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ANEXO A

Decreto nº 2.784 de 18 de junho de 1913.

Endereço https://www.planalto.gov.br/ccivil_03/decreto/Antigos/D2784.htm Ir Links

Presidência da República
Subchefia para Assuntos Jurídicos

DECRETO Nº 2.784, DE 18 DE JUNHO DE 1913.

Vide Decreto nº 4.264, de 2002

Determina a hora legal.

O Presidente da Republica dos Estados Unidos do Brazil: Faço saber que o Congresso Nacional decretou e eu sancciono a resolução seguinte:

Art. 1º Para as relações contractuaes internacionaes e commerciais, o meridiano de Greenwich será considerado fundamental em todo o território da Republica dos Estado Unidos do Brazil.

Art. 2º O territorio da Republica fica dividido, no que diz respeito á hora legal, em quatro fusos distinctos:

a) o primeiro fuso, caracterizado pela hora de Greenwich <<menos duas horas>>, comprehende o archipelago Fernando de Noronha e a ilha da Trindade;

b) o segundo fuso, caracterizado pela hora de Greenwich <<menos tres horas>>, comprehende todo o litoral do Brazil e os Estados interiores (menos Matto-Grosso e Amazonas), bem como parte do Estado do Pará delimitada por uma linha que, partindo do monte Grevaux, na fronteira com a Guyana Franceza, vá seguindo pelo alveo do rio Pecuary até o Javary, pelo alveo deste até o Amazonas e ao sul pelo leito do Xingú até entrar no Estado de Matto-Grosso;

c) o terceiro fuso, caracterizado pela hora media de Greenwich <<menos quatro horas>>, comprehenderá o Estado do Pará a W da linha precedente, o Estado do Matto-Grosso e a parte do Amazonas que fica a E de uma linha (circulo maximo) que, partindo de Tabatinga, vá a Porto Acre;

d) o quarto fuso, caracterizado pela hora de Greenwich <<menos cinco horas>>, comprehenderá o territorio do Acre e os cedidos recentemente pela Bolivia, assim como a área a W da linha precedentemente descripta.

Art. 3º Ficam revogadas as disposições em contrario.

Rio de Janeiro, 18 de junho de 1913, 92º da Independencia e 25º da Republica.

HERMES R. DA FONSECA
Pedro de Toledo

Este texto não substitui o publicado na Coleção de Leis do Brasil de 1913

ANEXO B

Decreto nº 10.546 de 5 de novembro de 1913.

Endereço https://www.planalto.gov.br/ccivil_03/decreto/Antigos/D10546.htm

Presidência da República
Casa Civil
Subchefia para Assuntos Jurídicos

DECRETO Nº 10.546, DE 5 DE NOVEMBRO DE 1913.

Approva o regulamento para execução da Lei n. 2.784, de 18 de junho de 1913, sobre a hora legal.

O Presidente da Republica dos Estados Unidos do Brazil, Usando da atribuição que lhe confere o art. 48, n. 1, da Constuição Federal, resolve approvar o regulamento que com este baixa, assignado pelo ministro de Estado da Agricultura, Industria e Commercio, para execução da lei n. 2.784, de 18 de junho de 1913, que determina a hora legal para todo o territorio da Republica dos Estados Unidos do Brazil.

Rio de Janeiro, 5 de novembro de 1913, 92º da Independencia e 25º da Republica.

HERMES R. DA FONSECA
Pedro de Toledo

Este texto não substitui o publicado na Coleção de Leis do Brasil de 1913, Págs. 515 E 516

Regulamento para execução da lei n. 2.784, de 18 de junho de 1913, a que se refere o decreto n. 10.546, de 5 de novembro de 1913

Art. 1º A contar de 1 de janeiro de 1914, a hora legal, em todo o territorio da Republica e para todas as relações contractuaes internacionaes e commerciaes, terá como base a do meridiano fundamental de Greenwich, diminuida de duas, tres, quatro ou cinco horas, conforme o fuso a que pertencer o logar considerado.

Art. 2º O territorio da Republica fica dividido, no que diz respeito á hora legal, em quatro fusos distinctos:

I. O primeiro fuso, em que a hora é igual á de Greenwich, diminuida de duas horas, comprehende o archipelago de Fernando de Noronha e a ilha da Trindade.

II. O segundo fuso, em que a hora legal é igual á de Greenwich, diminuida de tres horas, comprehende todo o litoral do Brazil e os Estados interiores (menos Matto Grosso e Amazonas), bem como parte do Estado do Pará delimitada por uma linha que, partindo de monte Crevaux, na fronteira com a Guyanna Franceza, vá seguindo pelo alveo do rio Pacuary até o Jary, pelo alveo deste até o Amazonas e ao sul pelo leito do Xingú até entrar no Estado de Matto-Grosso.

III O terceiro fuso, em que a hora é igual à de Greenwich, diminuida de quatro horas, comprehende o Estado do Pará, a Oeste da linha precedente, o Estado do Matto Grosso e a parte do Amazonas que fica à Leste de uma linha (circulo maximo) que, partindo de Tabatinga, vá a Porto-Acre (incluidas estas duas localidades no terceiro fuso).

IV O quarto fuso, em que a hora legal é igual à de Greenwich, diminuida de cinco horas, comprehende o territorio do Acre e a zona recentemente cedida pela Bolivia, assim como à área a Oeste da linha precedentemente descripta.

Art. 3º Para o fim de, em cada capital de Estado, serem acertados pela hora legal os relogios officiaes, suppostos regulados até então pela hora local, soffrerão elles á meia noite de 31 de dezembro, futuro, a correção indicada no quadro annexo.

Art. 4º No caso dos horarios das estradas de ferro, linhas de navegação e demais vias de communicação, a contagem da hora se fará de zero a vinte e tres, começando em meia noite, que será contada zero hora.

Art. 5º as longitudes geographicas serão de ora em deante referidas ao meridiano de Greenwich, em vez de sel-o em relação ao do Rio de Janeiro.

~~Art. 6º Ao Observatorio Nacional do Rio de Janeiro, assim como ás estações filiaes que vierem a ser creadas, incubem a determinação e a conservação da hora, bem como a sua transmissão, para fins geographicos ou maritimos, pelo telegrapho commum e sem fios e pelo <<Balão>> ou <<Tine-ball>>, de accôrdo com o regulamento vigente e as convenções internacionaes que vigorarem.~~

Art. 6º É da competência do Observatório Nacional, unidade de pesquisa do Ministério da Ciência e Tecnologia, gerar a Hora Legal do Brasil, bem como disseminá-la pelos meios de comunicação, observado o disposto na legislação vigente e nos tratados, acordos e atos internacionais de que o Brasil seja parte. (Redação dada pelo Decreto nº 4.264, de 10.6.2002)

Rio de Janeiro, 5 de novembro de 1913. Pedro de Toledo.

QUADRO DAS CORREÇÕES A APPLICAR AOS RELOGIOS, MARCANDO O TEMPO MÉDIO LOCAL NAS CAPITAES DOS ESTADOS, PARA FAZEL-OS MARCAR A AHORA LEGAL, A QUE REFERE O ART. 3º DO REGULAMENTO ANNEXO AO DECRETO N. 10.546, DE 5 DE NOVEMBRO DE 1913.

Capitaes	Fuso	Long. a W. de Gr.			Correcção			
Manáos..........	4 h.	4h.00 m 04 s.			Deve-se	adiantar	0 m	04 s.
Belém............	3	3	14	00	"	"	14	00
S. Luiz...........	3	2	57	11	"	atrazar	2	49
Therezina........	3	2	51	15	"	"	8	45
Fortaleza........	3	2	34	11	"	"	25	49
Natal.............	3	2	21	14	"	"	38	46
Parahyba........	3	2	19	24	"	"	40	36
Recife............	3	2	19	25	"	"	40	35
Maceió...........	3	2	22	58	"	"	37	02
Aracajú..........	3	2	28	14	"	"	31	46
Bahia............	3	2	34	05	"	"	25	55
Victoria..........	3	2	41	19	"	"	19	41
Captal Federal	3	2	52	41	"	"	7	19
Nictheroy........	3	2	52	29	"	"	7	31
S. Paulo.........	3	3	06	35	"	adiantar	6	35
Curityba..........	3	3	17	06	"	"	17	06
Florianopolis....	3	3	14	06	"	"	14	06
Porto Alegre....	3	3	24	53	"	"	24	53
Bello Horizonte.	3	2	55	44	"	atrazar	4	16
Goyaz............	3	3	20	21	"	adiantar	20	31
Cuyabá...........	4	3	44	22	"	atrazar	15	38
Cruzeiro do Sul.	5	4	50	25	"	"	9	35
Empreza.........	5	4	31	31	"	"	28	29

Rio de Janeiro, 5 de novembro de 1913. Pedro de Toledo

ANEXO C

Decreto n° 4264 de 10 de junho de 2002.

Endereço https://www.planalto.gov.br/ccivil_03/decreto/2002/D4264.htm Ir Links

Presidência da República
Casa Civil
Subchefia para Assuntos Jurídicos

DECRETO N° 4.264, DE 10 DE JUNHO DE 2002.

Restabelece o regulamento aprovado pelo Decreto nº 10.546, de 5 de novembro de 1913, que regulamenta a Lei nº 2.784, de 18 de junho de 1913, e dá outras providências.

O PRESIDENTE DA REPÚBLICA, no uso das atribuições que lhe confere o art. 84, incisos IV e VI, alínea "a", da Constituição, e tendo em vista o disposto na Lei nº 2.784, de 18 de junho de 1913,

DECRETA:

Art. 1º Fica restabelecido o regulamento aprovado pelo Decreto nº 10.546, de 5 de novembro de 1913, passando o seu art. 6º a vigorar com a seguinte redação:

> "Art. 6º É da competência do Observatório Nacional, unidade de pesquisa do Ministério da Ciência e Tecnologia, gerar a Hora Legal do Brasil, bem como disseminá-la pelos meios de comunicação, observado o disposto na legislação vigente e nos tratados, acordos e atos internacionais de que o Brasil seja parte." (NR)

Art. 2º Este Decreto entra em vigor na data de sua publicação.

Brasília, 10 de junho de 2002; 181º da Independência e 114º da República.

FERNANDO HENRIQUE CARDOSO
Ronaldo Mota Sardenberg

Este texto não substitui o publicado no D.O.U. de 11.6.2002

ANEXO D

http://www.atnf.csiro.au/pub/time/info/ggtts.gps (**08/03/2007)**

GGTTS GPS Data Format, version 01

The NML GPS receivers used for common view now report data in the GGTTS format. This format provides more information than the old format, and some data is given to higher precision than before.

