



Georgi Dobrovolski Solar Observatory

*Солнечная Обсерватория
имени Георгия Добровольского*

*Annual
Report
for
2002*

Compiled by Howard Barnes.

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30 Years of Solar Observing 1973 - 2003

 **Times Used (And Not Used) In This Publication.**

The term “Greenwich Mean Time” (GMT) is *not* used in this publication as it is ambiguous and is used, both mistakenly and *wrongly*, in the sense of the Greenwich civil atomic scale, **Co-ordinated Universal Time (UTC)**. From 1675, until the beginning of 1925, Greenwich Mean Time was measured by the Royal Observatory, from GREENWICH MEAN *MID-DAY*, 12 hours **BEHIND** Universal Time (UT).

For the purposes of lengthy solar observations, the GDSO considers all Universal Times (UT0, UT1, UT2, UT0R, UT1R, UT2R, UTC etc.) as being the same. Times in this loose sense are labelled UT. If a stated time in this publication is not labelled at all, then it is to be considered as being UT. In Sections A & B, UT is given to the nearest fifth minute (within the time period of the observation concerned); in Section D, it is given to the nearest minute.

For central-meridian purposes, the GDSO also considers Terrestrial Time (TT) as being the same as UT. From January 1999 to, at least, December 2003 [UTC] (inclusive), TT-UTC = +64.1840 seconds. This value is an approximate equivalent of the amount of time the Earth has lost, as a ‘clock’, since 1900. International Atomic Time (TAI), for the same period [1999-2003], precedes UTC by 32.0000 seconds.

As this publication has an international distribution, both New Zealand Standard Time (NZST) [UTC + 12 hours] and New Zealand Daylight Time (NZDT) [UTC + 13 hours] are ignored. (See also page xiv.)

PLEASE NOTE: There is NO other word order in English *whatsoever*, and NO other letter order (at all) for the name, and abbreviation, of **Co-ordinated Universal Time (UTC)**. It is, after all, the co-ordinated version of Universal Time.

LANGUAGE	Name in full.
French	Temps Universel Coordonné
German	Koordinierte Weltzeit
Dutch	Gecoördineerde Wereldtijd
Italian	Tempo Universale Coordinato
Spanish	Tiempo Universal Coordinado
Portuguese	Tempo Universal Coordenado
Norwegian	Koordinert Universaltid

The language-independent abbreviation UTC, is used in **all** languages.

 **Billion.**

If the word ‘billion’ is ever used in any GDSO report, it is to be taken in its literal sense of ‘million to the power of two’, that is 1 million million. The value of 1000 million might be occasionally referred to, in the GDSO reports, as the ‘sesquillion’, literally ‘million to the power of one and a half’.

 **The Decimal Point.**

FOR CONTINENTAL EUROPEAN, ASIAN AND SOUTH & CENTRAL AMERICAN READERS:

The full-stop (.) is used as the decimal point in this publication.



Preface

The Sun was observed 176 times throughout 2002 at 2 different sites. Michaels Ave (Ellerslie, Auckland) was used up to mid-December and Atworth Way (Burswood, Auckland) since then.

Activity was somewhat sustained throughout 2002, with some interesting active regions, such as Regions 9767, 9773, 9775 and 9800 in January; 9802, 9825 and 9830 in February; 9866 in March; 9885, 9887 and 9906 in April; 9957 in May; 9973 in June; [1]0030, 0036, 0039, 0043, 0044 and 0050 in July; 0067, 0069 and 0079 in August; 0095, 0103, 0105 (old 0069), 0119 and 0134 in September; 0149 and 0162 in October; 0180 and 0191 in November — a fairly good spread throughout the year with only December falling short. All these regions had 25 or more sunspots, one (Region No. 0030, on 2002/07/17) had 78 spots, and all were E or F in class.

The highest number of sunspots (observed by the GDSO) in 2002, was 174 on 29th July. The highest number of active regions was 17 on the 6th May, and the highest observed Wolf Number was 284 on 29th July.

The annual observed mean Wolf Number for 2002 is 144.34, compared with 142.90 for 2001. The R_{GD} for 2002 is 106.87. The final R_{GD} value for 2001 is 112.89. The highest observed monthly mean Wolf Number was 172.25 for September 2002, adjusted down to 112.15, however, the highest adjusted Wolf Number was 124.78 for the month before.

There were no spotless discs in 2002, like 1999, 2000 and 2001. Last minimum, 1996, had 50.5% of its observations spotless.

Monthly mean X-ray flare activity for 2002 peaked in July at $96.3 \mu\text{W}/\text{m}^2$. The annual mean value is $40.4638 \mu\text{W}/\text{m}^2$, compared with 61.3973 for 2001.

The Group Complexity Index (GCI) for 2002, as determined by the GDSO, ranged from 5.2951 in December to 13.4380 in July, with an annual mean of 8.7416, up from 2001's value of 8.0803, and also up on 2000's value of 8.6023. International GCI data have not been updated, at this stage, due to lack of penumbral data from Germany.

The 2800 MHz solar flux has an annual observed mean of $180.1 \times 10^{-22} \text{ Watts}/\text{m}^2/\text{Hz}$, adjusted to 180.0, for 2002. Thrice-daily solar flux data are being expanded in this issue, with an extra table quoting monthly means of all data on page E5.

Starting with this issue, along with a general “spruce-up”, graphs will be interspersed, with relevant graphs in Sections C, D, E and F. Also, mean deviations (denoted as δ in this publication) of observed values, are introduced. To accommodate the mean deviations of Active Areas, Tables G1 and G2 have been introduced. They appear on page F10.

The Annual Report for 2003 will be published in April 2004.

HOWARD BARNES.
April 2003.

 ***NOAA Region Numbers.***

On 14th June 2002 (UT), NOAA Region Numbers (used in Section B) reached 9999. The NOAA decided to keep the numbers four-digit, therefore 9999 was followed by 0000, then 0001. Although the NOAA has not strictly adhered to this decision (in some cases ignoring any leading zeroes), all NOAA region numbers after this date are to be considered as greater than 10000.

The GDSO has decided to go along with the NOAA's original four-digit decision, stating all leading zeroes.



Georgi Dobrovolski Solar Observatory

Солнечная Обсерватория имени Георгия Добровольского

100% Amateur.

100% Privately Owned & Funded.

Observatory's Telescope:

76mm f12 refractor

E-mail:

gdso@earthling.net

gdso@value.net.nz

Website:

www.cv-helios.net/gdso

MOVING?

