

ANNUAL REPORT

by chairman of TC 1.11 "Time and Frequency"

I. The general characteristic of the work:

For the period elapsed the work on 2 project was carried out on the subject "Time and Frequency". They are:

1. 398/RU/07 "A comparison of National standards for time and frequency using National time scale of Russia"
2. 605/RU/13 «A comparison of time scales of NTP-servers via INTERNET»

In the **2019** a special meeting of COOMET Technical Committee TC 1.11 "Time and Frequency" was held at TÜBİTAK Ulusal Metroloji Enstitüsü (TÜBİTAK UME), Turkey.

II. The CMC review

1 review of CMCs have been made in 2019 year.

III. Review on the fulfilled work:

PROJECT 398/RU/07

"Comparisons of the National Standards of Time and Frequency with RF scale UTC(SU)"

Comparisons of the UTC(SU) - Russia with the UTC(BY) - Republic of Belarus, UTC(UA) – Ukraine, and UTC (KZ) - Republic of Kazakhstan were made in 2018. A mutual exchange of measuring data was performed.

To perform intercomparisons the specialists of FGUP "VNIIFTRI" used the following receivers: a multi – channel receivers GPS/LONASS TTS-3 after calibration procedure using BIPM etalon- GPS receiver.

The comparisons between UTC(SU) and UTC(BY) were made using GPS common-views method (daily average data in the CGGTTS.V2 format).

Comparisons of UTC(SU) with UTC(UA) were made by GPS common-views (daily average data (in the CGGTTS.V2 format). The specialized multi-channel receiver GPS/GLONASS/GALILEO TTS-4 is used.

The comparisons between UTC(SU) and UTC(KZ) were made under GPS common-views (daily average data in the CGGTTS.V2 format). The a multi – channel receiver GPS/LONASS TTS-3 is used in KazInMetr Centre. No comparisons were made for the period 2019-2020.

Results of comparisons are published in Circular T of BIPM and in annual report of National Time and Frequency service of Russia.

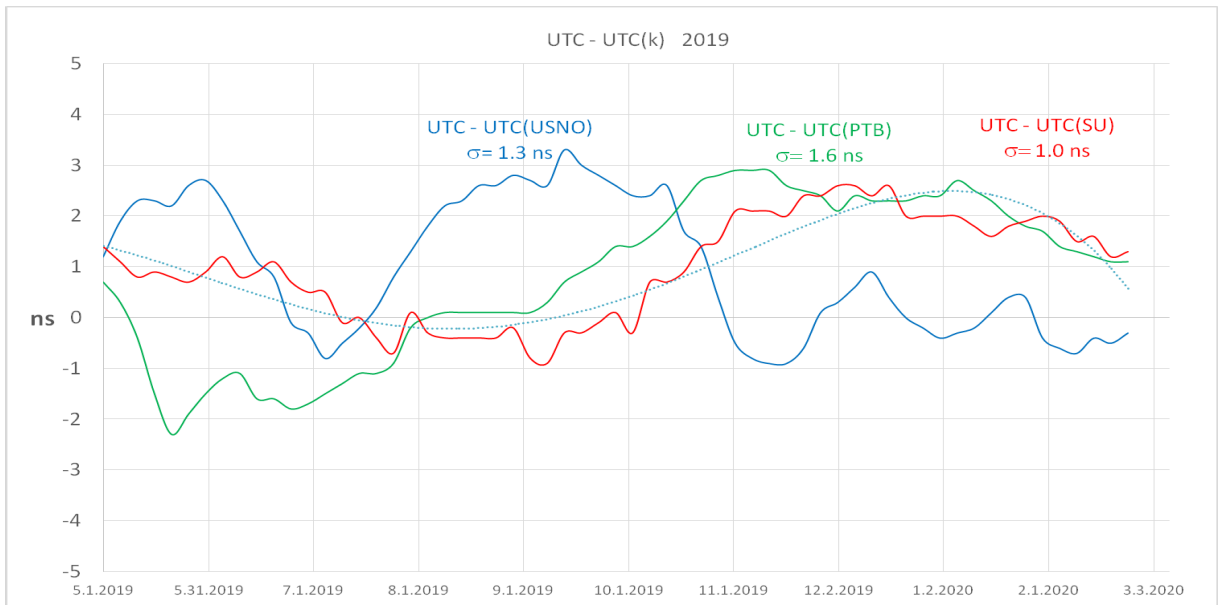


Figure 1. The deviation for the scale UTC(SU) of Russia relative to UTC. A comparison with the time scales of the leading laboratories in the world.