The data preamble is shown below, along with a brief description of what some of the lines mean. The data header is then eproduced, with the meanings shown below that. Note that the data field is longer than 80 columns, and the heading has been "folded" for clarity.

```
------------------------------------------------------------------
GGTTS GPS DATA FORMAT VERSION = 01
REV DATE = 1995-10-31                  /Revision date of data header
RCVR = AOA TTR6 0267 1991              /Receiver type, S.N. etc
CH = 01                                /number of receiver channels
IMS = 99999                            /Ionospheric correction receiver, or
LAB = NML                                      99999 if ionosphere modelled
X = -4648204.01 m                      /Antenna co-ordinates
Y = +2560474.76 m
Z = -3526504.99 m
FRAME = ITRF93                         /frame of reference
COMMENTS = NO COMMENTS
INT DLY = 40.0 ns                      /internal receiver delay
CAB DLY = 0292.0 ns                    /antenna to receiver cable delay
REF DLY = 0000.0 ns                    /reference 1PPS delay
REF = 36340                            /Reference (NML Caesium HP5071, S.N.340)
CKSUM = 66                             /Checksum for header (see CK below)

PRN CL MJD STTIME TRKL ELV AZTH   REFSV      SRSV     REFGPS    SRGPS  DSG   IOE  MDTR  SMDT    MDIO SMDI CK
           hhmmss  s  .1dg .1dg    .1ns     .1ps/s     .1ns    .1ps/s  .1ns .1ns .1ps/s .1ns  .1ps/s
```

```
-------------------------------------------------------------------
PRN              Satellite vehicle PRN (pseudo random number). This identifies the code number used for the
satellites CA code.

CL               Common-view class byte (hexadecimal).

STTIME           Start time of the track in hours minutes and seconds. MJD is the day on which the track occured.
hhmmss
```

TRKL: Length of the track in seconds (s)

ELV: Elevation of spacecraft in tenths of degrees at the midpoint of the track.
.1dg

```
AZTH             Azimuth of spacecraft in tenths of degrees at the midpoint of the track.
.1dg

REFSV            Difference between the (NML) reference and the space vehicle clock in tenths of nanoseconds.  Obs:
NML=National Measurement Laboratory
 .1ns

 SRSV            Slope of best line of fit for REF-SV data in
.1ps/s           tenths of picoseconds/second.

REFGPS           Difference between the (NML) reference and the GPS
 .1ns            time in tenths of nanoseconds

 SRGPS           Slope of best line of fit for REF-GPS in
.1ps/s           tenths of picoseconds/second.

 DSG             [Data Sigma] Root mean square of residuals of best line
.1ns             of fit for REFGPS in tenths of nanoseconds.

IOE              Index of Ephemeris. Three digit code indicating the ephemeris used for computation.
```

MDTR .1ns	Modelled trophospheric delay in tenths of nanoseconds
SMDT .1ps/s	Slope of moddeled trophospheric delay in tenths of picoseconds/second.
MDIO .1ns	Modelled Ionoshperic delay in tenths of nanoseconds.
SMDI .1ps/s	Slope of modelled ionospheric delay in tenths of picoseconds/second.
CK	Data line checksum. Hex sum, modulo 256 of ascii values of all characters in the data line up to CK.

ANEXO E

CIRCULAR T 222 **ISSN 1143-1393**

2006 JULY 13, 09h UTC

BUREAU INTERNATIONAL DES POIDS ET MESURES
ORGANISATION INTERGOUVERNEMENTALE DE LA CONVENTION DU METRE
PAVILLON DE BRETEUIL F-92312 SEVRES CEDEX TEL. +33 1 45 07 70 70 FAX. +33 1 45 34 20 21 tai@bipm.org

1 - Coordinated Universal Time UTC and its local realizations UTC(k). Computed values of [UTC-UTC(k)] and uncertainties valid for the period of this Circular. From 2006 January 1, 0h UTC, TAI-UTC = 33 s.

Date 2006 0h UTC	MAY 29	JUN 3	JUN 8	JUN 13	JUN 18	JUN 23	JUN 28	Uncertainty/ns			Notes
MJD	53884	53889	53894	53899	53904	53909	53914	uA	uB	u	
Laboratory k	[UTC-UTC(k)]/ns										
AOS (Borowiec)	-0.1	-11.9	-1.5	-1.0	3.8	4.3	5.2	1.6	5.3	5.5	
APL (Laurel)	-11.4	4.9	13.6	15.4	6.6	7.5	0.8	1.6	5.2	5.4	
AUS (Sydney)	-598.2	-592.3	-591.2	-581.0	-540.7	-536.0	-529.0	3.2	6.3	7.0	
BEV (Wien)	78.8	78.7	84.3	83.5	93.9	97.5	97.9	1.6	5.3	5.5	
BIRM (Beijing)	-1769.6	-1786.6	-1805.5	-1820.6	-1840.3	-1859.0	-1874.4	2.7	20.4	20.5	
CAO (Cagliari)	-1456.2	-1458.9	-1447.0	-1428.3	-1398.4	-1368.9	-1311.8	1.6	7.2	7.4	
CH (Bern)	-12.7	-3.3	-2.4	2.4	23.8	25.1	30.9	0.9	5.2	5.3	
CNM (Queretaro)	-24.6	-14.8	-12.8	-7.3	-9.1	-14.2	-13.5	5.0	20.4	21.0	
CNMP (Panama)	-5037.0	-5062.5	-5107.0	-5137.6	-5160.7	-5185.9	-5216.4	4.0	7.2	8.3	
CSIR (Pretoria)	518.7	433.3	362.8	253.3	196.5	128.0	65.9	3.0	20.1	20.3	
DLR (Oberpfaffenhofen)	-	-	-	-	-	-	-	-	-	-	
DTAG (Darmstadt)	-49.2	-45.1	-49.1	-49.0	-54.2	-67.9	-70.8	3.0	10.1	10.6	
HKO (Hong Kong)	115.6	124.9	125.4	127.0	139.3	140.3	133.5	3.2	6.3	7.1	
IFAG (Wettzell)	-56.8	-54.0	-50.8	-52.8	-34.3	-27.6	-27.0	0.9	5.2	5.3	
IGMA (Buenos Aires)	-	-	-	-	-	-	-	-	-	-	
INPL (Jerusalem)	150.4	145.9	147.5	148.9	159.7	155.6	154.9	4.0	10.2	10.9	

IT (Torino)	0.4	2.5	-0.4	-2.1	-3.8	-5.4	-5.0	0.7	2.3	2.4	(1)
JATC (Lintong)	9.5	-6.3	-5.4	-4.4	1.1	-1.6	-3.3	2.6	20.9	21.1	
JV (Kjeller)	-4029.5	-3967.8	-3934.1	-3899.5	-3853.3	-3766.1	-3696.8	5.0	20.0	20.7	
KRIS (Daejeon)	-10.1	-14.6	-23.8	-12.5	-16.9	-13.5	-14.6	1.3	6.3	6.4	
LDS (Leeds)	5124.2	5160.1	5199.6	5249.7	5287.2	5297.1	5331.2	3.0	20.0	20.2	
LT (Vilnius)	120.0	136.6	138.7	142.6	148.5	134.1	147.0	1.6	5.3	5.5	
MIKE (Espoo)	-108.2	-105.8	-102.7	-95.3	-102.2	-97.2	-109.1	5.0	19.9	20.5	
MSL (Lower Hutt)	-25.6	-1.8	-3.7	42.6	67.3	44.4	35.7	2.3	20.3	20.5	
NAO (Mizusawa)	206.6	204.6	209.6	211.0	208.9	213.4	214.0	3.1	19.7	20.0	
NICT (Tokyo)	-3.0	-4.1	-3.6	-4.2	-3.9	-6.8	-8.1	1.1	3.8	4.0	
NIM (Beijing)	-56.2	-59.5	-57.9	-56.8	-55.3	-53.2	-53.7	3.2	20.2	20.4	
NIMB (Bucharest)	-864.9	-876.6	-872.5	-873.7	-877.3	-893.6	-875.1	2.5	20.0	20.2	
NIMT (Bangkok)	-1149.8	-1150.1	-1146.1	-1148.0	-1145.9	-1150.2	-1149.6	1.5	20.4	20.4	
NIS (Cairo)	13.1	9.6	5.9	-0.4	-2.6	-2.6	-2.4	1.6	7.2	7.4	
Date 2006 0h UTC	MAY 29	JUN 3	JUN 8	JUN 13	JUN 18	JUN 23	JUN 28	Uncertainty/ns			Notes
MJD	53884	53889	53894	53899	53904	53909	53914	uA	uB	u	
Laboratory k				[UTC-UTC(k)]/ns							
NIST (Boulder)	6.5	7.1	7.4	6.9	6.9	8.5	9.2	0.7	5.0	5.0	
NMC (Sofiya)	-4519.1	-4538.2	-4552.5	-4545.0	-4550.0	-4549.3	-4562.9	5.0	20.1	20.7	
NMIJ (Tsukuba)	-12.5	-10.9	-10.3	-11.4	-9.0	-10.4	-10.3	1.3	6.2	6.4	
NMLS (Sepang)	-358.0	-351.5	-345.3	-353.8	-355.0	-366.1	-364.3	3.2	20.2	20.5	
NPL (Teddington)	20.0	17.5	14.7	11.9	9.6	9.3	7.9	0.7	2.3	2.4	
NPLI (New-Delhi)	19.7	25.6	39.9	47.8	87.8	107.6	119.6	2.5	7.2	7.6	
NRC (Ottawa)	1.2	-16.1	-19.8	-32.5	-38.9	-40.3	-27.1	3.0	15.1	15.4	
NTSC (Lintong)	2.8	3.3	7.4	9.8	15.0	10.7	10.4	2.6	6.1	6.6	
OMH (Budapest)	11099.1	11096.6	11114.7	11111.5	11114.2	11120.5	11130.1	2.5	20.1	20.2	
ONBA (Buenos Aires)	-10137.8	-10242.2	-10289.0	-10440.8	-10508.9	-10488.0	-10562.8	5.0	7.2	8.8	
ONRJ (Rio de Janeiro)	7203.9	7255.2	7302.5	7355.9	7415.8	7472.2	7524.1	5.0	20.5	21.1	
OP (Paris)	-16.2	-12.9	-5.7	-2.7	-5.1	0.7	-2.9	0.7	2.2	2.4	
ORB (Bruxelles)	0.9	1.8	2.6	1.9	4.8	4.2	3.8	0.9	5.3	5.3	
PL (Warszawa)	-3.9	-0.8	-3.8	-5.2	4.9	15.8	13.1	1.5	5.1	5.3	

PTB	(Braunschweig)	30.0	32.7	34.6	29.5	28.2	26.8	25.8	0.5	1.7	1.8	
ROA	(San Fernando)	45.2	50.1	53.7	54.2	48.9	60.4	63.5	0.9	5.3	5.3	
SCL	(Hong Kong)	35.0	27.2	29.8	25.3	18.3	3.2	-10.0	4.1	10.5	11.3	
SG	(Singapore)	-80.0	-95.2	-91.3	-91.8	-84.9	-83.7	-79.5	3.2	20.1	20.4	
SMU	(Bratislava)	-124.3	-123.3	-115.8	-105.1	-106.7	-84.2	-86.7	5.0	20.1	20.7	
SP	(Boras)	25.9	26.2	23.7	19.1	26.4	28.7	25.4	0.8	2.3	2.4	(2)
SU	(Moskva)	21.7	25.3	28.6	33.1	36.0	42.0	48.1	3.0	5.2	6.0	
TCC	(Concepcion)	-2864.4	-2872.3	-2876.2	-2885.7	-2921.3	-2950.7	-3016.7	2.1	20.1	20.2	
TL	(Chung-Li)	5.5	6.9	5.8	5.0	6.9	4.1	3.1	1.3	6.1	6.2	
TP	(Praha)	70.4	52.7	43.6	48.0	32.5	16.5	10.9	1.6	5.3	5.5	(3)
UME	(Gebze-Kocaeli)	1243.1	-10.6	-10.5	-19.1	-29.3	-28.1	-25.7	1.6	7.2	7.4	(4)
USNO	(Washington DC)	-8.7	-7.5	-6.8	-6.4	-6.2	-3.9	-2.9	0.6	1.8	1.9	
VSL	(Delft)	19.4	20.0	15.8	10.6	14.3	12.6	5.6	0.7	3.5	3.5	
ZMDM	(Belgrade)	3090.7	3119.0	3150.2	3184.6	3204.9	3227.9	3248.4	2.6	7.2	7.7	

- Notes on section 1:

(1) IT : Change of master clock on MJD 53909.35.
(2) SP : Corrected uncertainties for MJD 53854 to MJD 53884: (uA,uB,u) = (0.8, 2.3, 2.4) ns.
(3) TP : Change of master clock on MJD 53887.52.
(4) UME : Time step of UTC(UME) between MJD 53884.0 and 53889.0 due to master clock change.