If any subscriber of this report is changing his/her/their postal address,
PLEASE let the GDSO know by writing to the above address. Please include the post code.

ERRATA.

(in addition to any other errata)

None.



Geórgi Timoféyevich Dobrovólski.

Georgi Dobrovolski was born to Timoféi Dobrovolski and Maria Dobrovólskaya on 1st June 1928, at Odessa, the Ukraine, USSR.

Georgi initially wanted a naval career, but was turned down. He then applied to, and was accepted by, the Air Force. He later joined the cosmonaut corps and became a crew member of Soyúz (Union) 11, with Vladisláv Vólkov and Víktor Patsáyev under his command.

After a successful 23-day stay in space, Georgi along with his colleagues, died just before re-entry into the Earth's atmosphere on the 30th June 1971.

Georgi Timofeyevich left a wife, Lyudmíla, and two daughters, Marína and Natásha, then aged 12 and 4.



The Pronunciation of the Name Georgi Dobrovolski.

Cosmonaut Georgi Dobrovolski's name is pronounced as follows:

GeORgi, 3 syllables with the 'G's pronounced hard, as in 'gamma' (Γ), and the stress on the second syllable (OR). The 'I' is pronounced as a long 'ee'.

DobroVOLski has the stress on the third syllable (VOL), and the first two 'O's are pronounced as unstressed 'A's, as in the English word 'son', particularly the second 'O'. Again, the 'I' is pronounced as a long 'ee'. The 'L' in Dobrovolski is palatised.

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LIST OF DEFINITIONS IN THIS PUBLICATION.**WN (Wolf Number):**

$$R_{GD} = k(10g + f)$$

where f = number of sunspots,
g = number of sunspot regions
& k = up- or downgrading figure
to bring observatories to a
world standard.

WN = observed Wolf Number,
same as above, but k = 1.

BX (Beckindex):

$$BX_{GD} = k \left(\sum_{i=1}^g G_i f_i \right)$$

where g = number of regions,
f = number of sunspots,
G = region constant,
& k = up- or downgrading figure
to bring observatories to a
world standard.

BX = observed Beckindex, same as
above, but k = 1.

see next page for group constants.

QC (Quality Count):

$$QC = \sum_{i=1}^g Z_i$$

where g = number of regions,
Z = region constant based on
Zurich classes.

see next page for group constants.

Micro-hemisphere (μh):

This unit of area, equal to 1 000 000th of the visible hemisphere of the Sun, is used in Section C of the report. It is approximately equal to 3 000 000 square kilometres. A small spot's area would be in the vicinity of 5 or 10 μh , while a large region's area would be greater than 1000 μh . A very large region would have an area greater than 2000 μh .

SN (Pettisindex):

$$PX_{GD} = k(10p + s)$$

where s = number of penumbral-free
sunspots,
p = number of penumbrae,
& k = up- or downgrading figure
to bring observatories to a
world standard.

SN = observed Pettisindex, same as
above, but k = 1.

CV (Classification Value):

$$CV_{GD} = k \left(\sum_{i=1}^g M_i \right)$$

where g = number of regions,
M = region constant based on
McIntosh classes,
k = up- or downgrading figure
to bring observatories to a
world standard.

CV = observed Classification Value,
same as above, but k = 1.

see next page for group constants.

IS (Inter-Sol Index):

$$IS_{GD} = k(gr + f)$$

where gr = number of multi-spot regions,
f = number of sunspots,
& k = up- or downgrading figure
to bring observatories to a
world standard.

IS = observed Inter-Sol Index, same as
above, but k = 1.

 **Group Constants.**

The following are group constants for Beckindices, Classification Values and Quality Counts.

BECKINDICES

A	B	C	D	E	F	G	H	J
4	4	8	18	25	36	50	44	37

CLASSIFICATION VALUES

AXX = 1	CRO = 5	DKI = 46	EHC = 59	ESO = 26	FRI = 18
BXI = 3	CSI = 12	DKO = 43	EHI = 53	FAC = 33	FRO = 15
BXO = 2	CSO = 11	DRI = 16	EHO = 50	FAI = 24	FSC = 36
CAI = 9	DAC = 31	DRO = 13	EKC = 56	FAO = 21	FSI = 30
CAO = 8	DAI = 22	DSC = 34	EKI = 47	FHC = 60	FSO = 27
CHI = 42	DAO = 19	DSI = 28	EKO = 44	FHI = 54	HAX = 7
CHO = 41	DHC = 58	DSO = 25	ERI = 17	FHO = 51	HHX = 40
CKI = 39	DHI = 52	EAC = 32	ERO = 14	FKC = 57	HKX = 37
CKO = 38	DHO = 49	EAI = 23	ESC = 35	FKI = 48	HRX = 4
CRI = 6	DKC = 55	EAO = 20	ESI = 29	FKO = 45	HSX = 10

QUALITY COUNTS

	A	B	C	D	E	F	G	H	J
QC	1	2	3	4	5	6	4	3	2
QC ²	1	4	9	16	25	36	16	9	4

FORMULÆ.

The following are three formulæ used in the analysis of sunspot data etc.

σ (sample standard deviation) is computed as:

$$\sqrt{\frac{\sum k^2 - \frac{(\sum k)^2}{n_k}}{n_k - 1}}$$

The annual σ result is computed from a total pool of k values.

σ 'SIDC' (annual standard deviation based on the SIDC's formula) is computed as:

$$\frac{\sum(\sigma \times n_k)}{\sum n_k}$$

$E\sigma$ (estimate of standard deviation) is computed as:

$$\frac{\sqrt{\sum(\sigma^2 \times n_k)}}{\sum n_k}$$

SMOOTHING FORMULÆ.

The following are the three formulæ used in the smoothing of GDSO sunspot data. All are based on monthly means (\bar{x}).

