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BUREAU INTERNATIONAL DES POIDS ET MESURES

Circular T 86 (1995 March 27)

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

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

Date 1995 0h UTC		Jan 22	Feb 1	Feb 11	Feb 21
MJD		49739	49749	49759	49769
Laboratory k		UTC-UTC(k) (Unit = 1 nanosecond)			
AOS (Borowiec)		-622	-922	-1071	-1196
APL (Laurel)		744	783	849	918
AUS (Canberra)		-304	-379	-483	-557
BEV (Wien)		-	-	-	-
CAO (Cagliari)		-5415	-5740	-6126	-6416
CH (Bern)		141	113	77	39
CRL (Tokyo)		1286	1258	1246	1226
CSAO (Lintong)		-293	-187	-225	-324
CSIR (Pretoria)		-1775	-1566	-1313	-1232
FTZ (Darmstadt)		44	42	33	14
GUM (Warszawa)		-1130	-1023	-972	-1395
IEN (Torino)		563	574	590	594
IFAG (Wettzell)	(1)	-6834	-7543	-1187	-1560
IGMA (Buenos Aires)		-2458	-2452	-2522	-2584
INPL (Jerusalem)		-1340	-1535	-1680	-1843
JATC (Lintong)		731	1271	1127	899
KRIS (Taejon)		-21	18	82	101
LDS (Leeds)		-556	-672	-818	-892
MSL (Lower Hutt)		-2906	-3053	-3180	-3296
NAOM (Mizusawa)		-1990	-2031	-2047	-2084
NAOT (Tokyo)		-1311	-1289	-1245	-1249
NIM (Beijing)		7617	7391	7345	7318
NIST (Boulder)		-89	-76	-51	-33
NMC (Sofiya)		-	-	-	-
NPL (Teddington)		8	17	38	47
NPLI (New-Delhi)		-	-	-	-
NRC (Ottawa)		-122	-55	-6	45
NRLM (Tsukuba)		-10276	-10126	-9950	-9807
OMH (Budapest)		8983	9082	9180	9205
ONBA (Buenos Aires)		-	-	-	-
ONRJ (Rio de Janeiro)		-18539	-17857	-17099	-17242
OP (Paris)		-130	-127	-124	-123
ORB (Bruxelles)		-199	-176	-178	-141
PTB (Braunschweig)		2542	2524	2527	2524
RC (Habana)		-	-	-	-
ROA (San Fernando)		2175	2165	2167	2131
SCL (Hong Kong)		-183	-	-99	-50
SNT (Stockholm)		442	338	113	36
SO (Shanghai)		2155	2098	2038	2003
SU (Moskva)		-6109	-6205	-6292	-6388
TL (Chung-Li)		-1040	-959	-888	-829
TP (Praha)		-726	-699	-663	-654
TUG (Graz)		-1583	-1489	-1379	-1246
UME (Gebze-Kocaeli)		-2766	-2831	-2885	-2937
USNO (Washington DC)(USNO MC)		16	22	26	27
VSL (Delft)		397	274	218	88

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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		Jan 22	Feb 1	Feb 11	Feb 21
MJD		49739	49749	49759	49769
Laboratory k		TAI-TA(k) (Unit = 1 nanosecond)			
APL (Laurel)		2207	2246	2312	2381
AUS (Canberra)		-57453	-57741	-58023	-58273
CH (Bern)		-70949	-70813	-70649	-70487
CRL (Tokyo)		49411	49825	50251	50670
CSAO (Lintong)		11023	10999	10875	10689
F (Paris)		138729	139092	139467	139836
INPL (Jerusalem)		-256384	-258666	-260916	-263200
JATC (Lintong)		13852	14547	14499	14337
KRIS (Taejon)		1239	1328	1362	1341
NIM (Beijing)		-8294	-8500	-8521	-8531
NISA (Boulder)	(2)	-45123748	-45124175	-45124600	-45125032
NRC (Ottawa)		23862	23912	23943	23977
PTB (Braunschweig)		-360858	-360876	-360873	-360876
RC (Habana)		-	-	-	-
SO (Shanghai)		-45430	-45514	-45591	-45632
SU (Moskva)	(3)	27243891	27243795	27243708	27243612
USNO (Washington DC)	(4)	-34716014	-34716677	-34717341	-34718007

3 - Notes on sections 1 and 2.

(1) IFAG. Time step of UTC(IFAG) of - 7000 nanoseconds on MJD = 49749.6
Change of master clock on MJD = 49751 .

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

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

(4) 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)
Jan 22	49739	286	50	11
Jan 23	49740	289	42	9
Jan 24	49741	285	38	8
Jan 25	49742	275	43	9
Jan 26	49743	265	47	10
Jan 27	49744	261	37	8
Jan 28	49745	256	40	9
Jan 29	49746	246	44	10
Jan 30	49747	227	35	8
Jan 31	49748	214	39	8
Feb 1	49749	207	37	8
Feb 2	49750	198	46	10
Feb 3	49751	187	53	12
Feb 4	49752	175	39	8
Feb 5	49753	161	30	6
Feb 6	49754	147	39	9
Feb 7	49755	135	45	10
Feb 8	49756	127	49	11
Feb 9	49757	115	40	9
Feb 10	49758	100	43	9
Feb 11	49759	87	45	10
Feb 12	49760	78	52	11
Feb 13	49761	73	42	9
Feb 14	49762	66	58	12
Feb 15	49763	55	44	10
Feb 16	49764	45	40	9
Feb 17	49765	37	39	8
Feb 18	49766	30	32	7
Feb 19	49767	25	30	7
Feb 20	49768	20	36	8
Feb 21	49769	11	40	9

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)
Jan 22	49739	-15531	56
Feb 1	49749	-15510	40
Feb 11	49759	-15570	39
Feb 21	49769	-15634	40

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

Interval of validity		f(EAL)-f(TAI)
1993 Apr. 22 - 1995 Feb 21	49099-49769	7.40×10^{-13}

New steering correction foreseen for March-April 1995

1995 Feb. 21 - 1995 Apr 22	49769-49829	7.39×10^{-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	49709-49769	+0.9	3.0
PTB-CS2	49709-49769	+1.0	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:

$$1 - 0.2\times10^{-14} \pm 2.0\times10^{-14}$$

in SI second on the rotating geoid, for the two-month interval 49709-49769 .

* 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.

BIPM Circular T

Values [UTC - UTC(k)] and [TAI - TA(k)]

are now published in nanoseconds