2 - International Atomic Time TAI and Local atomic time scales TA(k). Computed values of [TAI-TA(k)].

Date 2006	0h UTC	MAY 29	JUN 3	JUN 8	JUN 13	JUN 18	JUN 23	JUN 28
MJD		53884	53889	53894	53899	53904	53909	53914
Laboratory k					[TAI-TA(k)]/ns			
CH	(Bern)	52934.3	52967.5	52992.1	53020.6	53065.8	53090.8	53120.4
F	(Paris)	168387.4	168386.4	168384.8	168378.6	168376.2	168375.0	168368.2
IT	(Torino)	53559.4	53695.4	53832.6	53969.7	54102.7	54243.3	54379.9

JATC (Lintong)	-39742.3	-39786.3	-39823.0	-39862.2	-39897.3	-39938.3	-39972.8	
KRIS (Daejeon)	12055.1	12116.5	12173.7	12249.9	12312.5	12382.3	12448.3	
NICT (Tokyo)	-1.4	0.0	0.5	0.2	3.3	0.9	0.5	
NIST (Boulder)	-45293083.5	-45293276.7	-45293470.1	-45293664.4	-45293858.1	-45294050.3	-45294243.3	
NRC (Ottawa)	29759.3	29758.9	29772.1	29776.5	29786.6	29802.3	29824.1	
NTSC (Lintong)	2877.3	2899.1	2923.6	2944.8	2968.1	2987.3	3010.9	
ONRJ (Rio de Janeiro)	**-**	**13.8**	**-21.7**	**-51.7**	**-77.8**	**-105.1**	**-119.0**	**(1)**
PL (Warszawa)	-3648.0	-3657.6	-3665.1	-3672.2	-3681.2	-3684.8	-3692.3	
PTB (Braunschweig)	-358227.0	-358216.9	-358207.7	-358205.1	-358199.0	-358192.8	-358186.4	
SU (Moskva)	27242202.1	27242219.5	27242236.6	27242255.0	27242271.7	27242291.5	27242311.4	(2)
TL (Chung-Li)	367.7	371.9	374.7	383.3	389.9	391.8	394.6	
USNO (Washington DC)	-34977304.5	-34977607.9	-34977912.5	-34978217.9	-34978523.7	-34978827.4	-34979133.0	

- Notes on section 2:

(1) ONRJ: TA(ONRJ) is an independent local atomic time scale computed by ONRJ.
(2) SU : Listed values are TAI-TA(SU) - 2.80 seconds.

3 - Difference between the normalized frequencies of EAL (free atomic time scale) and TAI.

	Interval of validity	f(EAL)-f(TAI)	
Steering correction	53884 - 53914	6.823x10**-13	(2006 MAY 29 - 2006 JUN 28)
New correction	53914 - 53944	6.823x10**-13	(2006 JUN 28 - 2006 JUL 28)
New correction foreseen	53944 - 53974	6.820x10**-13	(2006 JUL 28 - 2006 AUG 27)

4 - Duration of the TAI scale interval.

TAI is a realization of coordinate time TT. The following tables give the fractional deviation d of the scale interval of TAI from that of TT (the SI second on the geoid), i.e. the fractional frequency deviation of TAI with the opposite sign: d = -yTAI. In this section, a frequency over a time interval is defined as the ratio of the end-point phase difference to the duration of the interval. Whenever needed, the instability of EAL should be expressed as the quadratic sum of three components with t in days: (1) a white frequency noise of 3.0x10**-15 / sqrt(t), (2) a flicker frequency noise of 0.5x10**-15 and (3) a random walk frequency noise of 1.0x10**-16 x sqrt(t). The relation between EAL and TAI is given in Circular T and the Annual Report of the BIPM Time Section.

In the first table, d is obtained, on the given periods of estimation by comparison of the TAI frequency with that of the given individual Primary Frequency Standards (PFS). In this table: uA is the uncertainty originating in the instability of the PFS, uB is the combined uncertainty from systematic effects, Ref(uB) is a reference giving information on the stated value of uB or is the Circular T where this reference was first given, ul/lab is the uncertainty in the link between the PFS and the clock participating to TAI, including the uncertainty due to the dead-time, ul/TAI is the uncertainty in the link to TAI, u is the quadratic sum of all four uncertainty values. All values are expressed in 10**-15.

Standard	Period of Estimation	d	uA	uB	Ref(uB)	ul/Lab	ul/Tai	u	Note
SYRTE-JPO	53884 53914	8.0	0.6	6.3	T160	0.3	1.0	6.4	(1)
PTB-CS1	53884 53914	2.3	5.0	8.0	T148	0.0	1.0	9.5	(2)
PTB-CS2	53884 53914	1.2	3.0	12.0	T148	0.0	1.0	12.4	(2)

Notes:
(1) Report 4 July by LNE-SYRTE.
(2) Continuously operating as a clock participating to TAI.

The second table gives the BIPM estimate of d, based on all available PFS measurements over the period MJD 53524-53914, taking into account their individual uncertainties and characterizing the instability of EAL as noted above. u is the computed standard uncertainty of d.

Period of estimation	d	u	
53884-53914	1.9x10**-15	1.8x10**-15	(2006 MAY 29 - 2006 JUN 28)

5 - Relations of UTC and TAI with GPS time and GLONASS time.

[UTC-GPS time] = -14 s + C0, [TAI-GPS time] = 19 s + C0, global uncertainty is of order 10 ns.

[UTC−GLONASS time] = 0 s + C1, [TAI−GLONASS time] = 33 s + C1, global uncertainty is of order hundreds ns.

The C0 values are obtained using the values [UTC−UTC(OP)] and the GPS data taken at the Paris Observatory, corrected for IGS precise orbits, clocks and ionosphere maps. The C1 values are obtained using the values [UTC−UTC(AOS)] and the GLONASS data taken at the Astrogeodynamical Observatory Borowiec (AOS). N0 and N1 are the numbers of measurements, when N0 or N1 is 0, the corresponding values of C0 or C1 are interpolated.
The standard deviations S0 and S1 characterize the dispersion of individual measurements. The actual uncertainty of user's access to GPS and GLONASS times may differ from these values.
For this circular, S0 = 2.1 ns, S1 = 14.6 ns

Date 2006 0h UTC	MJD	C0/ns	N0	C1/ns	N1
MAY 29	53884	−13.1	48	−17.9	85
MAY 30	53885	−13.5	46	−16.2	87
MAY 31	53886	−13.4	47	−14.3	82
JUN 1	53887	−14.7	46	−11.5	73
JUN 2	53888	−14.7	48	−8.6	85
JUN 3	53889	−13.2	47	−4.9	86
JUN 4	53890	−13.0	46	−4.9	80
JUN 5	53891	−13.2	47	2.8	87
JUN 6	53892	−14.9	47	15.2	82
JUN 7	53893	−16.4	47	18.9	75
JUN 8	53894	−14.4	47	17.9	75
JUN 9	53895	−10.5	47	21.7	84
JUN 10	53896	−9.4	47	25.5	81
JUN 11	53897	−10.4	47	27.2	72
JUN 12	53898	−10.2	47	29.9	80
JUN 13	53899	−11.0	47	29.5	75
JUN 14	53900	−10.6	48	31.0	90
JUN 15	53901	−10.0	47	39.5	70
JUN 16	53902	−9.9	47	53.8	63
JUN 17	53903	−13.0	47	63.3	71
JUN 18	53904	−15.4	48	70.0	67
JUN 19	53905	−13.2	47	74.5	75
JUN 20	53906	−13.1	47	83.0	80

JUN 21	53907	-14.0	46	91.0	89
JUN 22	53908	-9.1	46	100.6	80
JUN 23	53909	-7.7	46	118.3	88
JUN 24	53910	-6.6	47	132.0	82
JUN 25	53911	-4.8	47	141.2	70
JUN 26	53912	-6.7	48	144.0	76
JUN 27	53913	-8.1	45	137.1	89
JUN 28	53914	-8.2	46	132.6	74

6 - Time links used for the computation of TAI and their uncertainties.

The time links used in the elaboration of this Circular T are listed in this section. The technique for the link is indicated as follows: GPS SC for GPS common-view single-channel C/A data; GPS MC for GPS common-view multi-channel C/A data; GPS P3 for GPS common-view multi-channel dual-frequency P code data; GPS GT for 'GPS time' observations; INT LK for internal cable link and TWSTFT for two-way satellite time and frequency transfer data.

For each link, the following uncertainties are provided: uA is the statistical uncertainty evaluated by taking into account the level of phase noise in the raw data, the interpolation interval between data points and the effects with typical duration between 5 and 30 days. uB is the estimated uncertainty on the calibration.

The calibration type of the link is indicated as: GPS EC for GPS equipment calibration; TW EC for two-way equipment calibration; LC (technique) for a link calibrated using 'technique'; BC (technique) for a link calibrated using 'technique' to transfer a past equipment calibration through a discontinuity of link operation.

The calibration dates indicate: the most recent calibration results for the two laboratories in the case of EC and the most recent calibration of the link in the case of LC and BC, NA stands for not available, in this case estimated values are provided.