Data suffixed (S^{HBm}) are computed as:

$$\frac{(\bar{x}_{+3} + \bar{x}_{-3}) + 2(\bar{x}_{+2} + \bar{x}_{-2}) + 3(\bar{x}_{+1} + \bar{x}_{-1}) + 4\bar{x}_0}{16}$$

Data suffixed (S^W) are computed as:

$$\frac{\sum_{-5}^{+5} \bar{x} + \frac{\bar{x}_{+6} + \bar{x}_{-6}}{2}}{12}$$

Data suffixed (S^{B13}) are computed as:









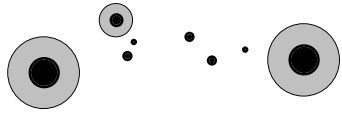


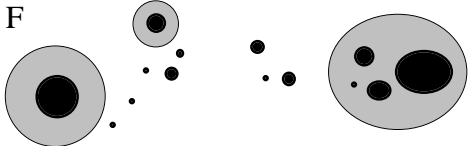



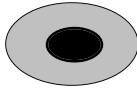
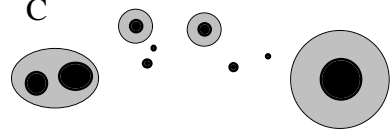
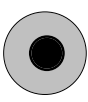

$$\frac{0.75(\bar{x}_{+6} + \bar{x}_{-6}) + 2(\bar{x}_{+5} + \bar{x}_{-5}) + 3(\bar{x}_{+4} + \bar{x}_{-4}) + 4(\bar{x}_{+3} + \bar{x}_{-3}) + 5(\bar{x}_{+2} + \bar{x}_{-2}) + 6(\bar{x}_{+1} + \bar{x}_{-1}) + 6.5\bar{x}_0}{48}$$

 **McIntosh Sunspot Group Classifications.**

(Illustrations highly stylised)

The McIntosh classifications are comprised of 3 letters representing; the Modified Zürich class (without G & J); the penumbra of the largest spot in the group (non-eXistent, **R**udimentary, Small Symmetric, Small Asymmetric, Large Symmetric [**H**], & Large Asymmetric [**K**]); and the internal spot distribution (non-eXistent, **O**pen, **I**ntermediate & **C**omplex or compact). See also page B2.

ZÜRICH CLASS

<p>A</p> 	<p>PENUMBRA: LARGEST SPOT</p>	
<p>B</p> 	<p>X</p> 	
<p>C</p> 	<p>R</p> 	<p style="text-align: center;">————— 10° SUNSPOT DISTRIBUTION</p>
<p>D</p> 	<p>S</p> 	<p>X</p> 
<p>E</p> 	<p>A</p> 	<p>O</p> 
<p>F</p> 	<p>H</p> 	<p>I</p> 
<p>G *</p> 	<p>K</p> 	<p>C</p> 
<p>H</p> 	<p>* Under the McIntosh system, Zürich class G is either E or F.</p> <p>** Under the McIntosh system, Zürich class J is H.</p>	
<p>J **</p> 	<p>The McIntosh examples in the left column are AXX, BXO, CSO, DSI, EHC, FKC, EHO, HHX and HSX respectively.</p> <p>The McIntosh examples in the right column above are HSX, CSO, CSI and EHC respectively.</p>	



What is Universal Time?

The times of various events, particularly astronomical phenomena, are often given in “Universal Time” (abbreviated UT) which is sometimes referred to, now colloquially, as “Greenwich Mean Time” (abbreviated GMT). The two terms are often used loosely to refer to time kept on the Greenwich meridian (longitude zero), five hours ahead of US Eastern Standard Time [or twelve hours behind New Zealand Standard Time]. Times given in UT are almost always given in terms of a 24-hour clock. Thus, 14:42 (often written simply 1442) is 2:42 p.m., and 21:17 (2117) is 9:17 p.m. Sometimes a Z is appended to a time to indicate UT, as in 0935Z.

When a precision of one second or better is needed, however, it is necessary to be more specific about the exact meaning of UT. For that purpose different designations of Universal Time have been adopted. In astronomical and navigational usage, UT often refers to a specific time called UT1, which is a measure of the rotation angle of the Earth as observed astronomically. It is affected by small variations in the rotation of the Earth, and can differ slightly from the civil time on the Greenwich meridian. Times which may be labelled “Universal Time” or “UT” in data provided by the Astronomical Applications Department of the U.S. Naval Observatory (for example, in the annual almanacs) conform to this definition.

However, in the most common civil usage, UT refers to a time scale called “Co-ordinated Universal Time” (abbreviated UTC), which is the basis for the world-wide system of civil time. This time scale is kept by time laboratories around the world, including the U.S. Naval Observatory, and is determined using highly precise atomic clocks. The International Bureau of Weights and Measures (BIPM) makes use of data from the timing laboratories to provide the international standard UTC which is accurate to approximately a nanosecond (thousand-millionth of a second) per day. The length of a UTC second is defined in terms of an atomic transition of the element caesium under specific conditions, and is not directly related to any astronomical phenomena.

UTC is the time distributed by standard radio stations that broadcast time, such as WWV and WWVH. It can also be obtained readily from the Global Positioning System (GPS) satellites. The difference between UTC and UT1 is made available electronically and broadcast so that astronomers and navigators can obtain UT1. UTC is the basis for civil standard time in most countries. Standard time within U.S. time zones is an integral number of hours offset from UTC.

UTC is equivalent to the civil time for Iceland, Liberia, Morocco, Senegal, Ghana, Mali, Mauritania, and several other countries. During the [northern] winter months, UTC is also the civil time the United Kingdom and Ireland.

[New Zealand times are; NZ Standard Time (UTC + 12 hours),
Chatham Islands Standard Time (UTC + 12 hours 45 minutes),
NZ Daylight Time (UTC + 13 hours) and
Chatham Islands Daylight Time (UTC + 13 hours 45 minutes).]

One can think of UT1 as being the time determined by the rotation of the Earth, over which we have no control, whereas UTC is a human invention. It is relatively easy to manufacture highly precise clocks that keep UTC, while the only ‘clock’ keeping UT1 precisely is the Earth itself. Nevertheless, it is desirable that our civil time scale not be very different from the Earth’s time, so, by international agreement, UTC is not permitted to differ from UT1 by more than 0.9 second. When it appears that the difference between the two kinds of time may approach this limit (or a sufficient difference accumulates to allow an alteration, staying within the above tolerance), a one-second change called a “leap second” is introduced into UTC. This occurs on average about once every year to a year and a half. [Leap-second decisions are made by the International Earth Rotation Service, now based in Germany; website <http://www.iers.org/>.]

For more information on time, time scales, and accurate clocks, see the U.S. Naval Observatory Time Service Department web pages. Related information can be found on the pages of the National Institute of Standards and Technology (NIST), and the International Bureau of Weights and Measures (BIPM).

Historical Note:

“Greenwich Mean Time” is a widely used historical term, but one that has been used in several ways. Because of the ambiguity, its use is no longer recommended in technical contexts.

