UNITED STATES OF AMERICA

PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.14: *to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method, and take appropriate action, in accordance with Resolution **653** (WRC-12)*

Background Information: Coordinated Universal Time (UTC) is the international standard time scale for practical timekeeping in the modern world. The basic unit of measurement is the internationally accepted Système International (SI) second, which is realized in practice by atomic clocks in national laboratories throughout the world. The Bureau International des Poids et Mesures uses clock information from these laboratories to coordinate the various national realizations of UTC. This process provides time with a stability of better than a billionth of a second per day for the international infrastructure that requires accurate timing information, such as communications, computer networks, navigation, and air traffic control. The Radio Regulations define UTC in No. **1.14** through incorporation by reference of Recommendation ITU-R TF.460-6.

The International Radio Consultative Committee (CCIR) formally adopted the system for UTC in Recommendation 374 in 1963. The CCIR introduced leap seconds into the definition of UTC beginning on January 1, 1972. In its Recommendation 460, the CCIR stated that UTC is a timescale that uses the SI second. The CCIR also stated the accounting of those seconds will be adjusted, when necessary, in 1 second steps to compensate for the slowing of the Earth's rotation rate.   This version of the UTC system remains in use today, defined by ITU-R (formerly CCIR) Recommendation ITU-R TF.460-6. Since their introduction, leap seconds have been inserted into UTC at irregular intervals because the slowing of the Earth's rotation rate is not uniform.

Much of our international infrastructure relies on steady, accurate timing. Many of these systems view leap seconds as disruptions of the count in the time stream. Resolution **653 (WRC-12)**, considering e, states "that the occasional insertion of leap seconds into UTC may create difficulties for systems and applications that depend on accurate timing." Given that our reliance on many of these systems and applications is both critical and growing with time, WRC-12 adopted agenda item 1.14 in order to consider the feasibility of achieving a continuous reference time-scale, whether by the modification of UTC or some other method.

Given the results of studies, this proposal supports the adoption of UTC without leap seconds as the most feasible means for achieving a continuous reference time-scale for dissemination by radiocommunication systems. To ensure sufficient time for legacy systems to update hardware and/or software to accommodate the elimination of leap seconds from UTC, a period of five years from the date of entry into force of the Final Acts of WRC-15 will be the effective date of application of revisions to the Radio Regulations resulting from Resolution **653 (WRC-12)**.

Proposal:

ARTICLE 1

Terms and definitions

MOD   USA/AI 1.14/1

Section I – General terms

1.14   *Coordinated Universal Time (UTC):* Time scale, based on the second (SI) and maintained by the Bureau International de Poids et Mesures (BIPM), that forms the basis for the coordinated dissemination of standard frequencies and time signals., as defined in Recommendation ITU-R TF.460-6.   (WRC-03)

For most practical purposes associated with the Radio Regulations, UTC is equivalent to mean solar time at the prime meridian (0° longitude), formerly expressed in GMT.

Reasons: The modification removes the incorporation by reference of Recommendation ITU-R TF.460-6, which defines the use of leap seconds in UTC. The modification also adds a reference to the international organization responsible for the maintenance of the UTC time scale. Finally, because UTC will no longer be tied to Earth's rotation, the modification removes the equivalence between UTC and the mean solar time at the prime meridian.

ARTICLE 2

Nomenclature

Section II – Dates and times

MOD   USA/AI 1.14/2

2.5   Whenever a date is used in connection with Coordinated Universal Time (UTC), this date shall be that of the prime meridian, at the appropriate time corresponding to zero degrees geographical longitude.

Reasons: Consequential change resulting from removing the equivalence between UTC and the mean solar time at the prime meridian in the definition of UTC.

MOD   USA/AI 1.14/3

CHAPTER X

Provisions for entry into force of the Radio Regulations (WRC-1~~2~~5)

Reasons: To update the WRC where provisions for entry into force will be recorded for the final acts of the conference.

MOD   USA/AI 1.14/4

ARTICLE 59

Entry into force and provisional application
of the Radio Regulations (WRC-1~~2~~5)

Reasons: To update the WRC in the Article where provisions for entry into force will be recorded for the final acts of the conference.

MOD   USA/AI 1.14/5

59.1   These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union, and as revised and contained in the Final Acts of WRC-95, WRC-97, WRC-2000, WRC-03, WRC-07~~, and~~ WRC-12, and WRC-15 shall be applied, pursuant to Article 54 of the Constitution, on the following basis. (WRC-1~~2~~5)

Reasons: To update the WRC where provisions for entry into force will be recorded for the final acts of the conference.

ADD   USA/AI 1.14/6

59.AA   The other provisions of these Regulations, as revised by WRC-15, shall enter into force on 1 January 2017, with the following exceptions: (WRC-15)

Reasons: To update Article 59 add provisions for entry into force for Regulations as revised by WRC-15 as well as other effective dates of application as specified in the listed Resolutions.

ADD   USA/AI 1.14/7

59.BB   the revised provisions for which other effective dates of application are stipulated in Resolution:

[USA/114/AAA] (WRC-15)   (WRC-15)

Reasons: To update Article 59 add provisions for entry into force for Regulations as revised by WRC-15 as well as other effective dates of application as specified in the listed Resolutions.

ADD   USA/AI 1.14/8

RESOLUTION [USA/114/AAA] (WRC-15)

Provisional application of certain provisions of the Radio Regulations as revised by WRC-15 and abrogation of certain Resolutions and Recommendations

The World Radiocommunication Conference (Geneva, 2015),

considering

a)   that this Conference has, in accordance with its terms of reference adopted a partial revision to the Radio Regulations (RR), which will enter into force on 1 January 2017;

b)   that some of the provisions, as amended by this Conference, need to apply provisionally before that date;

c)   that some of the provisions, as amended by this Conference, need to apply after that date;

d)   that, as a general rule, new and revised Resolutions and Recommendations enter into force at the time of the signing of the Final Acts of a Conference;

e)   that, as a general rule, Resolutions and Recommendations which a WRC has decided to suppress are abrogated at the time of the signing of the Final Acts of a Conference,

resolves

that, as of 1 January 2022, the following provisions of the RR, as revised or established by WRC-15, shall apply: Nos. **1.14, 2.5**;

Reasons: To ensure sufficient time for legacy systems to update hardware and/or software to accommodate the elimination of leap seconds, this provision is added to Resolution [USA/114/AAA] "Provisional application of certain provisions of the Radio Regulations as revised by WRC-15 and abrogation of certain Resolutions and Recommendations" (WRC-15). Additional provisions and abrogation for WRC-15 may be added to Resolution [USA/114/AAA].

SUP   USA/AI 1.14/9

RESOLUTION 653 (WRC-12)

Future of the Coordinated Universal Time time-scale

Reasons: The required studies have been completed and this resolution is no longer needed.

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