Link	Type	uA/ns	uB/ns	Calibration Type	Calibration Dates
AOS /PTB	GPS MC	1.5	5.0	GPS EC /GPS EC	2003 Sep/2003 Aug
APL /USNO	GPS MC	1.5	5.0	GPS EC /GPS EC	2003 Dec/2003 Dec
AUS /NICT	GPS MC	3.0	5.0	GPS EC/GPS EC	2002 Sep/2003 Nov
BEV /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Dec/2003 Aug
BIRM/NICT	GPS MC	2.5	20.0	NA /GPS EC	NA /2003 Nov
CAO /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2004 Nov/2003 Aug
CH /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2004 Nov/2004 Aug
CNM /NIST	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Dec
CNMP/USNO	GPS MC	4.0	7.0	GPS EC/GPS EC	2002 Oct/2003 Dec
CSIR/PTB	GPS MC	3.0	20.0	NA /GPS EC	NA /2003 Aug
DLR /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Apr/2004 Aug
DTAG/PTB	GPS SC	3.0	10.0	GPS EC/GPS EC	1998 May/2003 Aug
HKO /NICT	GPS MC	3.0	5.0	GPS EC/GPS EC	2004 Apr/2003 Nov
IFAG/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jun/2004 Aug
IGMA/USNO	GPS MC	5.0	20.0	NA /GPS EC	NA /2003 Dec
INPL/PTB	GPS SC	4.0	10.0	GPS EC/GPS EC	1987 Jun/2003 Jun
IT /PTB	TWSTFT	0.5	1.5	BC (TWSTFT)	2005 May
JATC/NTSC	INT LK	0.2	20.0	NA	NA
JV /PTB	GPS GT	5.0	20.0	NA /GPS EC	NA /2003 Aug
KRIS/NICT	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Aug/2005 Jun

Link	Type	uA/ns	uB/ns	Calibration Type	Calibration Dates
LDS /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2003 Aug
LT /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Nov/2003 Aug
MIKE/PTB	GPS MC	5.0	20.0	NA /GPS EC	NA /2003 Aug
MSL /NICT	GPS P3	2.0	20.0	NA /GPS EC	NA /2005 Jun
NAO /NICT	GPS SC	3.0	20.0	NA /GPS EC	NA /2003 Nov
NICT/PTB	GPS P3	1.5	5.0	GPS EC/GPS EC	2005 Jun/2004 Aug
NIM /NICT	GPS MC	3.0	20.0	NA /GPS EC	NA /2003 Nov
NIMB/PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2003 Aug
NIMT/NICT	GPS P3	1.0	20.0	NA /GPS EC	NA /2005 Jun

NIS /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2005 May/2003 Aug	
NIST/PTB	TWSTFT	0.5	5.0	BC(GPS P3)	2005 May	
NMC /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug	
NMIJ/NICT	GPS P3	0.7	5.0	GPS EC/GPS EC	2002 Apr/2005 Jun	
NMLS/NICT	GPS MC	3.0	20.0	NA /GPS EC	NA /2003 Nov	
NPL /PTB	TWSTFT	0.5	1.5	BC(GPS P3)	2005 May	
NPLI/PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 Jul/2003 Aug	
NRC /USNO	GPS SC	3.0	15.0	GPS EC/GPS EC	1982 /2003 Dec	
NTSC/NICT	GPS MC	2.5	5.0	GPS EC/GPS EC	2002 Aug/2003 Oct	
OMH /PTB	GPS SC	2.5	20.0	NA /GPS EC	NA /2003 Aug	
ONBA/USNO	GPS MC	5.0	7.0	GPS EC/GPS EC	2000 Oct/2003 Dec	
ONRJ/NIST	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Dec	
OP /PTB	TWSTFT	0.5	1.5	BC(GPS P3)	2005 May	
ORB /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jul/2004 Aug	
PL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Oct/2003 Aug	
ROA /PTB	TWSTFT	0.7	5.0	BC(GPS P3)	2005 May	
SCL /NICT	GPS SC	4.0	10.0	GPS EC/GPS EC	1993 May/2003 Nov	
SG /NICT	GPS MC	3.0	20.0	NA /GPS EC	NA /2003 Nov	
SMU /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug	
SP /PTB	GPS P3	0.7	1.5	LC(TWSTFT)	2005 Nov	(1)
SU /PTB	GPS SC	3.0	5.0	GPS EC/GPS EC	2003 Apr/2003 Aug	
TCC /USNO	GPS P3	2.0	20.0	NA /GPS EC	NA /2002 Dec	
TL /NICT	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 May/2005 Jun	
TP /PTB	GPS MC	1.5	5.0	LC(GPS SC)	2006 Jun	
UME /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2005 Dec/2003 Aug	
USNO/PTB	TWSTFT	0.5	1.1	BC(TW X-Band)	2005 May	
VSL /PTB	TWSTFT	0.5	3.0	BC(GPS SC)	2005 May	
ZMDM/PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 Mar/2003 Aug	

- Note on section 6:

(1) Correction for Circular T 221:

SP /PTB	GPS P3	0.7	1.5	LC(TWSTFT)	2005 Nov

ANEXO F

CIRCULAR T 225 **ISSN 1143-1393**

2006 OCTOBER 12, 13h UTC

BUREAU INTERNATIONAL DES POIDS ET MESURES
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1 - Coordinated Universal Time UTC and its local realizations UTC(k). Computed values of [UTC-UTC(k)] and uncertainties valid for the period of this Circular. From 2006 January 1, 0h UTC, TAI-UTC = 33 s.

Date 2006 0h UTC	AUG 27	SEP 1	SEP 6	SEP 11	SEP 16	SEP 21	SEP 26	Uncertainty/ns			Notes
MJD	53974	53979	53984	53989	53994	53999	54004	uA	uB	u	
Laboratory k				[UTC-UTC(k)]/ns							
AOS (Borowiec)	1.8	-5.0	10.3	5.9	-10.3	-1.0	1.7	1.5	5.1	5.3	
APL (Laurel)	7.4	26.1	32.4	32.7	26.5	20.8	20.6	1.5	5.0	5.2	
AUS (Sydney)	-388.8	-376.0	-361.5	-335.6	-308.6	-299.6	-292.0	1.5	5.0	5.3	
BEV (Wien)	36.6	43.9	42.0	40.6	37.4	27.3	23.8	2.0	5.0	5.4	
BIRM (Beijing)	-2025.4	-2048.7	-2073.8	-2103.2	-2125.0	-2140.6	-2166.7	3.5	20.0	20.3	
CAO (Cagliari)	-1086.0	-1062.4	-1053.2	-1047.2	-1024.6	-1017.1	-1009.3	1.5	7.1	7.2	
CH (Bern)	-8.2	-23.2	-25.4	-29.1	-29.4	-27.2	-29.3	0.7	5.0	5.1	(1)
CNM (Queretaro)	-13.5	-9.5	-5.7	0.2	1.7	4.5	3.1	4.9	19.8	20.4	
CNMP (Panama)	-5564.0	-5593.2	-5626.0	-5649.3	-5674.8	-5730.1	-5756.7	3.0	7.0	7.7	
CSIR (Pretoria)	-857.5	-929.5	-1016.5	-1086.6	-1179.9	-1259.1	-1336.5	2.5	20.0	20.2	
DLR (Oberpfaffenhofen)	-	-	-	-	-	-	-	-	-	-	
DTAG (Darmstadt)	-36.9	-8.8	28.6	56.9	70.1	99.1	131.3	3.0	10.0	10.5	
HKO (Hong Kong)	73.8	68.3	73.4	70.5	63.5	61.5	50.2	2.5	5.1	5.7	
IFAG (Wettzell)	-443.1	-412.8	-412.2	-409.7	-408.3	-395.5	-386.2	2.5	5.0	5.6	

IGMA (Buenos Aires)	-	-	-	-	-	-	776.3	5.0	20.0	20.6	
INPL (Jerusalem)	183.3	179.4	175.5	179.8	178.3	178.6	177.6	5.0	10.0	11.2	
IT (Torino)	17.2	19.8	25.1	27.0	26.1	23.3	19.7	0.6	1.3	1.4	
JATC (Lintong)	-8.0	-7.3	4.7	11.7	11.9	8.0	1.8	1.5	4.9	5.2	
JV (Kjeller)	-3030.3	-2966.1	-2916.7	-2839.4	-2763.2	-2739.1	-2710.9	5.0	20.0	20.6	
KRIS (Daejeon)	-9.7	-8.1	-8.3	-5.5	-7.6	-8.3	-11.3	0.7	5.0	5.1	
LDS (Leeds)	293.3	331.2	352.2	392.0	449.5	494.6	530.2	3.0	20.0	20.2	
LT (Vilnius)	89.1	96.7	99.1	114.2	129.2	108.0	114.1	1.5	5.1	5.3	
MIKE (Espoo)	-93.8	-128.5	-124.2	-122.6	-128.3	-123.8	-106.6	5.0	19.8	20.4	
MSL (Lower Hutt)	47.4	62.3	53.7	30.4	33.4	28.0	27.9	1.0	20.0	20.0	
NAO (Mizusawa)	231.7	238.7	258.5	249.3	242.7	256.8	250.3	3.0	20.0	20.2	(2)
NICT (Tokyo)	-1.3	0.8	1.2	0.6	0.3	2.5	2.7	0.7	4.8	4.8	
NIM (Beijing)	-53.2	-54.0	-49.3	-47.1	-51.6	-51.5	-54.1	1.5	19.8	19.8	
NIMB (Bucharest)	-981.8	-997.8	-999.2	-992.4	-1015.5	-1005.5	-1005.8	2.5	20.0	20.1	
NIMT (Bangkok)	-1146.0	-1144.6	-1141.3	-1139.7	-1135.5	-1134.8	-1135.6	1.0	20.0	20.0	
NIS (Cairo)	-	82.6	111.0	132.4	148.1	165.8	175.9	2.5	7.1	7.5	
Date 2006 0h UTC	AUG 27	SEP 1	SEP 6	SEP 11	SEP 16	SEP 21	SEP 26	Uncertainty/ns			Notes
MJD	53974	53979	53984	53989	53994	53999	54004	uA	uB	u	
Laboratory k				[UTC-UTC(k)]/ns							
NIST (Boulder)	-2.2	-5.4	-6.7	-8.8	-11.3	-13.0	-14.6	0.5	4.8	4.8	
NMC (Sofiya)	-4701.1	-4720.4	-4744.5	-4739.8	-4727.9	-4756.3	-4771.5	5.0	20.0	20.6	
NMIJ (Tsukuba)	-12.3	-13.7	-15.0	-17.3	-18.7	-22.3	-25.8	0.7	5.1	5.1	
NMLS (Sepang)	-467.3	-470.7	-480.1	-492.1	-492.0	-492.9	-499.0	2.0	20.0	20.1	
NPL (Teddington)	-1.8	-4.0	-2.8	-3.4	-4.1	-3.4	-3.6	0.6	1.3	1.4	
NPLI (New-Delhi)	-35.1	-17.9	2.1	15.5	35.9	49.9	71.4	4.0	7.1	8.1	
NRC (Ottawa)	8.7	16.7	18.3	21.2	20.7	22.6	29.2	0.7	5.1	5.1	
NTSC (Lintong)	-2.0	-1.4	7.3	12.4	15.3	13.6	7.8	1.5	4.8	5.0	
OMH (Budapest)	11385.0	11411.6	11435.4	11456.8	11472.0	11500.4	11523.9	2.5	20.0	20.2	
ONBA (Buenos Aires)	-	-	-	-	-	-	-	-	-	-	
ONRJ (Rio de Janeiro)	8132.0	8175.3	8223.6	8275.7	8330.3	8384.7	8437.3	7.0	19.9	21.1	
OP (Paris)	4.7	-3.1	-0.9	-3.9	-8.4	-6.3	-13.8	0.6	1.3	1.4	

ORB (Bruxelles)	10.0	12.5	16.1	17.6	22.6	24.4	25.0	0.7	5.0	5.1
PL (Warszawa)	10.0	15.5	13.2	0.4	-6.9	-6.6	-9.0	1.5	4.8	5.1
PTB (Braunschweig)	11.3	4.5	6.1	0.0	-5.1	-6.3	-5.0	0.3	0.9	0.9
ROA (San Fernando)	91.6	95.5	88.0	74.9	70.4	75.8	73.3	0.7	5.0	5.1
SCL (Hong Kong)	-52.3	-53.6	-41.1	-42.9	-39.7	-36.3	-46.7	3.9	9.9	10.6
SG (Singapore)	-	28.8	43.4	44.9	47.0	43.2	54.9	2.0	7.1	7.3
SMU (Bratislava)	-26.7	-38.2	-42.8	-41.1	-45.1	-40.2	-49.6	5.0	20.0	20.6
SP (Boras)	8.7	7.3	8.5	0.9	2.9	-0.4	2.9	0.7	1.7	1.8
SU (Moskva)	25.1	18.2	13.1	6.7	-0.9	-4.7	-7.9	3.0	5.0	5.8
TCC (Concepcion)	-3189.5	-3203.9	-3266.0	-3310.0	-3315.2	-3341.6	-3367.4	1.5	20.0	20.1
TL (Chung-Li)	2.9	4.4	6.0	2.4	1.9	2.8	2.0	0.7	4.8	4.9
TP (Praha)	-58.3	-57.8	-51.7	-42.7	-42.1	-33.0	-28.9	1.5	5.1	5.3
UME (Gebze-Kocaeli)	-67.0	-65.5	-66.0	-66.2	-65.4	-60.8	56.5	1.5	7.1	7.2
USNO (Washington DC)	1.3	-1.0	-0.5	-2.0	-2.0	-1.1	-0.2	0.3	1.0	1.0
VSL (Delft)	-10.7	-10.7	-7.9	-7.8	-11.9	-13.8	-20.1	0.6	1.3	1.4
ZMDM (Belgrade)	3568.2	3598.0	3626.9	3644.7	3668.9	3703.7	3733.7	2.0	7.0	7.3

- Notes on section 1:

(1) CH : Time step of UTC(CH) of -8.9 ns on MJD 53986.
(2) NAO : Change of master clock on MJD 53982.