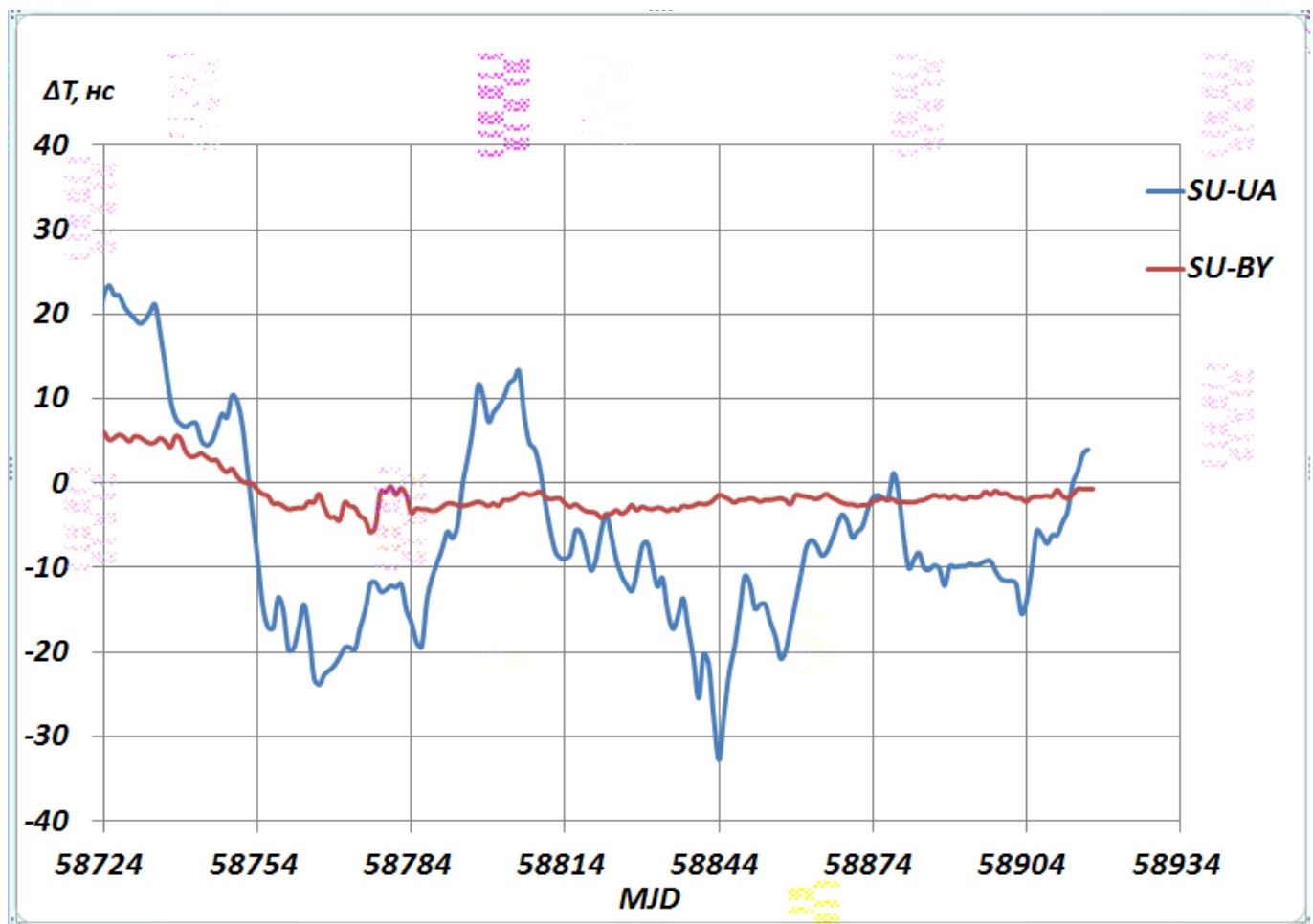