Prior to 1925, in astronomical almanacs, a day of “Greenwich Mean Time” began at Greenwich *mid-day*. This reckoning of “Greenwich Mean Time” is now called “Greenwich Mean Astronomical Time” (GMAT), and is no longer used. **Persons using old editions of the almanacs for historical research should be aware of the previous convention.**

*Copied from the US Naval Observatory’s website,
and slightly ‘doctored’ for New Zealand purposes by the GDSO.*



Glossary

AA	Active Area.
AGO	Astronomical-Geodetic Society (of the Academy of Sciences of Russia).
BAA	British Astronomical Association.
BX	Beckindex (observed).
BX _{GD}	Beckindex (corrected by the GDSO).
BX _I	Beckindex (as determined by Sonne, Germany).
CV	Classification Value (observed).
CV _{GD}	Classification Value (corrected by the GDSO).
CV _I	Classification Value (as determined by the CV Network, Norway).
g	Active Area (observed).
g _B	Active Area (as determined by BAA Solar Section).
g _{GD}	Active Area (corrected by the GDSO).
GDSO	Georgi Dobrovolski Solar Observatory.
HIA	Herzberg Institute of Astrophysics, Canada.
IS	Inter-Sol Index (observed).
IS _{GD}	Inter-Sol Index (corrected by the GDSO).
IS _I	Inter-Sol Index (as determined by the Paderborn Public Observatory, Germany).
KSB	Koninklijke Sterrenwacht van België / Royal Observatory of Belgium.
NIST	U.S. National Institute of Standards & Technology.
NOAA	U.S. National Oceanic and Atmospheric Administration.
NRCC	National Research Council, Canada.
ORB	Observatoire Royal de Belgique / Royal Observatory of Belgium.
PX _{GD}	Pettisindex (corrected by the GDSO).
PX _I	Pettisindex (as determined by Sonne, Germany).
QC	Quality Count (observed).
QC ²	Squared Quality Count (observed).
R _{GD}	Wolf Number (corrected by the GDSO).
R _I	Wolf Number (as determined by the SIDC).
SIDC	Solar Influences Data-analysis Centre, formerly Sunspot Index Data Centre.
SN	Pettisindex (observed).
TAI	International Atomic Time / Temps Atomique International (see page ii).
TT	Terrestrial Time (see page ii).
UT	Universal Time (see pages ii and xiv).
UTC	Co-ordinated Universal Time / Temps Universel Coordonné (see pages ii and xiv).
WN	Wolf Number (observed).
Z	Zulu (= UTC).



The Kiepenheuer Scales (Q & S) and Transparency Scale.

Grade	Q (Quietness)	Grade	S (Sharpness)	Grade	T (Transparency)
1.0	No scintillation on the solar surface noticeable, neither at limb nor on disc.	1.0	Some fine structures in great umbræ, very sharp fine structures in penumbræ.	1.0	Deep blue sky near Sun.
1.5	Amplitude of scintillation at limb 0.5", no noticeable scintillation in sunspots.	1.5	Sharp fine structures in penumbræ, granulation visible very well.	1.5	No haze.
2.0	Scintillation at limb 1 - 1.5", slightly waving, scintillation in sunspots hardly noticeable.	2.0	Some fine structures in penumbræ and at umbra-penumbral boundaries, granulation visible well.	2.0	Very little haze. Haze extending 10° out from the Sun.
2.5	Scintillation at limb 2 - 2.5" and visible on the solar disc, waving limb.	2.5	Granulation visible, the boundaries between umbræ, penumbræ and photosphere are sharp but without any fine structures.	2.5	Slightly hazy. Haze extending 20° out from the Sun.
3.0	Scintillation at limb 3 - 3.5", limb strongly waving.	3.0	Granulation difficult to see, umbra-penumbral boundaries still sharp.	3.0	Some haze. Haze extending 30° out from the Sun.
3.5	Scintillation at limb 4 - 5".	3.5	Granulation invisible, umbræ and penumbræ still separable.	3.5	Hazy. Haze extending 40° out from the Sun.
4.0	Scintillation at limb 6 - 7".	4.0	Umbræ and penumbræ only separable in great spots, granulation invisible.	4.0	Very hazy. Haze extending 50° out from the Sun.
4.5	Scintillation at limb 8 - 10". Observation would be abandoned.	4.5	Umbræ and penumbræ only in very great spots, granulation invisible. Observation would be abandoned.	4.5	Very very hazy. Haze extending 60° out from the Sun. Observation would be abandoned.
5.0	Scintillation at limb >10". Observation would be abandoned.	5.0	Umbræ and penumbræ indistinguishable. Observation would be abandoned.	5.0	Nearly opaque. Observation would be abandoned.



Section A

SOLAR OBSERVATIONAL DATA for **2002** obtained using the 76 mm refractor.

ALL TIMES IN UNIVERSAL TIME (UT) .

CR = Carrington Rotation Number, with fraction of rotation stated.

Rotation 1 commenced at 1853/11/09;1144 UT (approximately).

g = Active Area or group count for WHOLE solar disc.

f = Sunspot count for WHOLE solar disc.

WN = Wolf Number (k in formula neglected).

TWN = Truncated Wolf Number (Wolf Number minus A and B class regions).

p = Penumbral count for WHOLE solar disc.

s = Penumbra-free spot count for WHOLE solar disc.

SN = Pettisindex.

BX = Beckindex.

CV = Classification Value.

QC = Quality Count.

QC² = Squared Quality Count.

IS = Inter-Sol Index.

See page ix for all definitions.

Q = Quietness [steadiness] of image (on the Kiepenheuer scale; see opposite page),

1 = steady , 5 = heavy boiling.

S = Sharpness [clarity] of image (on the Kiepenheuer scale; see opposite page),

1 = fine features visible , 5 = umbrae & penumbrae indistinguishable from each other.

T = Transparency of the Earth's atmosphere, where 1 = excellent , 5 = worthless.

If any of Q, S or T is greater (worse) than 4, the observation will be abandoned.

