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Circular T 87 (1995 April 25)

1 - Coordinated Universal Time UTC. Computed values of UTC-UTC(k).

(From 1994 July 1, 0hUTC, TAI-UTC = 29 s)

Date 1995 0h UTC		Feb 21	Mar 3	Mar 13	Mar 23
MJD		49769	49779	49789	49799
Laboratory k		UTC-UTC(k) (Unit is one nanosecond)			
AOS (Borowiec)		-1196	-1277	-1265	-990
APL (Laurel)		918	980	1021	1074
AUS (Canberra)		-557	-511	-469	-484
BEV (Wien)		-	-	-	-
CAO (Cagliari)		-6416	-6623	-6604	-6868
CH (Bern)	(1)	39	21	-1	-324
CRL (Tokyo)		1226	1200	1167	1171
CSAO (Lintong)		-324	-410	-374	-366
CSIR (Pretoria)		-1232	-1083	-995	-1014
FTZ (Darmstadt)		14	-15	-19	-10
GUM (Warszawa)		-1395	-1428	-1280	-1099
IEN (Torino)		594	590	589	599
IFAG (Wettzell)		-1560	-1634	-1706	-1663
IGMA (Buenos Aires)		-2584	-2552	-2640	-2682
INPL (Jerusalem)		-1843	-1994	-2138	-2246
JATC (Lintong)		899	686	595	472
KRIS (Taejon)		101	117	134	179
LDS (Leeds)		-892	-873	-903	-929
MSL (Lower Hutt)		-3296	-3271	-3376	-3410
NAOM (Mizusawa)		-2084	-2137	-2202	-2275
NAOT (Tokyo)		-1249	-1260	-1327	-1411
NIM (Beijing)		7318	7283	7304	7316
NIST (Boulder)		-33	-12	-4	18
NMC (Sofiya)		-	-	-	-
NPL (Teddington)		47	60	61	77
NPLI (New-Delhi)		-	-	-	-
NRC (Ottawa)		45	77	112	152
NRLM (Tsukuba)		-9807	-9669	-9523	-9347
OMH (Budapest)		9205	9292	9394	9459
ONBA (Buenos Aires)		-	-	-	-
ONRJ (Rio de Janeiro)		-17242	-17552	-17747	-17988
OP (Paris)		-123	-131	-127	-124
ORB (Bruxelles)		-141	-97	-18	-9
PTB (Braunschweig)		2524	2516	2508	2501
RC (Habana)		-	-	-	-
ROA (San Fernando)		2131	2084	2034	2042
SCL (Hong Kong)		-50	-12	15	15
SNT (Stockholm)		36	-25	-71	-48
SO (Shanghai)		2003	1990	1979	1990
SU (Moskva)		-6388	-6491	-6590	-6683
TL (Chung-Li)		-829	-783	-735	-659
TP (Praha)		-654	-658	-637	-614
TUG (Graz)	(2)	-1246	-1152	-672	-661
UME (Gebze-Kocaeli)		-2937	-3013	-3092	-3158
USNO (Washington DC)(USNO MC)		27	25	22	26
VSL (Delft)		88	-38	-66	-76

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2 - International Atomic Time TAI and local atomic time scales TA(k).

The following table gives the computed values of TAI-TA(k).

Date 1995 0h UTC		Feb 21	Mar 3	Mar 13	Mar 23
MJD		49769	49779	49789	49799
Laboratory k		TAI-TA(k) (Unit is one nanosecond)			
APL (Laurel)		2381	2443	2484	2537
AUS (Canberra)		-58273	-58514	-58776	-59017
CH (Bern)	(1)	-70487	-70305	-70128	-70251
CRL (Tokyo)		50670	51086	51497	51936
CSAO (Lintong)		10689	10508	10414	10293
F (Paris)		139836	140195	140565	140941
INPL (Jerusalem)		-263200	-265490	-267791	-270074
JATC (Lintong)		14337	14188	14114	14002
KRIS (Taejon)		1341	1337	1344	1369
NIM (Beijing)		-8531	-8546	-8499	-8471
NISA (Boulder)	(3)	-45125032	-45125461	-45125903	-45126331
NRC (Ottawa)		23977	23992	24008	24032
PTB (Braunschweig)		-360876	-360884	-360892	-360899
RC (Habana)		-	-	-	-
SO (Shanghai)		-45632	-45632	-45633	-45615
SU (Moskva)	(4)	27243612	27243509	27243410	27243317
USNO (Washington DC)	(5)	-34718007	-34718677	-34719345	-34720007

3 - Notes on sections 1 and 2.

