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BUREAU INTERNATIONAL DES POIDS ET MESURES

Circular T 92 (1995 September 18)

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

(From 1994 July 1, 0hUTC, to 1996 January 1, 0hUTC, TAI-UTC = 29 s)
(From 1996 January 1, 0hUTC, until further notice, TAI-UTC = 30 s)

Date 1995 0h UTC	Jul 31	Aug 10	Aug 20	Aug 30
MJD	49929	49939	49949	49959
Laboratory k	UTC-UTC(k) (Unit is one nanosecond)			
AOS (Borowiec)	-1767	-1800	-1909	-1916
APL (Laurel)	2135	2121	2120	2111
AUS (Canberra)	-460	-500	-547	-543
BEV (Wien)	-32538	-33180	-33757	-34323
CAO (Cagliari)	-	-	-	-
CH (Bern)	207	203	205	191
CRL (Tokyo)	803	769	739	701
CSAO (Lintong)	-305	-300	-333	-351
CSIR (Pretoria)	1081	1528	1725	1898
FTZ (Darmstadt)	-	-169	-198	-230
GUM (Warszawa)	-205	-228	-246	-282
IEN (Torino)	7	-7	-2	0
IFAG (Wettzell)	-2849	-2946	-3095	-3283
IGMA (Buenos Aires)	-269	-347	-372	-336
INPL (Jerusalem)	-1566	-1728	-1948	-2121
JATC (Lintong)	777	762	787	820
KRIS (Taejon)	195	190	182	195
LDS (Leeds)	605	589	560	580
MSL (Lower Hutt)	-3682	-3771	-4002	-4091
NAOM (Mizusawa)	-3253	-3312	-3367	-3429
NAOT (Tokyo)	-3341	-3573	-3800	-4069
NIM (Beijing)	7473	7473	7431	7502
NIST (Boulder)	20	12	10	7
NMC (Sofiya)	-	-	-	-
NPL (Teddington)	93	85	77	66
NPLI (New-Delhi)	-	-	-	-
NRC (Ottawa)	291	232	165	98
NRLM (Tsukuba)	-7456	-7314	-7175	-7036
OMH (Budapest)	10784	10839	10856	10902
ONBA (Buenos Aires)	-	3189	4239	5349
ONRJ (Rio de Janeiro)	-14174	-13551	-12703	-11755
OP (Paris)	-41	-31	-12	-7
ORB (Bruxelles)	145	195	232	245
PTB (Braunschweig)	2364	2359	2342	2321
RC (Habana)	-764	-	-	-
ROA (San Fernando)	2185	2137	2073	2040
SCL (Hong Kong)	-1006	-1093	-1044	-942
SO (Shanghai)	1985	1964	1944	1970
SU (Moskva)	-6916	-6935	-6956	-6990
TL (Chung-Li)	-189	-197	-185	-225
TP (Praha)	-468	-464	-447	-431
TUG (Graz)	-493	-479	-466	-457
UME (Gebze-Kocaeli)	-3365	-3346	-3326	-3317
USNO (Washington DC)(USNO MC)	4	4	6	10
VSL (Delft)	-201	-188	-174	-168

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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		Jul 31	Aug 10	Aug 20	Aug 30
MJD		49929	49939	49949	49959
Laboratory k		TAI-TA(k) (Unit is one nanosecond)			
APL (Laurel)		3598	3584	3583	3574
AUS (Canberra)		-62231	-62485	-62766	-62978
CH (Bern)		-67319	-67104	-66880	-66673
CRL (Tokyo)		57369	57780	58197	58605
CSAO (Lintong)		8668	8543	8381	8233
F (Paris)		145489	145825	146161	146484
IEN (Torino)		-382	-412	-428	-452
INPL (Jerusalem)		-300025	-301152	-302290	-303424
JATC (Lintong)		13156	13096	12949	12839
KRIS (Taejon)		1203	1226	1264	1322
NIM (Beijing)		-8023	-7994	-8009	-7909
NISA (Boulder)	(1)	-45131967	-45132405	-45132837	-45133270
NRC (Ottawa)		24551	24604	24649	24694
PTB (Braunschweig)		-361036	-361041	-361058	-361079
RC (Habana)	(2)	-322004	-	-	-
SO (Shanghai)		-45640	-45634	-45619	-45592
SU (Moskva)	(3)	27243084	27243065	27243044	27243010
USNO (Washington DC)	(4)	-34728654	-34729318	-34729980	-34730641

3 - Notes on sections 1 and 2.

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

(2) RC . Listed values are TAI-TA(RC) - 18 seconds.

(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 (until 1996 January 1, 0h UTC)
[UTC - GPS time] = -11 s + C0 (from 1996 January 1, 0h UTC)
[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)
Jul 31	49929	43	28	6
Aug 1	49930	42	42	9
Aug 2	49931	42	58	15
Aug 3	49932	45	41	9
Aug 4	49933	45	49	11
Aug 5	49934	39	51	11
Aug 6	49935	34	52	11
Aug 7	49936	34	47	10
Aug 8	49937	35	32	7
Aug 9	49938	29	34	7
Aug 10	49939	21	30	7
Aug 11	49940	17	37	9
Aug 12	49941	11	45	10
Aug 13	49942	7	44	9
Aug 14	49943	7	50	11
Aug 15	49944	7	43	9
Aug 16	49945	1	49	11
Aug 17	49946	-4	38	9
Aug 18	49947	-6	50	11
Aug 19	49948	-9	49	14
Aug 20	49949	-8	52	14
Aug 21	49950	-2	44	11
Aug 22	49951	6	43	10
Aug 23	49952	9	33	8
Aug 24	49953	9	39	10
Aug 25	49954	11	48	12
Aug 26	49955	12	46	11
Aug 27	49956	16	49	12
Aug 28	49957	20	36	8
Aug 29	49958	19	32	7
Aug 30	49959	12	52	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)
Jul 31	49929	-19435	40
Aug 10	49939	-19812	41
Aug 20	49949	-20188	39
Aug 30	49959	-20549	55

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

Interval of validity		f(EAL)-f(TAI)
1995 Jun. 21 - 1995 Aug. 30	49889-49959	7.37×10^{-13}

New steering correction foreseen for September-October 1995

1995 Aug. 30 - 1995 Oct. 29	49959-50019	7.36×10^{-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 together with its uncertainty σ. This is obtained, on the given period of estimation, by comparison of the TAI frequency :
- with the frequency, corrected for the black-body radiation shift, of a given individual primary frequency standard (σ is then the last communicated estimate of the uncertainty of the standard frequency), and
- with a combination computed by the BIPM of all available measurements from PTB CS2 and NIST-7 consistently corrected for the black-body radiation shift (σ is then estimated by the BIPM taking into account the individual uncertainties and parameters characteristic of TAI stability).

Standard	Period of estimation	d (10^{-14} s)	σ (10^{-14} s)
NIST-7	49689-49699	+2.0	1.0
NIST-7	49699-49709	+2.5	1.0
NIST-7	49789-49799	+2.0	1.0
NIST-7	49809-49819	+3.0	1.0
NIST-7	49819-49829	+2.9	1.0
NIST-7	49829-49839	+2.0	1.0
NIST-7	49839-49849	+2.2	1.0
NIST-7	49899-49909	+2.2	1.0
PTB CS2	49889-49959	+3.5	1.5
BIPM estimate	49889-49959	+2.0	0.7