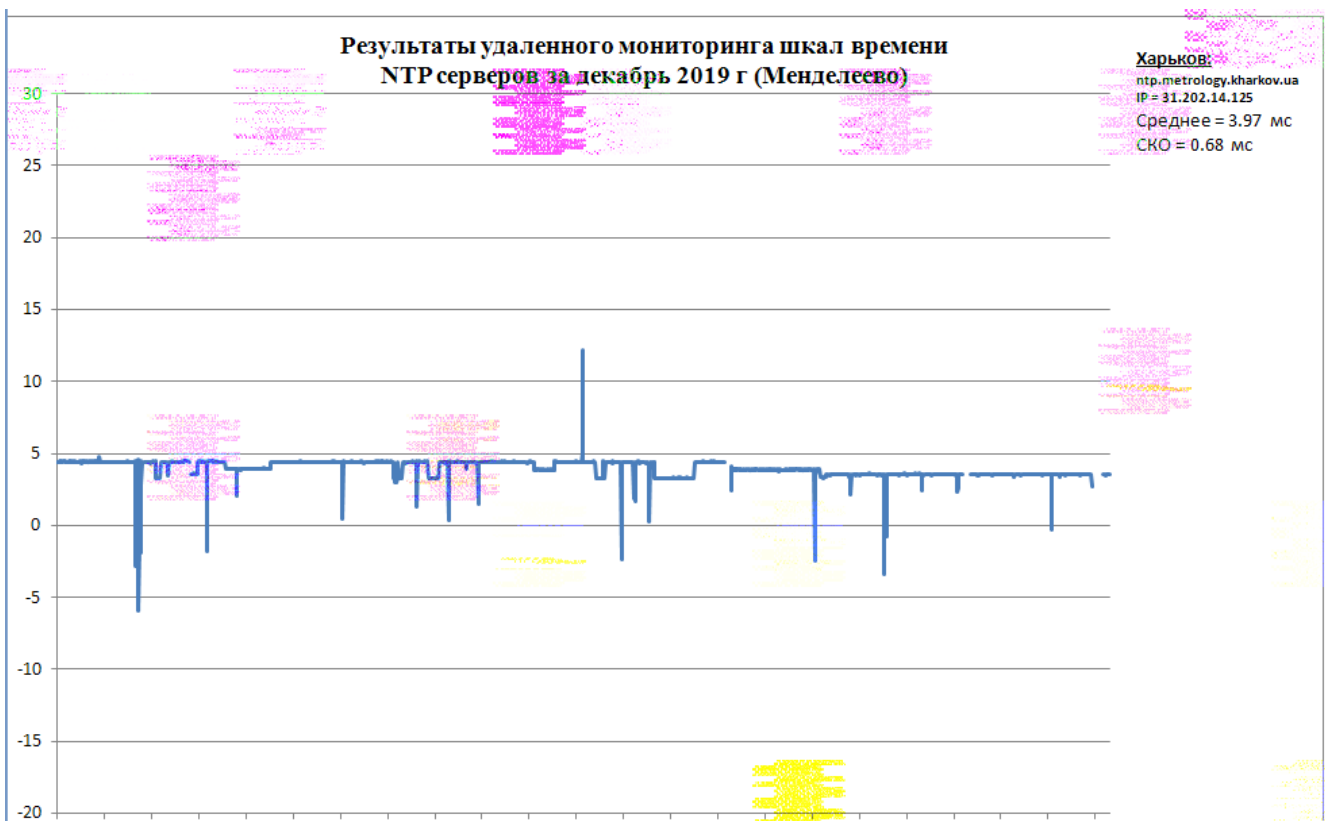