DATE	UT	CR	g	f	WN	TWN	p	s	SN	BX	CV	QC	QC ²	IS	Q	S	T
JANUARY 2002																	
01	2030	1984.8098	10	68	168	157	21	25	235	1609	222	35	143	75	1.5	2.5	2.5
02	2040	.8466	12	65	185	172	22	27	247	1503	262	41	157	75	1.5	2.0	2.0
03	2215	.8856	12	61	181	170	22	29	249	1556	225	40	152	70	2.0	2.5	2.5
04	2020	.9193	11	56	166	166	17	28	198	1561	153	32	112	62	2.0	2.0	2.5
06	2100	.9935	7	37	107	82	12	17	137	719	101	21	71	43	1.5	2.0	2.5
09	2035	1985.1026	8	67	147	147	19	25	215	1763	185	31	129	74	1.5	2.0	2.0
11	2015	.1752	10	93	193	171	19	45	235	2506	216	33	139	100	1.5	2.0	2.0
12	2035	.2123	10	77	177	166	20	30	230	2403	264	35	153	82	2.0	2.5	2.5
15	2040	.3233	7	42	112	112	13	16	146	1042	134	26	110	48	2.0	2.0	2.5
16	2055	.3591	8	24	104	93	11	7	117	531	104	22	72	29	1.5	2.0	2.0
18	2045	.4320	9	41	131	108	11	16	126	763	134	25	81	47	1.5	1.5	2.0
20	2035	.5049	10	54	154	143	19	25	215	1029	213	33	119	62	2.0	3.0	2.5
21	2045	.5417	10	48	148	148	18	20	200	979	200	32	110	55	2.5	3.0	2.5
22	2015	.5776	11	52	162	129	21	20	230	1165	211	32	116	58	2.0	2.5	2.5
27	2155	.7630	10	71	171	147	20	26	226	1799	242	36	144	80	1.5	2.5	2.5
28	2020	.7971	10	64	164	129	15	26	176	1222	204	30	108	71	2.0	2.0	2.5
29	2035	.8341	10	69	169	134	16	29	189	1494	212	29	101	76	2.0	2.0	2.0
30	2025	.8704	10	65	165	143	20	34	234	1747	145	29	113	69	2.0	2.0	2.5
31	2050	.9076	7	75	145	133	17	32	202	2015	161	27	119	81	2.0	2.5	3.0

DATE	UT	CR	g	f	WN	TWN	p	s	SN	BX	CV	QC	QC ²	IS	Q	S	T
FEBRUARY 2002																	
02	2035	1985.9804	11	86	196	196	29	25	315	2303	247	41	169	94	2.0	2.5	2.5
05	2040	1986.0902	13	79	209	197	25	35	285	2305	248	39	143	87	2.0	2.5	2.5
07	1950	.1621	11	44	154	143	14	17	157	647	179	34	114	53	2.0	3.0	3.0
08	2105	.2006	12	46	166	132	13	23	153	746	175	33	105	53	2.0	2.5	2.5
12	2025	.3459	9	64	154	142	13	29	159	1549	128	27	95	70	1.5	2.0	2.5
13	2055	.3832	9	53	143	107	14	26	166	1465	110	23	79	57	2.0	2.5	2.5
14	2030	.4191	6	53	113	89	12	25	145	1517	90	18	70	57	2.5	2.5	2.5
16	2025	.4922	5	47	97	97	16	21	181	1613	130	23	117	51	1.5	2.0	2.0
17	2025	.5288	5	48	98	86	16	17	177	1575	100	20	96	52	2.0	2.0	2.5
22	2120	.7130	8	39	119	83	11	16	126	1004	92	22	78	44	2.0	2.5	2.5
23	2100	.7491	8	43	123	101	15	17	167	1143	157	26	106	48	2.0	2.5	3.0
25	2025	.8214	13	84	214	203	25	36	286	1471	250	45	169	95	1.5	2.0	2.5
26	2045	.8585	11	69	179	153	21	24	234	1341	184	36	136	77	1.5	2.0	2.5
27	2055	.8954	11	69	179	145	23	24	254	1574	199	38	156	78	2.5	2.5	2.5

MARCH 2002

02	2025	1987.0044	8	39	119	74	12	18	138	858	90	21	77	44	2.0	2.5	2.5
05	2030	.1143	11	47	157	79	12	28	148	1226	138	27	107	52	1.5	1.5	2.0
16	2040	.5172	6	58	118	118	14	22	162	1636	163	24	106	64	2.0	2.5	2.5
17	2100	.5543	6	49	109	109	12	19	139	1021	133	24	100	55	2.0	2.5	2.5
18	2030	.5902	6	51	111	111	11	23	133	1033	104	22	88	56	2.0	2.5	2.5
19	2055	.6274	8	40	120	96	10	20	120	869	99	24	84	46	2.5	2.5	2.5
20	2100	.6642	9	35	125	113	12	9	129	870	130	28	98	42	2.0	3.0	3.0
21	2100	.7008	9	36	126	115	14	11	151	787	160	28	102	42	2.0	2.5	2.5
22	2055	.7373	9	44	134	111	15	21	171	938	173	31	125	51	2.0	2.0	2.5
23	2050	.7738	10	48	148	125	16	22	182	789	154	30	104	56	2.0	2.0	2.5
25	2125	.8479	7	52	122	122	20	20	220	1044	159	26	102	58	1.5	2.0	2.5
26	2130	.8847	8	53	133	133	17	17	187	1092	153	27	99	61	2.0	3.0	3.5
28	2030	.9565	7	55	125	125	19	22	212	1157	193	27	111	61	1.5	1.5	2.0

DATE	UT	CR	g	f	WN	TWN	p	s	SN	BX	CV	QC	QC ²	IS	Q	S	T
APRIL 2002																	
01	2050	1988.1036	9	102	192	145	19	50	240	2486	219	30	124	110	1.5	2.0	1.5
02	2140	.1415	10	83	183	148	22	36	256	1971	212	32	130	91	2.0	2.5	2.5
03	2150	.1784	9	79	169	156	19	29	219	2160	212	34	148	87	2.0	2.0	2.5
06	2025	.2862	12	74	194	161	22	28	248	2188	261	37	149	81	2.0	2.0	2.0
09	2100	.3971	11	78	188	173	25	31	281	1630	256	41	169	87	1.5	2.0	2.0
10	2115	.4341	11	76	186	175	27	28	298	1565	279	41	171	85	2.0	2.5	2.5
11	2115	.4708	13	96	226	215	27	42	312	2171	270	49	209	107	1.5	2.0	2.0
15	2105	.6172	10	73	173	173	21	31	241	1641	218	34	130	81	2.0	2.0	2.0
16	2110	.6540	10	53	153	131	13	21	151	1152	166	28	98	58	1.5	2.0	2.5
17	2055	.6903	7	56	126	115	12	22	142	1240	131	22	82	61	1.5	1.5	2.0
20	2100	.8005	8	46	126	103	13	24	154	749	117	25	89	53	1.0	1.5	2.0
28	2040	1989.0936	5	30	80	68	7	14	84	462	77	17	61	35	3.0	3.0	3.0
29	2050	.1305	9	27	117	82	10	14	114	325	106	23	69	33	1.5	1.5	2.0
30	2055	.1674	10	27	127	116	10	13	113	339	108	26	74	33	2.0	2.5	2.5