2 - International Atomic Time TAI and Local atomic time scales TA(k). Computed values of [TAI-TA(k)].

Date 2006 0h UTC	AUG 27	SEP 1	SEP 6	SEP 11	SEP 16	SEP 21	SEP 26
MJD	53974	53979	53984	53989	53994	53999	54004
Laboratory k				[TAI-TA(k)]/ns			
CH (Bern)	53404.7	53417.0	53440.2	53445.7	53463.5	53483.8	53499.8
F (Paris)	168359.0	168355.4	168356.7	168353.3	168352.1	168352.0	168346.7
IT (Torino)	55989.3	56121.6	56250.0	56376.9	56511.9	56645.1	56778.9
JATC (Lintong)	-40433.4	-40472.1	-40503.2	-40538.3	-40575.7	-40613.6	-40650.2
KRIS (Daejeon)	13281.9	13354.5	13425.4	13498.6	13567.6	13638.4	13707.3

NICT (Tokyo)	5.8	7.4	6.7	6.1	6.2	7.5	6.6	
NIST (Boulder)	-45296569.0	-45296764.7	-45296958.5	-45297153.1	-45297348.1	-45297542.3	-45297737.3	
NRC (Ottawa)	29958.5	29974.6	29993.1	30012.9	30029.5	30048.3	30071.8	
NTSC (Lintong)	3285.9	3307.4	3335.8	3361.2	3383.6	3405.9	3430.5	
ONRJ (Rio de Janeiro	-488.7	-523.1	-550.9	-580.3	-610.9	-640.9	-667.6	
PL (Warszawa)	-3807.3	-3812.0	-3816.4	-3824.2	-3836.3	-3847.4	-3857.4	
PTB (Braunschweig)	-358111.1	-358110.3	-358101.3	-358099.6	-358097.3	-358090.8	-358081.9	
SU (Moskva)	27242549.4	27242569.2	27242590.9	27242611.3	27242630.5	27242653.5	27242674.9	(1)
TL (Chung-Li)	463.6	467.3	471.8	476.3	480.6	486.1	492.2	
USNO (Washington DC)	-34982783.7	-34983089.3	-34983393.2	-34983697.7	-34984001.3	-34984304.6	-34984609.4	

- Note on section 2:

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

3 - Difference between the normalized frequencies of EAL (free atomic time scale) and TAI.

	Interval of validity	f(EAL)-f(TAI)	
Steering correction	53974 - 54004	6.820x10**-13	(2006 AUG 27 - 2006 SEP 26)
New correction	54004 - 54039	6.817x10**-13	(2006 SEP 26 - 2006 OCT 31)
New correction foreseen	54039 - 54069	6.817x10**-13	(2006 OCT 31 - 2006 NOV 30)

4 - Duration of the TAI scale interval.

TAI is a realization of coordinate time TT. The following tables give the fractional deviation d of the scale interval of TAI from that of TT (the SI second on the geoid), i.e. the fractional frequency deviation of TAI with the opposite sign: d = -yTAI. In this section, a frequency over a time interval is defined as the ratio of the end-point phase difference to the duration of the interval. Whenever needed, the instability of EAL should be expressed as the quadratic sum of three components with t in days: (1) a white frequency noise of 3.0x10**-15 / sqrt(t), (2) a flicker frequency noise of 0.5x10**-15 and (3) a random walk frequency noise of 1.0x10**-16 x sqrt(t). The relation between EAL and TAI is given in Circular T and the Annual Report of the BIPM

Time Section.

In the first table, d is obtained, on the given periods of estimation by comparison of the TAI frequency with that of the given individual Primary Frequency Standards (PFS). In this table: uA is the uncertainty originating in the instability of the PFS, uB is the combined uncertainty from systematic effects, Ref(uB) is a reference giving information on the stated value of uB or is the Circular T where this reference was first given, ul/lab is the uncertainty in the link between the PFS and the clock participating to TAI, including the uncertainty due to the dead-time, ul/TAI is the uncertainty in the link to TAI, u is the quadratic sum of all four uncertainty values. All values are expressed in 10**-15.

Standard	Period of Estimation		d	uA	uB	Ref(uB)	ul/Lab	ul/Tai	u	Note
SYRTE-JPO	53984	54004	11.1	0.8	6.3	T160	0.3	0.6	6.4	(1)
NMIJ-F1	53974	53984	-0.4	1.1	3.9	T213	0.6	1.9	4.5	(2)
PTB-CS1	53974	54004	-5.8	5.0	8.0	T148	0.0	0.3	9.4	(3)
PTB-CS2	53974	54004	5.8	3.0	12.0	T148	0.0	0.3	12.4	(3)

Notes:
(1) Report 5 Oct. 2006 by LNE-SYRTE.
(2) Report 2 Oct. 2006 by NMIJ.
(3) Continuously operating as a clock participating to TAI.

The second table gives the BIPM estimate of d, based on all available PFS measurements over the period MJD 53614-54004, taking into account their individual uncertainties and characterizing the instability of EAL as noted above. u is the computed standard uncertainty of d

Period of estimation	d	u	
53974-54004	2.7x10**-15	1.7x10**-15	(2006 AUG 27 - 2006 SEP 26)

5 - Relations of UTC and TAI with GPS time and GLONASS time.

```
[UTC-GPS time]     = -14 s + C0,   [TAI-GPS time]     =  19 s + C0, global uncertainty is of order 10 ns.
[UTC-GLONASS time] =   0 s + C1,   [TAI-GLONASS time] =  33 s + C1, global uncertainty is of order hundreds ns.
```

The C0 values are obtained using the values [UTC–UTC(OP)] and the GPS data taken at the Paris Observatory, corrected for IGS precise orbits, clocks and ionosphere maps. The C1 values are obtained using the values [UTC–UTC(AOS)] and the GLONASS data taken at the Astrogeodynamical Observatory Borowiec (AOS). N0 and N1 are the numbers of measurements,
when N0 or N1 is 0, the corresponding values of C0 or C1 are interpolated.
The standard deviations S0 and S1 characterize the dispersion of individual measurements. The actual uncertainty of user's access to GPS and GLONASS times may differ from these values.
For this circular, S0 = 2.3 ns, S1 = 12.5 ns

Date 2006 0h UTC	MJD	C0/ns	N0	C1/ns	N1
AUG 27	53974	-7.9	45	-33.1	73
AUG 28	53975	-8.0	44	-46.0	85
AUG 29	53976	-8.7	44	-57.5	83
AUG 30	53977	-8.2	45	-81.4	86
AUG 31	53978	-8.9	44	-108.2	86
SEP 1	53979	-8.6	44	-127.9	88
SEP 2	53980	-10.2	46	-148.1	89
SEP 3	53981	-9.8	46	-172.2	81
SEP 4	53982	-8.1	44	-193.9	78
SEP 5	53983	-5.3	45	-209.6	85
SEP 6	53984	-6.6	43	-210.0	86
SEP 7	53985	-8.6	45	-207.8	73
SEP 8	53986	-11.2	44	-210.9	74
SEP 9	53987	-12.1	45	-207.8	89
SEP 10	53988	-10.5	48	-204.1	79
SEP 11	53989	-8.2	47	-206.2	83
SEP 12	53990	-6.4	47	-210.5	89
SEP 13	53991	-6.0	47	-210.4	86
SEP 14	53992	-5.1	47	-213.4	82
SEP 15	53993	-7.8	47	-219.4	73
SEP 16	53994	-7.8	47	-223.9	66
SEP 17	53995	-5.8	47	-225.8	70
SEP 18	53996	-3.2	48	-224.3	84

SEP 19	53997	-4.6	47	-220.4	89
SEP 20	53998	-4.9	47	-225.9	87
SEP 21	53999	-7.8	47	-233.0	89
SEP 22	54000	-6.1	43	-219.5	86
SEP 23	54001	-4.8	44	-200.9	80
SEP 24	54002	-5.8	45	-203.5	89
SEP 25	54003	-5.5	47	-214.0	80
SEP 26	54004	-7.6	47	-225.1	75

6 - Time links used for the computation of TAI and their uncertainties.

The time links used in the elaboration of this Circular T are listed in this section. The technique for the link is indicated as follows: **GPS SC for GPS all-in-view single-channel C/A data**; GPS MC for GPS all-in-view multi-channel C/A data; GPS P3 for GPS all-in-view multi-channel dual-frequency P code data; GPS GT for 'GPS time' observations; INT LK for internal cable link and TWSTFT for two-way satellite time and frequency transfer data.

For each link, the following uncertainties are provided: uA is the statistical uncertainty evaluated by taking into account the level of phase noise in the raw data, the interpolation interval between data points and the effects with typical duration between 5 and 30 days. uB is the estimated uncertainty on the calibration.

The calibration type of the link is indicated as: GPS EC for GPS equipment calibration; TW EC for two-way equipment calibration; LC (technique) for a link calibrated using 'technique'; BC (technique) for a link calibrated using 'technique' to transfer a past equipment calibration through a discontinuity of link operation.