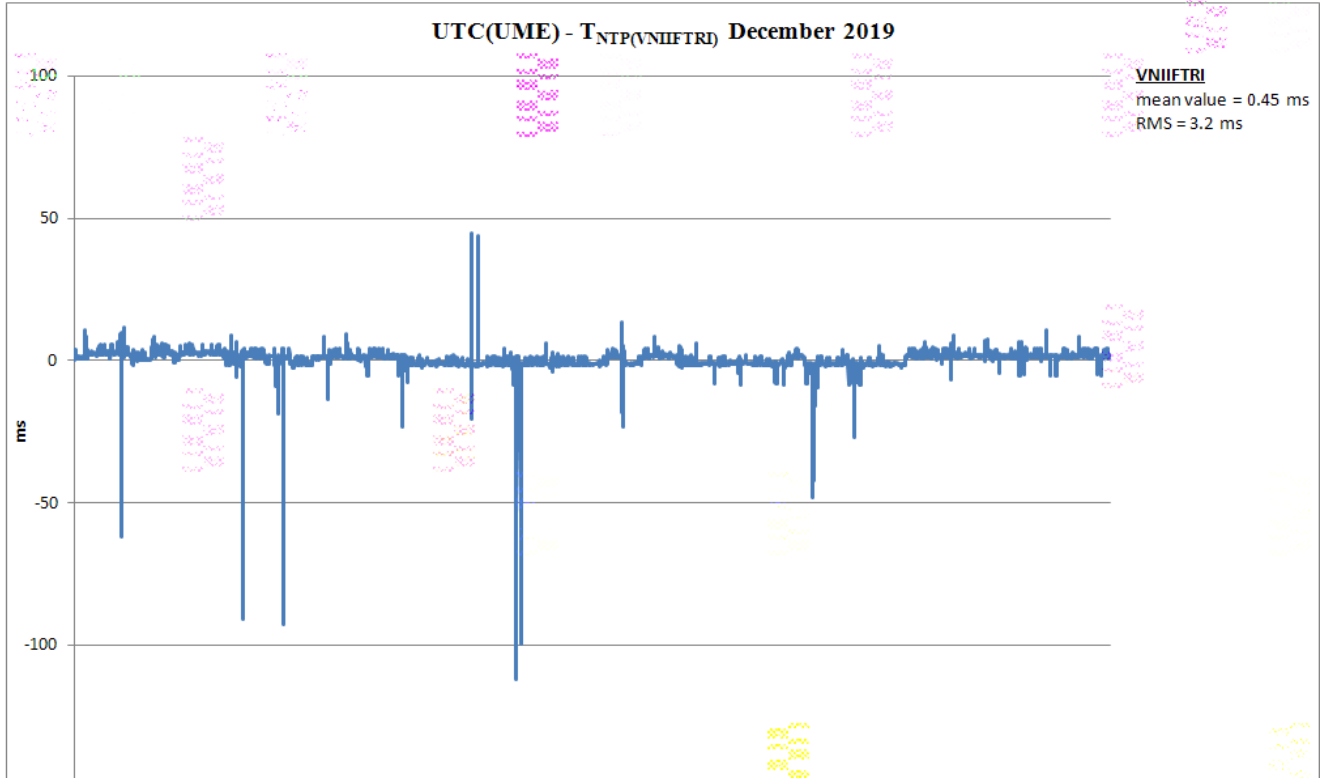
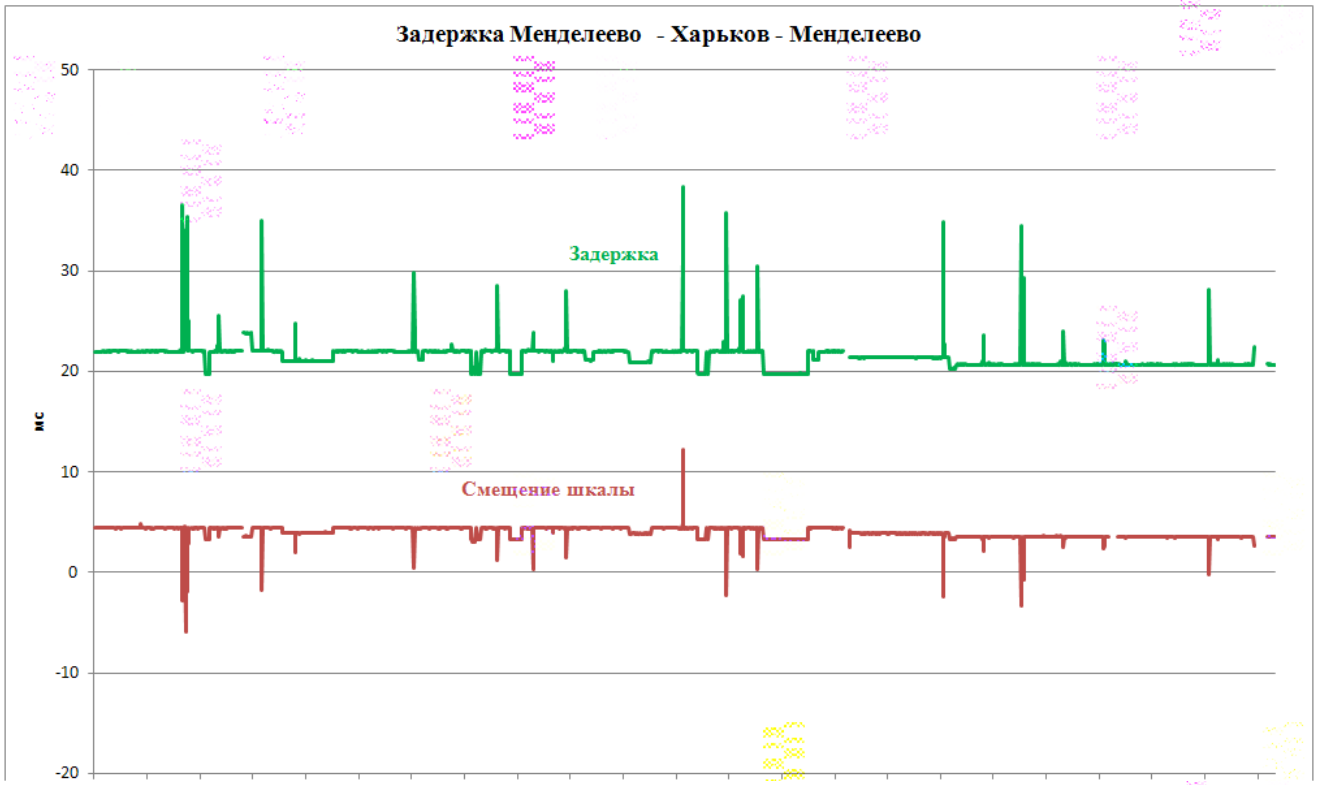
Figure 2. The deviations of national time scales of Ukraine, Belarus relative to UTC (SU).