MAY 2002

06	2115	1989.3882	17	59	229	195	19	23	213	1035	234	43	123	68	1.5	2.0	2.5
15	2120	.7189	9	35	125	102	14	16	156	591	187	27	95	41	1.5	3.0	3.0
19	2230	.8676	9	52	142	131	14	8	148	1596	142	25	87	56	2.0	3.5	4.0
23	2040	1990.0118	11	76	186	163	21	24	234	2022	196	35	133	84	2.5	2.5	2.5
24	2030	.0483	11	75	185	163	24	24	264	2219	199	35	145	81	2.5	2.5	3.0
25	2100	.0859	10	70	170	159	22	33	253	1994	216	36	156	77	2.0	2.5	3.0
26	2110	.1229	11	62	172	161	21	24	234	1698	225	39	165	70	2.0	2.5	2.5
27	2205	.1610	10	45	145	134	17	18	188	1159	206	32	120	52	2.0	3.0	3.0
28	2155	.1975	11	49	159	137	16	20	180	1201	226	33	123	55	2.0	2.5	3.0
29	2140	.2339	10	56	156	145	20	17	217	1261	266	35	139	64	2.0	2.0	2.0
30	2200	.2712	11	55	165	130	17	21	191	1343	179	32	114	62	2.0	2.5	2.5

JUNE 2002

01	2230	1990.3455	9	64	154	143	20	19	219	1687	224	32	130	70	1.5	2.0	2.5
02	2145	.3811	12	65	185	137	20	27	227	1565	204	36	132	74	1.5	2.0	2.0
03	2135	.4176	13	66	196	138	18	28	208	1283	207	35	117	74	1.5	2.0	2.5
05	2225	.4924	9	51	141	129	17	22	192	942	171	27	91	57	1.5	3.0	3.0
06	2250	.5298	12	57	177	166	21	23	233	1122	252	37	129	64	2.0	2.5	3.0
07	2235	.5661	12	56	176	165	24	22	262	1102	273	36	124	62	1.5	2.0	2.0
15	2115	.8582	6	23	83	60	8	9	89	398	118	18	62	27	2.0	2.0	2.5
22	2115	1991.1156	5	19	69	56	8	8	88	319	124	16	56	23	2.0	2.0	2.5
23	2135	.1529	7	26	96	61	9	12	102	417	126	18	58	30	2.0	2.0	2.5

DATE	UT	CR	g	f	WN	TWN	p	s	SN	BX	CV	QC	QC ²	IS	Q	S	T
JUNE 2002 continued.																	
24	2055	1991.1886	6	36	96	96	12	16	136	637	164	21	77	41	1.5	2.5	2.5
25	2100	.2255	6	23	83	71	9	9	99	404	111	17	53	27	2.0	2.0	2.0
28	2055	.3357	7	18	88	65	6	9	69	293	96	18	52	23	2.0	2.5	2.5
30	2130	.4101	5	32	82	82	12	11	131	666	166	19	75	36	1.5	2.0	2.0

JULY 2002

01	2130	1991.4469	5	24	74	63	10	9	109	398	123	16	58	28	2.0	2.5	3.0
02	2050	.4827	4	29	69	69	10	9	109	502	119	15	57	33	2.0	3.0	3.0
04	2240	.5590	7	43	113	113	18	17	197	885	168	26	102	49	1.5	2.5	3.0
05	2120	.5937	8	36	116	105	14	14	154	653	130	25	89	42	2.0	3.0	3.0
09	2125	.7409	7	22	92	70	8	8	88	465	124	19	63	26	1.5	2.5	2.5
12	2205	.8522	3	34	64	64	9	10	100	1169	54	11	49	36	2.0	2.5	3.5
13	2055	.8872	3	45	75	75	13	15	145	1565	78	11	49	47	2.0	2.5	2.5
14	2125	.9247	7	70	140	92	16	27	187	2181	83	17	59	74	1.5	2.0	2.5
15	2110	.9611	9	68	158	91	14	23	163	2086	95	20	70	72	1.5	1.5	2.0
17	2125	1992.0350	6	105	165	132	19	30	220	3444	123	16	68	108	1.5	2.0	2.0
18	2120	.0716	6	102	162	140	20	36	236	3143	186	20	88	105	1.0	2.0	2.0
23	2100	.2549	11	98	208	185	22	23	243	2967	247	40	172	107	1.0	1.5	1.5
24	2140	.2926	10	104	204	204	28	37	317	2942	232	35	143	112	1.5	2.5	2.5
25	2130	.3291	10	134	234	223	33	39	369	3702	273	40	180	143	2.5	2.5	3.0
28	2045	.4382	10	165	265	265	36	57	417	4772	325	41	183	173	2.0	2.0	2.0
29	2110	.4756	11	174	284	273	35	49	399	5693	257	41	185	183	2.0	2.0	2.5
30	2110	.5123	10	124	224	202	26	41	301	4176	243	34	156	129	2.5	2.5	2.0
31	2100	.5488	10	110	210	184	23	30	260	3518	199	34	148	117	2.0	2.5	2.5

AUGUST 2002

02	2055	1992.6221	9	70	160	137	22	26	246	1927	228	34	158	77	2.0	2.0	2.0
06	2125	.7698	9	51	141	117	16	22	182	1149	165	31	121	59	2.0	3.0	3.0
07	2120	.8064	8	40	120	109	14	13	153	1042	136	25	91	46	2.0	2.0	2.5
09	2125	.8800	4	37	77	65	9	22	112	813	79	16	70	41	2.0	2.5	2.5
14	2120	1993.0635	14	112	252	230	27	34	304	2575	276	47	181	122	2.0	2.5	3.0
15	2110	.1000	13	114	244	221	33	34	364	2527	300	46	184	124	2.0	2.0	3.0
16	2120	.1369	11	121	231	219	25	36	286	2947	267	41	169	130	3.0	3.5	2.5
17	2130	.1739	14	141	281	258	31	43	353	3263	261	43	155	151	2.0	2.0	2.5
18	2100	.2099	12	120	240	217	23	42	272	2740	240	38	140	128	1.5	2.5	2.5
20	2125	.2839	9	98	188	166	18	31	211	2199	203	29	111	104	1.5	2.0	2.0