The calibration dates indicate: the most recent calibration results for the two laboratories in the case of EC and
the most recent calibration of the link in the case of LC and BC,
NA stands for not available, in this case estimated values are provided

Link	Type	uA/ns	uB/ns	Calibration Type	Calibration Dates
AOS /PTB	GPS MC	1.5	5.0	GPS EC /GPS EC	2003 Sep/2003 Aug
APL /PTB	GPS MC	1.5	5.0	GPS EC /GPS EC	2003 Dec/2003 Aug
AUS /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2002 Sep/2003 Aug
BEV /PTB	GPS MC	2.0	5.0	GPS EC/GPS EC	2001 Dec/2003 Aug

BIRM/PTB	GPS SC	3.5	20.0	NA /GPS EC	NA /2003 Aug
CAO /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2004 Nov/2003 Aug
CH /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2004 Nov/2004 Aug
CNM /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug
CNMP/PTB	GPS MC	3.0	7.0	GPS EC/GPS EC	2002 Oct/2003 Aug
CSIR/PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2003 Aug
DLR /PTB	NA				
DTAG/PTB	GPS MC	3.0	10.0	GPS EC/GPS EC	1998 May/2003 Aug
HKO /PTB	GPS MC	2.5	5.0	GPS EC/GPS EC	2004 Apr/2003 Aug
IFAG/PTB	GPS SC	2.5	5.0	GPS EC/GPS EC	2003 Jun/2003 Aug
IGMA/PTB	GPS MC	5.0	20.0	NA /GPS EC	NA /2003 Aug
INPL/PTB	GPS SC	5.0	10.0	GPS EC/GPS EC	1987 Jun/2003 Aug
IT /PTB	TWSTFT	0.5	1.0	LC (TWSTFT)	2005 Nov
JATC/NTSC	INT LK	0.2	1.0	NA	/2002 Aug
JV /PTB	GPS GT	5.0	20.0	NA /GPS EC	NA /2003 Aug
KRIS/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Aug/2004 Aug

Link	Type	uA/ns	uB/ns	Calibration Type	Calibration Dates
LDS /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2003 Aug
LT /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Nov/2003 Aug
MIKE/PTB	GPS MC	5.0	20.0	NA /GPS EC	NA /2003 Aug
MSL /PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NAO /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2003 Aug
NICT/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Jun/2004 Aug
NIM /PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2003 Aug
NIMB/PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2003 Aug
NIMT/PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NIS /PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 May/2003 Aug
NIST/PTB	TWSTFT	0.5	5.0	BC(GPS P3)	2005 May
NMC /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug
NMIJ/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2002 Apr/2004 Aug
NMLS/PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2003 Aug

NPL /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2005 Nov
NPLI/PTB	GPS MC	4.0	7.0	GPS EC/GPS EC	2005 Jul/2003 Aug
NRC /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Nov/2004 Aug
NTSC/PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2002 Aug/2003 Aug
OMH /PTB	GPS SC	2.5	20.0	NA /GPS EC	NA /2003 Aug
ONBA/PTB	NA				
ONRJ/PTB	GPS SC	7.0	20.0	NA /GPS EC	NA /2003 Aug
OP /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2005 Nov
ORB /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jul/2004 Aug
PL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Oct/2003 Aug
ROA /PTB	TWSTFT	0.7	5.0	BC(GPS P3)	2005 May
SCL /PTB	GPS SC	4.0	10.0	GPS EC/GPS EC	1993 May/2003 Aug
SG /PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2004 Nov/2003 Aug
SMU /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2003 Aug
SP /PTB	GPS P3	0.7	1.5	LC(TWSTFT)	2004 Aug
SU /PTB	GPS SC	3.0	5.0	GPS EC/GPS EC	2003 Apr/2003 Aug
TCC /PTB	GPS P3	1.5	20.0	NA /GPS EC	NA /2004 Aug
TL /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 May/2004 Aug
TP /PTB	GPS MC	1.5	5.0	LC(GPS SC)	2003 Aug
UME /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2005 Dec/2003 Aug
USNO/PTB	TWSTFT	0.5	1.1	BC(TW X-Band)	2005 May
VSL /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2005 Nov
ZMDM/PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2005 Mar/2003 Aug

ANEXO G

CIRCULAR T 227

ISSN 1143-1393

2006 DECEMBER 13, 16h UTC

BUREAU INTERNATIONAL DES POIDS ET MESURES
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1 - Coordinated Universal Time UTC and its local realizations UTC(k). Computed values of [UTC-UTC(k)] and uncertainties valid for the period of this Circular. From 2006 January 1, 0h UTC, TAI-UTC = 33 s.

Date 2006 0h UTC	OCT 31	NOV 5	NOV 10	NOV 15	NOV 20	NOV 25	NOV 30	Uncertainty/ns			Notes
MJD	54039	54044	54049	54054	54059	54064	54069	uA	uB	u	
Laboratory k	[UTC-UTC(k)]/ns										
AOS (Borowiec)	-1.1	1.7	1.6	0.6	5.3	5.0	-9.2	1.5	5.1	5.3	
APL (Laurel)	10.3	8.8	8.8	-10.0	-2.7	4.6	12.4	1.5	5.0	5.2	
AUS (Sydney)	-246.2	-243.5	-247.0	-238.5	-226.1	-207.8	-177.7	1.5	5.1	5.3	
BEV (Wien)	8.5	9.0	14.4	9.6	6.6	-2.2	-8.9	2.0	5.1	5.4	
BIRM (Beijing)	-2295.4	-2316.0	-2337.5	-2362.5	-2374.0	-2392.6	-2413.8	3.5	20.0	20.3	
CAO (Cagliari)	-897.7	-890.8	-879.6	-880.3	-892.1	-887.7	-857.7	1.5	7.1	7.2	
CH (Bern)	-31.5	-30.8	-32.4	-31.4	-29.6	-17.0	-23.3	0.7	5.1	5.1	
CNM (Queretaro)	33.3	7.7	3.6	-2.7	-1.3	-11.5	-5.5	5.0	5.1	7.1	
CNMP (Panama)	-5963.3	-5994.2	-6003.5	-5787.7	-4821.9	-3883.8	-2910.2	3.0	5.1	5.9	
CSIR (Pretoria)	-1777.4	-1844.1	-1906.4	-1977.6	-2040.5	-2119.6	-2174.8	2.5	20.0	20.2	
DLR (Oberpfaffenhofen)	-	-	-	-	-	-	-	-	-	-	
DTAG (Darmstadt)	266.9	280.2	290.8	304.8	319.9	335.6	-	3.0	10.1	10.5	
HKO (Hong Kong)	6.5	3.5	7.4	4.1	-7.1	-13.1	-17.7	2.5	5.1	5.7	
IFAG (Wettzell)	-382.2	-397.2	-391.7	-383.7	-382.3	-370.0	-376.8	0.7	5.1	5.1	

IGMA (Buenos Aires)	768.5	767.6	767.2	756.8	756.8	759.5	756.7	2.5	5.1	5.7	
INPL (Jerusalem)	157.2	156.6	160.8	167.1	170.9	172.6	177.8	5.0	10.0	11.2	
IT (Torino)	-6.6	-8.7	-8.4	-6.8	-3.3	-0.6	2.4	0.6	1.5	1.6	
JATC (Lintong)	-7.2	7.8	9.6	11.4	12.1	11.8	9.7	1.5	5.1	5.3	
JV (Kjeller)	-2274.5	-2184.0	-2095.5	-2039.5	-2002.4	-1930.1	-1857.8	5.0	20.0	20.6	
KRIS (Daejeon)	-8.6	-7.6	-9.6	-10.0	-6.8	-5.5	-13.4	0.7	5.1	5.1	
LDS (Leeds)	849.1	873.6	896.8	926.5	991.7	1016.7	1053.2	3.0	20.0	20.3	
LT (Vilnius)	74.2	74.0	69.0	64.8	74.5	62.2	65.1	1.5	5.1	5.3	
MIKE (Espoo)	-80.3	-92.3	-100.0	-120.3	-98.1	-78.6	-62.8	5.0	19.8	20.5	
MSL (Lower Hutt)	7.8	-12.2	-19.8	-9.0	8.5	-11.7	-10.9	1.0	20.0	20.0	
NAO (Mizusawa)	252.2	246.0	241.4	235.1	237.6	239.0	230.9	3.0	20.0	20.3	
NICT (Tokyo)	2.9	0.8	1.4	-1.2	-2.9	-3.8	-6.0	0.7	4.8	4.8	
NIM (Beijing)	-46.4	-51.7	-47.2	-53.8	-52.2	-48.4	-50.8	1.5	19.8	19.9	
NIMB (Bucharest)	-1067.1	-1078.2	-1098.7	-437.4	-343.3	-352.8	-369.8	2.5	20.0	20.2	(1)
NIMT (Bangkok)	-1158.6	-1164.4	-1168.8	-1164.6	-1167.2	-1165.7	-1178.4	1.0	20.0	20.1	
NIS (Cairo)	245.6	249.3	261.5	268.5	287.9	236.2	159.7	2.5	7.1	7.5	

Date 2006 0h UTC	OCT 31	NOV 5	NOV 10	NOV 15	NOV 20	NOV 25	NOV 30	Uncertainty/ns			Notes
MJD	54039	54044	54049	54054	54059	54064	54069	uA	uB	u	
Laboratory k				[UTC-UTC(k)]/ns							
NIST (Boulder)	-4.9	-1.9	2.7	6.0	9.8	9.9	11.6	0.5	4.9	4.9	
NMC (Sofiya)	-4878.6	-4877.2	-4881.0	-4898.5	-4941.1	-4915.5	-4902.9	5.0	20.0	20.6	
NMIJ (Tsukuba)	-8.3	-8.4	-6.0	-4.9	-3.9	-2.6	-1.2	0.7	5.1	5.1	
NMLS (Sepang)	-555.3	-565.4	-583.0	-592.9	-598.2	-608.4	-612.5	2.0	20.0	20.1	
NPL (Teddington)	-12.5	2.4	2.6	3.3	10.8	11.3	10.4	1.5	5.1	5.3	
NPLI (New-Delhi)	-44.9	-46.1	-22.4	-6.8	11.4	21.3	43.8	4.0	7.1	8.1	
NRC (Ottawa)	-10.4	-8.5	-0.8	7.5	15.5	29.9	43.6	0.7	5.1	5.2	
NTSC (Lintong)	-4.8	12.2	7.2	10.9	11.4	8.9	9.1	1.5	5.0	5.2	
OMH (Budapest)	11607.9	11615.8	11621.1	11622.2	11615.4	11631.2	11645.0	2.5	20.0	20.2	
ONBA (Buenos Aires)	-12970.7	-12920.0	-13006.0	-12912.0	-12864.8	-12710.6	-12620.4	5.0	5.1	7.2	
ONRJ (Rio de Janeiro)	8797.1	-25.5	-28.1	-31.6	-13.5	-14.4	-20.6	4.0	20.0	20.4	(2)
OP (Paris)	-32.9	-30.3	-24.6	-22.2	-23.5	-29.4	-28.5	0.5	1.4	1.5	

ORB (Bruxelles)	34.0	29.6	26.5	23.0	19.1	13.2	4.6	0.7	5.1	5.1
PL (Warszawa)	-16.7	-23.2	-22.0	-15.5	1.2	4.9	10.2	1.4	4.9	5.1
PTB (Braunschweig)	-3.8	-3.8	-3.1	0.1	1.6	7.7	9.2	0.3	1.1	1.1
ROA (San Fernando)	36.0	24.0	20.8	10.5	0.2	-7.3	-8.9	0.7	5.1	5.1
SCL (Hong Kong)	-34.9	-36.3	-40.1	-44.2	-38.6	-30.9	-32.0	4.0	9.9	10.7
SG (Singapore)	56.2	33.2	32.6	35.5	33.1	39.9	42.1	2.0	5.1	5.5
SMU (Bratislava)	-64.4	-65.8	-76.2	-93.6	-101.2	-102.1	-115.9	5.0	20.0	20.6
SP (Boras)	11.6	11.3	7.0	6.0	7.4	9.8	17.1	0.5	1.4	1.5
SU (Moskva)	-11.9	-12.8	-12.3	-11.4	-10.8	-9.9	-8.0	3.0	5.1	5.9
TCC (Concepcion)	-3398.8	-3413.1	-3433.8	-3476.0	-3506.0	-3543.5	-3535.5	1.5	19.9	20.0
TL (Chung-Li)	-12.6	-13.3	-10.8	-11.1	-11.0	-6.4	-2.7	0.7	4.9	4.9
TP (Praha)	-41.4	-38.0	-33.4	-35.6	-29.9	-33.1	-26.8	1.5	5.1	5.3
UME (Gebze-Kocaeli)	27.2	14.7	6.5	4.6	5.1	7.0	1.3	1.5	7.1	7.2
USNO (Washington DC)	3.3	4.6	5.3	4.6	5.1	3.8	4.1	0.3	1.3	1.4
VSL (Delft)	-21.7	-29.6	-35.1	-35.3	-36.9	-43.5	-49.0	0.6	1.5	1.6
ZMDM (Belgrade)	3922.6	3950.2	3985.4	4020.9	4061.7	4095.9	4127.5	2.0	7.1	7.4

- Notes on section 1:

(1) NIMB : Time step of UTC(NIMB) between MJD 54049 and 54054 due to cable re-calibration.
(2) ONRJ : Time step of UTC(ONRJ) between MJD 54039 and 54044 due to master clock and GPS receiver changes.

