apply, for cases submitted under Appendices 30 or 30A, category P2 shall apply, and for cases submitted under Appendix 30B, category P5 shall apply.

e) For non-geostationary satellite networks, the flat fee for categories C1, C2, C3, N1, N2 and N3 is applicable from 100 units to 25 000 units. From 25 000 units to 75 000 units, there is an additional fee per additional unit, equal to the flat fee divided by 50 000. Above 75 000 units, there is no additional fee per additional unit.

**\* Definition of category for coordination (C) and notification (N)**

The category for coordination (C1, C2, C3) and for notification (N1, N2, N3) is related to the number of forms of coordination applicable to a particular satellite network coordination request or notification submission, as follows:

• C1 and N1 correspond to a satellite network filing referring to only one cost-recovery form of coordination (A, B, C, D, E or F). Both categories also include cases for which no form of coordination applies as a result of unfavourable finding under No. 11.31 of the Radio Regulations for all frequency assignments of the submitted filing, or cases including frequency assignments published for information only.

• C2 and N2 correspond to a satellite network filing referring to any two or three cost‑recovery forms of coordination amongst A, B, C, D, E or F.

• C3 and N3 correspond to a satellite network filing referring to any four or more cost‑recovery forms of coordination amongst A, B, C, D, E or F.

|  |  |
| --- | --- |
| **Cost-recovery form of coordination** | **Individual Radio Regulations forms of coordination** |
| A | No. 9.7, RS33.3 |
| B | AP30 7.1, AP30A 7.1 |
| C | No. 9.11, RS33 2.1, RS539 |
| D | Nos. 9.7B, 9.11A, 9.12, 9.12A, 9.13, 9.14 |
| E | No. 9.7A[[5]](#footnote-5) |
| F | No. 9.21 |

part 2

recommendations on possible revision to Decision 482
concerning Exceptionally complex GSO satellite filings

**1 Introduction**

At its 2018 session, Council established a Council Expert Group on Decision 482. The terms of reference of this group contain three tasks:

* to further examine Procedures B and C described in Document C18/36, while taking into account considerations contained in Documents C18/36 (Addendum 1), C18/75, C18/83 and C18/90, as well as contributions submitted to its meetings;
* to focus its examination of Procedure B on the cases of complex non-GSO satellite filings and to prepare a report containing recommendations about the possible revision of Decision 482 with regard to complex non-GSO satellite filings for submission to the 2019 ITU Council for action;
* once studies of complex non-GSO satellite filings have been completed, and subject to the Bureau providing information to this Council Expert Group that support the need to take action, to consider whether the approach of Procedure B should also be applicable to the cases of exceptionally complex GSO satellite filings (i.e. filings that require a very significant amount of additional time and resources to process). The results of the studies on these GSO filings should be reported to the 2019 ITU Council in a separate report, for action as appropriate.

This Group, chaired by Mr. Nikolay VARLAMOV (Russian Federation), held three meetings on 27-28 September 2018, 28 February-1 March 2019 and 6-7 June 2019 in the ITU headquarters in Geneva.

This report contains recommendations on possible revision to Decision 482 concerning exceptionally complex GSO satellite filings.

**2 Background**

With regard to submissions of exceptionally complex GSO satellite filings the table below shows, for 12-month periods starting on 1st July 2009 and finishing on 30th June 2018:

* the number of published coordination requests (for both GSO and non-GSO filings),
* the average number of units per publication,
* the median number of units per publication,
* the 95% percentile of number of units,
* the maximum number of units per publication,
* the number of publications with more than 100 000 units,
* the number of publications with more than 200 000 units, and
* the number of publications with more than 300 000 units.

The reason for including non-GSO filings in these statistics is to emphasize the exceptional feature of GSO filings having more than 200 000 units. As can be seen from the table, GSO filings with more than 100 000 units, while rare, have regularly been submitted and processed. The Radiocommunication Bureau considered that these types of satellite filings were a form of upper bound to the complexity of GSO filings. However, in recent years, the levels of 200 000 units then of 300 000 units have been exceeded.

These satellite filings remain rare and therefore the word “exceptional” is accurate to characterize them. However, from a processing point of view, they have a disproportionate impact on the overall examination and publication process, because they require additional computing resources, increased human analysis and may on rare occasions require software updates (design, implementation, tests and deployment).

For example, for each of the 6 coordination requests of geostationary satellite filings having more than 300 000 units that were received in 2017, the average time for receivability was 8.3 person-days (compared to 4.5 person-days for other satellite filings), the average examination time was 83.8 person-days (compared to 5.1 person-days for other satellite filings), the average time for preparing the special section was 17.5 person-days (compared to 2.5 person-days for other satellite filings).