DATE	UT	CR	g	f	WN	TWN	p	s	SN	BX	CV	QC	QC ²	IS	Q	S	T
AUGUST 2002 continued.																	
21	2055	1993.3199	11	80	190	143	17	33	203	1621	233	35	135	89	1.5	2.0	2.0
22	2045	.3563	8	71	151	140	13	34	164	1238	223	26	96	77	1.0	2.0	2.0
24	2135	.4310	7	58	128	117	14	35	175	1142	223	24	92	63	2.0	3.0	3.0
26	2045	.5031	6	35	95	84	9	11	101	596	150	19	67	40	1.5	2.0	2.0
27	2105	.5403	8	36	116	83	9	14	104	644	122	19	59	39	2.5	3.0	2.5
28	2030	.5761	6	31	91	69	10	12	112	500	127	17	59	35	1.5	2.5	2.5
30	2045	.6499	7	72	142	142	22	27	247	1670	195	28	118	79	2.0	3.5	4.0
31	2040	.6865	7	75	145	145	18	19	199	1843	155	27	113	81	1.5	2.0	1.5

SEPTEMBER 2002

01	2055	1993.7236	11	87	197	197	27	26	296	2377	263	39	153	95	2.0	2.5	2.5
03	2045	.7967	11	90	200	200	30	39	339	2207	219	37	139	99	2.0	3.0	3.0
06	2035	.9065	9	83	173	151	19	40	230	2008	150	29	117	89	1.5	2.0	2.5
10	2135	1994.0547	9	113	203	169	25	41	291	2970	197	30	124	120	2.0	2.0	2.5
11	2125	.0912	7	117	187	174	23	50	280	3222	195	27	117	123	2.0	3.0	3.0
13	2015	.1627	7	72	142	108	15	30	180	1936	155	23	99	77	2.0	3.0	2.5
20	2010	.4193	13	63	193	158	20	29	229	1210	247	40	138	73	2.0	2.0	2.5
21	2115	.4576	10	71	171	160	19	23	213	1462	196	30	102	77	2.0	2.5	2.5
23	2055	.5305	12	78	198	173	21	31	241	1667	232	36	126	87	2.0	2.5	3.0
25	2010	.6026	11	61	171	149	19	20	210	1202	188	32	112	67	1.5	1.5	2.0
26	2045	.6402	8	44	124	102	15	12	162	916	139	26	104	49	2.0	2.5	2.5
29	2105	.7507	7	38	108	74	10	17	117	776	62	17	53	42	2.0	2.0	2.0

OCTOBER 2002

02	2045	1994.8601	4	41	81	70	7	18	88	694	62	12	42	44	2.0	2.0	2.5
03	2035	.8965	4	40	80	80	10	13	113	700	86	15	57	44	1.5	2.5	2.5
04	2035	.9331	6	52	112	100	12	18	138	953	154	19	65	56	2.0	2.5	2.5
05	2005	.9690	7	49	119	108	17	12	182	913	178	22	78	53	2.0	2.5	2.5
06	2010	1995.0058	6	45	105	94	12	17	137	775	140	18	62	49	2.5	2.5	2.5
07	2030	.0430	6	52	112	112	12	23	143	875	156	20	70	57	2.5	2.5	2.0
08	2025	.0795	11	49	159	136	15	22	172	857	185	31	99	56	1.5	2.0	2.0
09	2020	.1160	10	34	134	112	12	15	135	530	149	24	68	38	2.0	2.5	2.5
10	2125	.1543	11	62	172	147	18	29	209	1023	191	32	102	70	2.5	2.5	2.0
12	2010	.2257	10	63	163	141	17	21	191	1123	225	29	99	70	2.5	2.5	2.5
14	2020	.2992	10	58	158	146	15	26	176	1005	176	29	89	67	1.5	2.5	2.5

DATE	UT	CR	g	f	WN	TWN	p	s	SN	BX	CV	QC	QC ²	IS	Q	S	T
OCTOBER 2002 continued.																	
16	2015	1995.3724	11	63	173	149	17	32	202	1289	156	31	103	69	2.0	2.0	2.5
18	2030	.4460	9	74	164	139	20	27	227	1466	187	32	128	83	2.0	2.5	2.5
19	2050	.4832	9	82	172	150	21	25	235	2696	203	31	129	88	1.5	2.5	2.5
21	2120	.5572	6	48	108	97	12	16	136	1296	144	20	80	53	2.0	3.0	3.0
23	2020	.6290	5	52	102	91	12	21	141	1619	138	16	66	55	2.0	2.5	2.5
25	1935	.7011	8	42	122	99	10	23	123	1243	124	22	78	46	1.5	2.0	2.0
30	2020	.8854	13	47	177	119	13	20	150	911	153	31	93	54	1.5	2.0	2.0
NOVEMBER 2002																	
01	2110	1995.9599	11	51	161	161	20	21	221	1012	231	33	109	58	2.5	2.5	2.5
02	2000	.9948	13	56	186	127	15	34	184	1037	219	36	120	64	2.0	2.0	2.0
06	2000	1996.1413	10	94	194	183	21	40	250	2478	238	32	120	100	2.0	2.0	2.0
11	2100	.3259	6	64	124	112	20	29	229	2049	124	23	105	69	2.0	2.5	2.5
12	2020	.3615	7	67	137	126	20	26	226	1957	127	24	100	72	2.5	3.0	2.5
16	1955	.5074	7	89	159	135	16	30	190	2853	267	29	139	95	1.5	1.5	2.0
17	2030	.5449	5	61	111	111	18	21	201	2116	270	26	142	65	2.0	3.0	2.5
18	1940	.5802	6	50	110	98	18	18	198	1573	183	26	126	55	2.0	2.5	2.5
19	2145	.6200	5	40	90	90	10	22	122	1182	161	22	104	44	2.0	3.0	2.5
20	2010	.6542	7	41	111	111	13	18	148	1097	190	27	115	47	2.5	3.0	3.5
22	2010	.7275	6	36	96	85	10	17	117	1123	145	20	84	39	1.5	2.5	2.5
24	2000	.8004	5	20	70	70	9	7	97	758	143	17	69	22	2.0	2.5	2.0
25	2015	.8374	7	19	89	66	6	10	70	599	121	18	62	21	2.0	2.0	2.0
29	1945	.9831	6	18	78	55	7	7	77	351	81	17	59	22	2.0	2.5	2.5
30	2035	1997.0210	5	22	72	72	9	10	100	458	103	18	70	26	2.0	3.0	3.0
DECEMBER 2002																	
01	2000	1997.0567	6	36	96	73	12	17	137	730	101	18	66	40	2.0	2.5	2.5
04	2125	.1687	7	40	110	87	11	20	130	789	129	24	96	46	2.0	2.5	2.5
08	2115	.3148	12	25	145	123	13	10	140	427	143	29	81	30	1.5	2.0	2.0
09	2055	.3509	10	43	143	131	14	15	155	742	144	29	91	51	2.0	2.5	2.0
22	2140	.8278	6	41	101	101	15	16	166	992	165	25	113	46	2.0	2.5	2.5
24	1910	.8972	5	11	61	50	6	4	64	153	64	13	39	14	2.0	2.5	2.5
26	1940	.9711	3	4	34	34	4	0	40	110	45	8	24	5	2.0	2.5	2.5
28	1935	1998.0442	4	5	45	23	2	3	23	61	23	7	15	6	1.5	2.5	2.0
29	2000	.0814	4	14	54	43	5	8	58	188	55	11	35	17	1.5	2.0	2.0
30	2015	.1184	2	7	27	27	3	3	33	145	32	6	20	8	1.5	2.5	2.5
31	1920	.1536	2	10	30	30	2	7	27	80	21	6	18	12	1.0	2.0	2.0