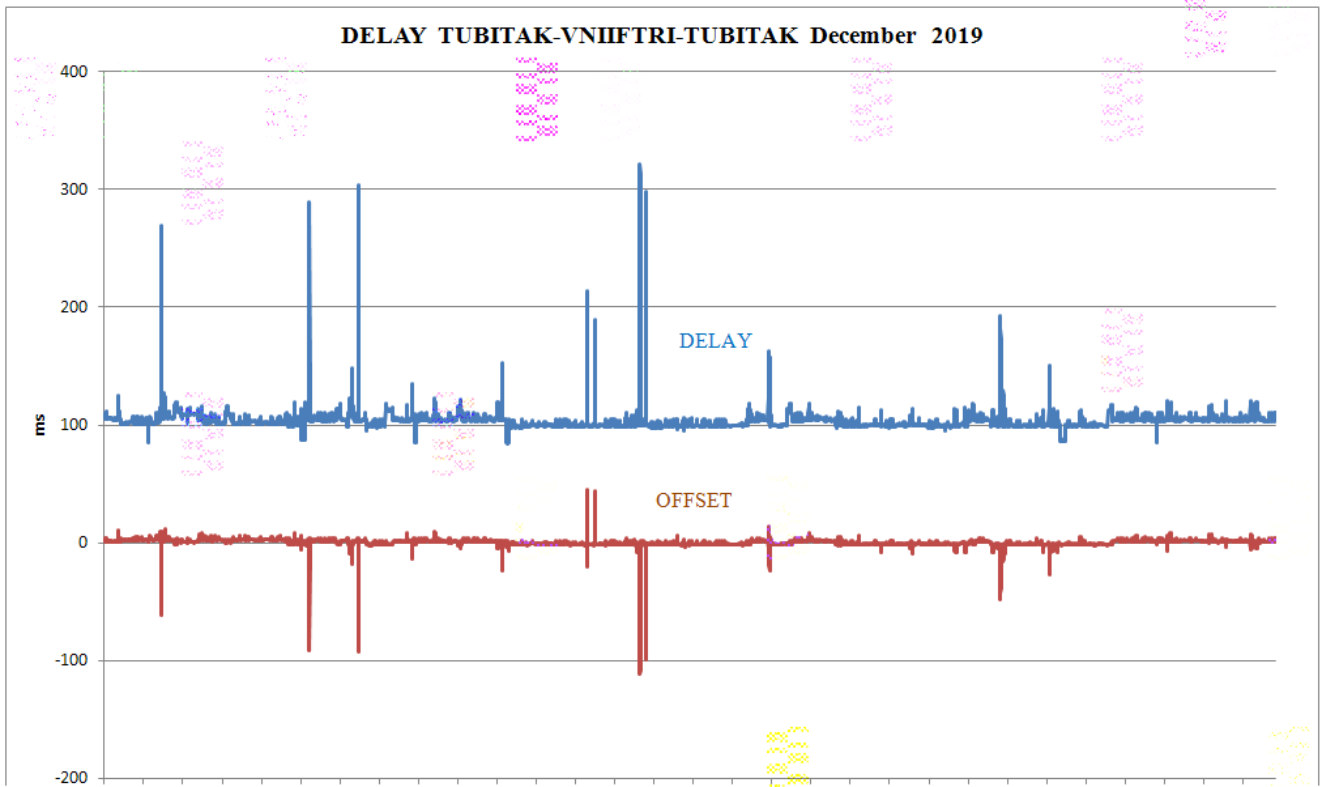
Project 605/RU/13
« A comparison of time scales of NTP-servers via INTERNET»