A significant driver of the processing delay in the example above was the need for a BR software update. That may not be needed in the future. The specific data elements captured in the six filings above were not analysed. However, such filings require more efforts from the BR staff compared with satellite filings having averaged number of units (see table below) and may also increase the amount of coordination for subsequent submissions.

In order to address the regulatory side of these exceptional cases, the Radio Regulations Board, at its the 77th meeting (19 – 23 March 2018), “instructed the Bureau to consult with administrations on the significant impact on the processing time for complex and extensive satellite network filings, and to invite them to comply with the provisions of RR No. 4.1 when they notify the frequency requirements for their satellite networks.”

It should finally be noted that there were no notification of such exceptionally complex GSO satellite filings (the maximum number of units for the notification of a GSO satellite is 34 833, in the period from 1st July 2009 to 30th June 2018).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| From 1 July to 30 June | Number of published coordination requests | Average number of units per publication | Median number of units per publication | 95% percentile of number of units | Maximum number of units per publication | Number of publications with more than 100 000 units | Number of publications with more than 200 000 units | Number of publications with more than 300 000 units |
| 2009-2010 | 270 | 5391 | 1021 | 24024 | 143954 | 3 GSO (2 administrations) | 0 | 0 |
| 2010-2011 | 268 | 3357 | 942 | 14256 | 29763 | 0 | 0 | 0 |
| 2011-2012 | 266 | 3250 | 1240 | 14256 | 27610 | 0 | 0 | 0 |
| 2012-2013 | 396 | 3013 | 520 | 9638 | 164178 | 2 GSO (2 administrations) | 0 | 0 |
| 2013-2014 | 206 | 8465 | 1743 | 22723 | 184463 | 6 GSO (1 administration) | 0 | 0 |
| 2014-2015 | 218 | 9675 | 2510 | 27528 | 211680 | 2 GSO (1 administration), 3 NGSO (1 administration) | 1 NGSO (1 administration) | 0 |
| 2015-2016 | 248 | 8687 | 2691 | 24261 | 182282 | 2 GSO (1 administration), 1 NGSO (1 administration) | 0 | 0 |
| 2016-2017 | 309 | 14421 | 2417 | 74749 | 257696 | 8 GSO (1 administration) | 5 GSO (1 administration) | 0 |
| 2017-2018 | 303 | 14918 | 3117 | 33611 | 342409 | 8 GSO (2 administrations) | 6 GSO (1 administration) | 6 GSO (1 administration) |
| **Total** | **2485** | **7809** | **1724** | **23968** | **342409** | **31 GSO (4 administrations), 4 NGSO (2 administrations)** | **11 GSO (2 administrations), 1 NGSO (1 administration)** | **6 GSO (1 administration)** |

With respect to the exceptionally complex GSO filings, it is worth mentioning that this issue has 2 dimensions:

1. Processing of satellite filings by the Radiocommunication Bureau;

2. Difficulties that may be created to other administrations.

**3 Conclusion**

The Council Expert Group on Decision 482 received various proposals regarding the introduction of one or several additional break point(s) in the current GSO cost recovery scheme together with regulatory and administrative solutions. After consideration, the Group concluded that:

a) Regarding regulatory solutions, they are outside the mandate of the Group and require WRC decision. Therefore, Council may consider the matter and take decision, as appropriate;

b) Regarding administrative solution(s), Council may decide to endorse the instruction of the Radio Regulations Board to the Bureau to contact the notifying administration of those networks drawing their attention to the consequences of processing of such networks: staff resource absorption and complications which could have a negative impact for subsequent submissions. In this regard, it was indicated that it would be useful to establish possible criteria to initiate the action by the Bureau;

c) With respect to financial solution(s), the Group did not reach any conclusion at this stage due to the fact that the degree of effectiveness of such solution(s) is yet to be studied and carefully analysed.

In view of the above, the Group further concluded that the combination of the financial solution with regulatory and administrative ones is fundamental aiming at resolving this matter effectively.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. In this decision, the term “satellite network” refers to any space system in accordance with No. 1.110 of the Radio Regulations. [↑](#footnote-ref-1)
2. The fee per “unit” (see Annex) shall not be understood as a tax imposed on spectrum users. It is used here as a driver for the calculation of cost recovery relating to publication of satellite systems. [↑](#footnote-ref-2)
3. A submission of filings under Article 4 of Appendix 30 and Appendix 30A in the Regions 1 and 3 Plans, referring to a single orbital position with the same satellite name and received on the same date shall be considered as one “satellite network” filing for the purpose of free entitlement. [↑](#footnote-ref-3)
4. \* *Editorial amendment made by the secretariat* [↑](#footnote-ref-4)
5. Cost recovery for category C1 only. See also *decides* 11. [↑](#footnote-ref-5)