(1) CH . Apparent time step of UTC(CH) and TA(CH) of + 307 ns due to a change of GPS receiver.

(2) TUG . Time step of UTC(TUG) of - 438 ns on MJD = 49783.354 due to a change of master clock.

(3) NIST. TA(NISA) designates the scale AT1 of NIST.

(4) SU . Listed values are TAI-TA(SU) - 2.80 seconds.

(5) USNO. TA(USNO) designates the scale A1(MEAN) of USNO.

4 - [UTC - GPS time] and [TAI - GPS time].

[UTC - GPS time] = -10 s + C0, [TAI - GPS time] = 19 s + C0.

Daily values of C0 are given in the following table. They are obtained as follows: the GPS data taken at the Paris Observatory, for highest elevation, are first corrected for precise satellite ephemerides and for measured ionospheric delays, and then smoothed to obtain daily values of [UTC(OP) - GPS time] at 0h UTC; daily values of C0 are derived from them using linear interpolation of [UTC - UTC(OP)].

For a given day, where N measurements are used for estimation of C0 :
- the dispersion of individual measurements is characterized by a standard deviation σ,
- the daily C0 value is characterized by the standard deviation of the mean $\sigma/\sqrt{N}$.

Date 1995 0h UTC	MJD	C0 (ns)	σ (ns)	$\sigma/\sqrt{N}$ (ns)
Feb 21	49769	11	40	9
Feb 22	49770	1	45	10
Feb 23	49771	0	40	9
Feb 24	49772	6	37	8
Feb 25	49773	7	35	8
Feb 26	49774	7	39	8
Feb 27	49775	9	43	9
Feb 28	49776	12	31	7
Mar 1	49777	18	49	11
Mar 2	49778	23	39	8
Mar 3	49779	23	44	10
Mar 4	49780	23	43	9
Mar 5	49781	29	51	11
Mar 6	49782	36	44	9
Mar 7	49783	46	46	11
Mar 8	49784	50	47	10
Mar 9	49785	51	38	8
Mar 10	49786	50	41	9
Mar 11	49787	49	32	7
Mar 12	49788	51	47	10
Mar 13	49789	52	40	9
Mar 14	49790	51	24	5
Mar 15	49791	50	36	8
Mar 16	49792	52	39	9
Mar 17	49793	57	42	9
Mar 18	49794	60	42	9
Mar 19	49795	55	46	10
Mar 20	49796	47	36	8
Mar 21	49797	42	45	10
Mar 22	49798	41	45	10
Mar 23	49799	39	51	12

5 - [UTC - GLONASS time].

[UTC - GLONASS time] = C1 (modulo 1 s).

From his current observations of both the GPS and GLONASS satellite systems Prof. P. Daly, University of Leeds, establishes and reports [GPS time - GLONASS time] at ten-day intervals, together with the standard deviation σ of his daily GLONASS data. C1 is then derived using [UTC - GPS time] of section 4.

Date 1995 0h UTC	MJD	C1 (ns)	σ (ns)
Feb 21	49769	-15634	40
Mar 3	49779	-15693	38
Mar 13	49789	-15767	35
Mar 23	49799	-15892	35

6 - Difference between the normalized frequencies of EAL and TAI.

Interval of validity		f(EAL)-f(TAI)
1995 Feb. 21 - 1995 Apr. 22	49769-49829	7.39×10^{-13}

New steering correction foreseen for May-June 1995

1995 Apr. 22 - 1995 Jun. 21	49829-49889	7.38×10^{-13}

7 - Duration of the TAI scale interval.

The following table gives the departure D of the duration of the TAI scale interval from the SI second on the rotating geoid as realized by a given primary standard occasionally evaluated or continuously operating as a clock. In the later case the chosen two-month period of observation is also indicated. The last communicated estimate of the inaccuracy of the standard provides the uncertainty σ of the D value.

D and σ are expressed in units of 10^{-14} second.

Standard	Obs. period	D	σ
PTB-CS1	49739-49799	0.0	3.0
PTB-CS2	49739-49799	+0.7	1.5

The estimate of the duration of the TAI scale interval, computed by the BIPM, from all the available measurements of the TAI frequency, obtained by comparison with primary frequency standards continuously observed or occasionally evaluated (*CRL, *LPTF, *NIST, NRC, PTB, SU), is:

$$1 + 0.1 \times 10^{-14} \quad \pm \quad 2.0 \times 10^{-14}$$

in SI second on the rotating geoid, for the two-month interval 49739-49799 .

* The frequencies of the primary frequency standards Cs1 from CRL, JPO from LPTF, and NIST-7 from NIST, are corrected for the black body radiation shift.