With all the participants agreed procedure for measurements of and file format for sharing that match those allegations "Technical protocol." Approved format files containing information about the divergence time position time scales controlled remote NTP servers on the appropriate national time scales for each calendar month, had to send in "VNIIFTRI" and processed together with the same monitoring data obtained at "VNIIFTRI." Data processing and calculation of metrological characteristics carried "VNIIFTRI" from November 2013, in accordance with the procedure set forth in the "Technical protocol" and the results are sent to the participants of the pilot project.

Reflected in the results of the monthly submitted "VNIIFTRI" charts indicating calculated metrological characteristics. All-time monitoring from November 2013 the average value of discrepancy time scales controlled remote NTP servers in control on national time scales UTC (k) does not exceed ± 6 ms







IV. COLLABORATION WITH INTERNATIONAL AND REGIONAL ORGANIZATIONS

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| Bureau Internationale on Poids et Mesures (BIPM) | - a regular data exchange to contribute to the TAI; |
| Comite Consultatif du Temps et des Frequences (CCTF), | - participation in the work of the CCTF and its Working Groups; |
| Consultative Committee on Length (CCL) | - participation in elaboration of recommendations on redefinition of a second; |
| International Telecommunication Union (ITU) | - participation in the work of 7A Group; |
| International Earth Rotation Service (IERS) | - a regular data exchange; |
| International Geodetic Service (IGS) | - observation and processed data exchange; |
| International Laser Ranging Service (ILRS) | - observation and processed data exchange. |

Participation of FGUP VNIIFTRI on International Conferences and Forums in 2019-2020 years:

1. European Forum on Time and Frequency (Tampa -2019, USA)
2. International Conference for Precise Time and Time Intervals (February -2020, USA)

Chairman of TC 1.11 "Time and Frequency"

V.G. Palchikov