2 - International Atomic Time TAI and Local atomic time scales TA(k). Computed values of [TAI-TA(k)].

Date 2006 0h UTC	OCT 31	NOV 5	NOV 10	NOV 15	NOV 20	NOV 25	NOV 30
MJD	54039	54044	54049	54054	54059	54064	54069
Laboratory k				[TAI-TA(k)]/ns			
CH (Bern)	53624.2	53638.0	53649.5	53663.6	53678.5	53695.4	53702.2
F (Paris)	168335.1	168333.3	168332.3	168332.7	168333.9	168332.8	168335.7
IT (Torino)	57702.3	57831.6	57965.2	58096.7	58229.3	58360.1	58489.7
JATC (Lintong)	-40903.7	-40942.1	-40977.1	-41012.4	-41049.6	-41083.4	-41116.9

KRIS (Daejeon)	14215.3	14288.9	14360.0	14432.3	14508.4	14582.6	14648.7	
NICT (Tokyo)	9.1	7.7	5.5	4.3	2.8	1.3	-0.2	
NIST (Boulder)	-45299095.2	-45299289.2	-45299481.6	-45299675.3	-45299867.3	-45300061.2	-45300253.5	
NRC (Ottawa)	30150.4	30155.9	30167.6	30179.8	30191.7	30210.1	30227.6	
NTSC (Lintong)	3597.0	3618.1	3641.4	3663.9	3686.5	3711.2	3737.0	
ONRJ (Rio de Janeiro)	-870.0	-923.1	-933.4	-951.5	-1019.5	-1033.9	-1048.8	
PL (Warszawa)	-3931.8	-3951.4	-3963.8	-3973.5	-3980.6	-3991.3	-4002.7	
PTB (Braunschweig)	-358028.5	-358021.3	-358013.1	-358002.3	-357993.2	-357979.4	-357970.4	
SU (Moskva)	27242825.1	27242846.3	27242868.8	27242891.7	27242914.4	27242937.3	27242961.2	(1)
TL (Chung-Li)	509.3	511.2	515.4	520.8	525.7	530.2	535.9	
USNO (Washington DC)	-34986737.3	-34987039.8	-34987343.8	-34987648.6	-34987952.5	-34988257.9	-34988561.0	

- Note on section 2:

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

3 - Difference between the normalized frequencies of EAL (free atomic time scale) and TAI.

	Interval of validity	f(EAL)-f(TAI)	
Steering correction	54039 - 54069	6.817x10**-13	(2006 OCT 31 - 2006 NOV 30)
New correction	54069 - 54099	6.812x10**-13	(2006 NOV 30 - 2006 DEC 30)
New correction foreseen	54099 - 54129	6.806x10**-13	(2006 DEC 30 - 2007 JAN 29)

4 - Duration of the TAI scale interval.

TAI is a realization of coordinate time TT. The following tables give the fractional deviation d of the scale interval of TAI from that of TT (the SI second on the geoid), i.e. the fractional frequency deviation of TAI with the opposite sign: d = -yTAI. In this section, a frequency over a time interval is defined as the ratio of the end-point phase difference to the duration of the interval. Whenever needed, the instability of EAL should be expressed as the quadratic sum of three components with t in days: (1) a white frequency noise of 3.0x10**-15 / sqrt(t), (2) a flicker frequency noise of 0.5x10**-15 and (3) a random walk frequency noise of

1.0x10**-16 x sqrt(t). The relation between EAL and TAI is given in Circular T and the Annual Report of the BIPM Time Section.

In the first table, d is obtained, on the given periods of estimation by comparison of the TAI frequency with that of the given individual Primary Frequency Standards (PFS). In this table: uA is the uncertainty originating in the instability of the PFS, uB is the combined uncertainty from systematic effects, Ref(uB) is a reference giving information on the stated value of uB or is the Circular T where this reference was first given, ul/lab is the uncertainty in the link between the PFS and the clock participating to TAI, including the uncertainty due to the dead-time, ul/TAI is the uncertainty in the link to TAI, u is the quadratic sum of all four uncertainty values. All values are expressed in 10**-15.

Standard	Period of Estimation		d	uA	uB	Ref(uB)	ul/Lab	ul/Tai	u	Note
SYRTE-JPO	54039	54069	10.0	0.7	6.3	T160	0.3	0.3	6.4	(1)
SYRTE-FO1	54054	54069	1.1	0.1	0.4	[1]	0.1	0.6	0.8	(2)
SYRTE-FO2	54054	54069	1.0	0.2	0.4	[1]	0.1	0.6	0.8	(3)
PTB-CS1	54039	54069	-2.3	5.0	8.0	T148	0.0	0.2	9.4	(4)
PTB-CS2	54039	54069	-5.4	3.0	12.0	T148	0.0	0.2	12.4	(4)

Notes:
(1) Report 5 Dec. 2006 by LNE-SYRTE.
(2) Report 8 Dec. 2006 by LNE-SYRTE.
(3) Report 11 Dec. 2006 by LNE-SYRTE.
(4) Continuously operating as a clock participating to TAI.
[1] C. Vian et al., IEEE Trans. on Inst. and Meas., 54, 833-836, 2005.

The second table gives the BIPM estimate of d, based on all available PFS measurements over the period MJD 53679-54069, taking into account their individual uncertainties and characterizing the instability of EAL as noted above. u is the computed standard uncertainty of d

Period of estimation	d	u	
54039-54069	1.7x10**-15	0.7x10**-15	(2006 OCT 31 - 2006 NOV 30)

5 - Relations of UTC and TAI with GPS time and GLONASS time.

[UTC−GPS time] = −14 s + C0, [TAI−GPS time] = 19 s + C0, global uncertainty is of order 10 ns.
[UTC−GLONASS time] = 0 s + C1, [TAI−GLONASS time] = 33 s + C1, global uncertainty is of order hundreds ns.

The C0 values are obtained using the values [UTC−UTC(OP)] and the GPS data taken at the Paris Observatory, corrected for IGS precise orbits, clocks and ionosphere maps. The C1 values are obtained using the values [UTC−UTC(AOS)] and the GLONASS data taken at the Astrogeodynamical Observatory Borowiec (AOS). N0 and N1 are the numbers of measurements,
when N0 or N1 is 0, the corresponding values of C0 or C1 are interpolated.
The standard deviations S0 and S1 characterize the dispersion of individual measurements. The actual uncertainty of user's access to GPS and GLONASS times may differ from these values.
For this circular, S0 = 2.5 ns, S1 = 12.9 ns

Date 2006 0h UTC	MJD	C0/ns	N0	C1/ns	N1
OCT 31	54039	−2.5	48	−303.8	88
NOV 1	54040	−6.1	47	−314.3	78
NOV 2	54041	−5.6	48	−316.5	74
NOV 3	54042	−6.8	48	−314.1	83
NOV 4	54043	−7.3	48	−317.4	75
NOV 5	54044	−5.4	47	−321.8	82
NOV 6	54045	−2.4	44	−327.3	83
NOV 7	54046	−2.2	48	−335.1	84
NOV 8	54047	−3.3	47	−338.6	86
NOV 9	54048	−2.5	43	−336.1	69
NOV 10	54049	−3.1	45	−340.8	65
NOV 11	54050	−2.6	45	−350.8	80
NOV 12	54051	−4.0	47	−352.4	82
NOV 13	54052	−3.2	46	−350.3	81
NOV 14	54053	−4.1	45	−346.8	80
NOV 15	54054	−2.0	47	−345.3	88
NOV 16	54055	−0.1	47	−351.6	86
NOV 17	54056	−0.4	46	−353.8	84
NOV 18	54057	−1.7	41	−354.9	76
NOV 19	54058	−2.0	46	−364.3	89

NOV 20	54059	-3.2	46	-371.0	88
NOV 21	54060	-2.1	46	-378.6	83
NOV 22	54061	-2.4	46	-394.6	89
NOV 23	54062	-1.0	46	-405.7	83
NOV 24	54063	-1.0	35	-402.7	86
NOV 25	54064	-3.8	44	-400.1	80
NOV 26	54065	-5.0	45	-396.7	85
NOV 27	54066	-6.2	45	-382.8	89
NOV 28	54067	-4.8	44	-381.6	75
NOV 29	54068	-4.1	47	-397.3	73
NOV 30	54069	-3.5	46	-413.4	68

6 - Time links used for the computation of TAI and their uncertainties.

The time links used in the elaboration of this Circular T are listed in this section. The technique for the link is indicated as follows: GPS SC for GPS all-in-view single-channel C/A data; GPS MC for GPS all-in-view multi-channel C/A data; GPS P3 for GPS all-in-view multi-channel dual-frequency P code data; GPS GT for 'GPS time' observations; INT LK for internal cable link and TWSTFT for two-way satellite time and frequency transfer data.

For each link, the following uncertainties are provided: uA is the statistical uncertainty evaluated by taking into account the level of phase noise in the raw data, the interpolation interval between data points and the effects with typical duration between 5 and 30 days. uB is the estimated uncertainty on the calibration.

The calibration type of the link is indicated as: GPS EC for GPS equipment calibration; TW EC for two-way equipment calibration; LC (technique) for a link calibrated using 'technique'; BC (technique) for a link calibrated using 'technique' to transfer a past equipment calibration through a discontinuity of link operation.

The calibration dates indicate: the most recent calibration results for the two laboratories in the case of EC and
the most recent calibration of the link in the case of LC and BC,
NA stands for not available, in this case estimated values are provided

Link	Type	uA/ns	uB/ns	Calibration Type	Calibration Dates
AOS /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2003 Sep/2004 Jul
APL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2003 Dec/2004 Jul

AUS /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2004 Nov/2004 Jul
BEV /PTB	GPS MC	2.0	5.0	GPS EC/GPS EC	2001 Dec/2004 Jul
BIRM/PTB	GPS SC	3.5	20.0	NA /GPS EC	NA /2004 Jul
CAO /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2004 Nov/2004 Jul
CH /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2004 Nov/2004 Aug
CNM /PTB	GPS SC	5.0	5.0	GPS EC/GPS EC	2005 Nov/2004 Jul
CNMP/PTB	GPS MC	3.0	5.0	GPS EC/GPS EC	2004 May/2004 Jul
CSIR/PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2004 Jul
DLR /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Apr/2004 Aug
DTAG/PTB	GPS MC	3.0	10.0	GPS EC/GPS EC	1998 May/2004 Jul
HKO /PTB	GPS MC	2.5	5.0	GPS EC/GPS EC	2004 Sep/2004 Jul
IFAG/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jun/2004 Aug
IGMA/PTB	GPS MC	2.5	5.0	GPS EC/GPS EC	2004 Aug/2004 Jul
INPL/PTB	GPS SC	5.0	10.0	GPS EC/GPS EC	1987 Jun/2004 Jul
IT /PTB	TWSTFT	0.5	1.0	LC (TWSTFT)	2005 Nov
JATC/NTSC	INT LK	0.2	1.0	NA	/2002 Aug
JV /PTB	GPS GT	5.0	20.0	NA /GPS EC	NA /2003 Aug
KRIS/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Aug/2004 Aug
Link	Type	uA/ns	uB/ns	Calibration Type	Calibration Dates
LDS /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2004 Jul
LT /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Nov/2004 Jul
MIKE/PTB	GPS MC	5.0	20.0	NA /GPS EC	NA /2004 Jul
MSL /PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NAO /PTB	GPS SC	3.0	20.0	NA /GPS EC	NA /2004 Jul
NICT/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 Jun/2004 Aug
NIM /PTB	GPS MC	1.5	20.0	NA /GPS EC	NA /2004 Jul
NIMB/PTB	GPS MC	2.5	20.0	NA /GPS EC	NA /2004 Jul
NIMT/PTB	GPS P3	1.0	20.0	NA /GPS EC	NA /2004 Aug
NIS /PTB	GPS MC	2.5	7.0	GPS EC/GPS EC	2005 May/2004 Jul
NIST/PTB	TWSTFT	0.5	5.0	BC(GPS P3)	2005 May
NMC /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2004 Jul

NMIJ/PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2002 Apr/2004 Aug
NMLS/PTB	GPS MC	2.0	20.0	NA /GPS EC	NA /2004 Jul
NPL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2002 Jun/2004 Jul
NPLI/PTB	GPS MC	4.0	7.0	GPS EC/GPS EC	2005 Jul/2004 Jul
NRC /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Nov/2004 Aug
NTSC/PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2004 Sep/2004 Jul
OMH /PTB	GPS SC	2.5	20.0	NA /GPS EC	NA /2004 Jul
ONBA/PTB	GPS MC	5.0	5.0	GPS EC/GPS EC	2004 Jul/2004 Jul
ONRJ/PTB	GPS MC	4.0	20.0	NA /GPS EC	NA /2004 Jul
OP /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2005 Nov
ORB /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2003 Jul/2004 Aug
PL /PTB	GPS MC	1.5	5.0	GPS EC/GPS EC	2001 Oct/2004 Jul
ROA /PTB	TWSTFT	0.7	5.0	BC(GPS P3)	2005 May
SCL /PTB	GPS SC	4.0	10.0	GPS EC/GPS EC	1993 May/2004 Jul
SG /PTB	GPS MC	2.0	5.0	GPS EC/GPS EC	2004 Nov/2004 Jul
SMU /PTB	GPS SC	5.0	20.0	NA /GPS EC	NA /2004 Jul
SP /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2005 Nov
SU /PTB	GPS SC	3.0	5.0	GPS EC/GPS EC	2003 Apr/2004 Jul
TCC /PTB	GPS P3	1.5	20.0	NA /GPS EC	NA /2004 Aug
TL /PTB	GPS P3	0.7	5.0	GPS EC/GPS EC	2005 May/2004 Aug
TP /PTB	GPS MC	1.5	5.0	LC(GPS SC)	2004 Jul
UME /PTB	GPS MC	1.5	7.0	GPS EC/GPS EC	2005 Dec/2004 Jul
USNO/PTB	TWSTFT	0.5	2.0	BC(TW X-Band)	2005 May
VSL /PTB	TWSTFT	0.5	1.0	LC(TWSTFT)	2005 Nov
ZMDM/PTB	GPS MC	2.0	7.0	GPS EC/GPS EC	2005 Mar/2004 Jul

ANEXO H

DETERMINAÇÃO DO FIM DA DISPONIBILIDADE SELETIVA (SA)

(http://clinton3.nara.gov/WH/EOP/OSTP/html/0053_2.html)

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release **May 1, 2000**

STATEMENT BY THE PRESIDENT REGARDING THE UNITED STATES' DECISION TO STOP DEGRADING GLOBAL POSITIONING SYSTEM ACCURACY

Today, I am pleased to announce that the United States will stop the intentional degradation of the Global Positioning System (GPS) signals available to the public beginning at midnight tonight. We call this degradation feature Selective Availability (SA). This will mean that civilian users of GPS will be able to pinpoint locations up to ten times more accurately than they do now. GPS is a dual-use, satellite-based system that provides accurate location and timing data to users worldwide. My March 1996 Presidential Decision Directive included in the goals for GPS to: "encourage acceptance and integration of GPS into peaceful civil, commercial and scientific applications worldwide; and to encourage private sector investment in and use of U.S. GPS technologies and services." To meet these goals, I committed the U.S. to discontinuing the use of SA by 2006 with an annual assessment of its continued use beginning this year.

The decision to discontinue SA is the latest measure in an on-going effort to make GPS more responsive to civil and commercial users worldwide. Last year, Vice President Gore announced our plans to modernize GPS by adding two new civilian signals to enhance the civil and commercial service. This initiative is on-track and the budget further advances modernization by incorporating some of the new features on up to 18 additional satellites that are already awaiting launch or are in production. We will continue to provide all of these capabilities to worldwide users free of charge.

My decision to discontinue SA was based upon a recommendation by the Secretary of Defense in coordination with the Departments of State, Transportation, Commerce, the Director of Central Intelligence, and other Executive Branch Departments and Agencies. They realized that worldwide transportation safety, scientific, and commercial interests could best be served by discontinuation of SA. Along with our commitment to enhance GPS for peaceful applications, my administration is committed to preserving fully the military utility of GPS. The decision to discontinue SA is coupled with our continuing efforts to upgrade the military utility of our systems that use GPS, and is supported by threat assessments which conclude that setting SA to zero at this time would have minimal impact on national security. Additionally, we have demonstrated the capability to selectively deny GPS signals on a regional basis when our national security is threatened. This regional approach to denying navigation services is consistent with the 1996 plan to discontinue the degradation of civil and commercial GPS service globally through the SA technique.

Originally developed by the Department of Defense as a military system, GPS has become a global utility. It benefits users around the world in many different applications, including air, road, marine, and rail navigation, telecommunications, emergency response, oil exploration, mining, and many more. Civilian users will realize a dramatic improvement in GPS accuracy with the discontinuation of SA. For example, emergency teams responding to a cry for help can now determine what side of the highway they must respond to, thereby saving precious minutes. This increase in accuracy will allow new GPS applications to emerge and continue to enhance the lives of people around the world.

President Clinton: Improving the Civilian Global Positioning System (GPS) May 1, 2000

"The decision to discontinue Selective Availability is the latest measure in an ongoing effort to make GPS more responsive to civil and commercial users worldwide…This increase in accuracy will allow new GPS applications to emerge and continue to enhance the lives of people around the world."

President Bill Clinton
May 1, 2000

As part of his on going effort to bring the benefits of government investments in science and technology to the civilian and commercial sectors, President Clinton ordered that the intentional degrading of the civilian Global Positioning System (GPS) signal be discontinued at midnight tonight. Without any additional costs to users or the government, the President's actions will bring tangible benefits to millions of individuals and business around the world that use GPS. The increased performance is also expected to accelerate its acceptance and use by businesses, governments, and private individuals in the U.S. and around the world that will enjoy increases in productivity, efficiency, safety, scientific knowledge and quality of life.

GPS IS A CRITICAL TECHNOLOGY FOR INDIVIDUALS AND BUSINESSES AROUND THE GLOBE. GPS is a dual-use system, providing highly accurate positioning and timing data for both military and civilian users. There are more than 4 million GPS users world wide, and the market for GPS applications is expected to double in the next three years, from $8 billion to over $16 billion. Some of these applications include: air, road, rail, and marine navigation, precision agriculture and mining, oil exploration, environmental research and management, telecommunications, electronic data transfer, construction, recreation and emergency response.

GPS IS THE GLOBAL STANDARD. GPS has always been the dominant standard satellite navigation thanks to the U.S. policy of making both the signal and the receiver design specification available to the public completely free of charge.

NEW TECHNOLOGIES ENHANCE AMERICA'S NATIONAL SECURITY. The U.S. previously employed a technique called Selective Availability (SA) to globally degrade the civilian GPS signal. New technologies demonstrated by the military enable the U.S. to degrade the GPS signal on a regional basis. GPS users worldwide would not be affected by regional, security-motivated, GPS degradations, and businesses reliant on GPS could continue to operate at peak efficiency.

GPS IMPROVED SIGNAL WILL BRING INSTANT BENEFITS TO MILLIONS OF GPS USERS. The improved, non-degraded signal will increase civilian accuracy by an order of magnitude, and have immediate implications in areas such as:

· Car Navigation: Previously, a GPS-based car navigation could give the location of the vehicle to within a hundred meters. This was a problem, for example in areas where multiple highways run in parallel, because the degraded signal made it difficult to determine which one the car was on. Terminating SA will eliminate such problems, leading to greater consumer confidence in the technology and higher adoption rates. It will also simplify the design of many systems (e.g., eliminate certain map matching software), thereby lowering their retail cost.

· Enhanced-911: The FCC will soon require that all new cellular phones be equipped with more accurate location determination technology to improve responses to emergency 911 calls. Removing SA will boost the accuracy of GPS to such a degree that it could become the method of choice for implementing the 911 requirement. A GPS-based solution might be simpler and more economical than alternative techniques such as radio tower triangulation, leading to lower consumer costs.

· Hiking, Camping, and Hunting: GPS is already popular among outdoorsmen, but the degraded accuracy has not allowed them to precisely pin-point their location or the location of items (such as game) left behind for later recovery. With 20 meter accuracy or better, hikers, campers, and hunters should be able to navigate their way through unmarked wilderness terrain with increased confidence and safety. Moreover, users will find that the accuracy of GPS exceeds the resolution of U.S. Geological Survey (USGS) topographical quad maps.

· Boating and Fishing: Recreational boaters will enjoy safer, more accurate navigation around sandbars, rocks, and other obstacles. Fishermen will be able to more precisely locate their favorite spot on a lake or river. Lobster fishermen will be able to find and recover their traps more quickly and efficiently.

· Increased Adoption of GPS Time: In addition to more accurate position information, the accuracy of the time data broadcast by GPS will improve to within 40 billionths of a second. Such precision may encourage adoption of GPS as a preferred means of acquiring Universal Coordinated Time (UTC) and for synchronizing everything from electrical power grids and cellular phone towers to telecommunications networks and the Internet. For example, with higher precision timing, a company can stream more data through a fiber optic cable by tightening the space between data packets. Using GPS to accomplish this is far less costly than maintaining private atomic clock equipment.

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Additional information about GPS and the Selective Availability decision is available online at the Interagency GPS Executive Board web site: http://www.igeb.gov