OBSERVATIONAL RESULTS from MURMANSK, RUSSIA, for 2000 continued.

DATE	UT	g	f	WN	IS	AREA	C	DATE	UT	g	f	WN	IS	AREA	C
APRIL 2000								MAY 2000							
01	1140	16	125	285	139	1538	3.5	01	1115	7	95	165	102	—	2.0
02	1150	13	137	267	149	1425	2.0	02	1520	7	53	123	60	—	2.0
03	0735	14	117	257	130	1377	2.0	03	1110	7	27	97	34	—	3.0
06	1445	12	83	203	95	956	2.0	04	1045	6	29	89	34	—	2.0
07	1350	9	57	147	66	718	3.0	05	1150	5	11	61	15	—	2.0
08	0625	9	62	152	70	562	1.5	06	1025	3	11	41	14	—	4.0
09	1150	8	53	133	58	986	3.5	07	1440	3	14	44	17	—	4.0
10	1020	9	56	146	62	647	3.5	08	1620	7	42	112	49	—	3.0
11	1310	10	72	172	81	899	2.0	09	0825	8	57	137	64	—	1.0
13	1455	14	51	191	62	786	3.0	10	1025	9	80	170	88	—	4.0
14	1020	13	58	188	68	644	3.0	10	1150	7	74	144	81	—	1.0
15	0755	9	41	131	49	544	4.0	11	0945	8	111	191	118	—	3.0
17	0650	10	41	141	48	512	3.0	12	1330	9	150	240	158	—	2.5
18	1310	10	54	154	62	726	3.0	13	0925	10	193	293	203	—	1.0
20	0700	10	58	158	66	791	3.0	16	0850	10	167	267	177	—	3.0
21	0625	11	70	180	80	1460	2.0	17	1430	6	109	169	111	—	3.5
23	1150	12	171	291	181	3176	1.0	19	0840	7	279	349	286	—	1.0
24	1650	9	132	222	141	6887	4.0	20	1130	9	336	426	345	—	1.0
27	0810	9	110	200	119	6808	2.0	21	1315	10	313	413	322	—	1.0
28	0515	8	80	160	87	4954	3.5	22	1210	9	262	352	271	—	2.0
29	1625	7	98	168	105	3179	2.0	23	1350	9	161	251	169	—	2.0
30	1400	6	67	127	73	2279	4.0	24	1150	12	130	250	141	—	1.0
Means	—	10.4	81.5	185.1	90.5	1902.5	2.8	29	0740	9	97	187	106	—	1.0
								30	0905	8	90	170	98	—	1.0
								31	0755	5	72	122	77	—	1.0
								Means	—	7.6	120.4	196.6	127.5	—	2.1

OBSERVATIONAL RESULTS from MURMANSK, RUSSIA, for 2000 continued.

DATE	UT	g	f	WN	IS	AREA	C	DATE	UT	g	f	WN	IS	AREA	C
JUNE 2000								JULY 2000							
01	1620	7	76	146	82	—	1.0	01	1535	14	66	206	74	—	2.5
02	0725	7	52	122	56	—	1.0	04	1710	7	26	96	31	—	2.0
03	1130	6	78	138	83	—	1.0	05	1355	7	36	106	42	—	2.0
06	1700	7	113	183	120	—	3.5	06	1155	8	52	132	59	—	2.0
07	1655	8	74	154	81	—	4.0	07	0920	9	56	146	63	—	2.0
09	1545	7	123	193	130	—	2.5	08	1650	10	87	187	97	—	1.0
10	0820	8	131	211	139	—	3.5	09	0640	12	84	204	95	—	1.0
11	1415	12	172	292	184	—	2.0	11	1920	13	181	311	190	—	2.5
14	1915	15	127	277	139	—	2.5	13	1030	13	221	351	233	—	1.5
16	1440	10	113	213	121	—	3.0	14	1530	14	188	328	198	—	2.5
17	2005	11	164	274	174	—	3.0	15	1655	11	200	310	210	—	1.0
18	1825	10	131	231	140	—	2.5	17	1205	12	230	350	242	—	3.0
20	1850	13	123	253	132	—	2.5	18	1005	16	277	437	290	—	2.0
21	1910	9	56	146	62	—	3.5	19	1200	17	331	501	346	—	1.0
23	1845	11	65	175	73	—	2.0	20	1720	16	256	413	270	—	2.5
24	0915	12	100	220	110	—	1.5	21	1315	15	279	429	292	—	3.5
25	1035	11	103	213	111	—	1.5	22	1615	14	245	385	258	—	2.0
26	0915	12	103	223	113	—	1.0	23	1440	11	200	310	210	—	4.5
27	1745	14	141	281	152	—	2.0	25	1250	11	186	296	196	—	2.0
28	1210	11	127	237	138	—	1.5	26	1020	11	132	242	142	—	1.5
29	1040	14	91	231	98	—	1.5	27	1640	12	89	209	99	—	2.0
Means	—	10.2	107.8	210.1	116.1	—	2.2	28	0745	11	74	184	83	—	1.0
								29	1615	11	71	181	81	—	1.0
								30	1625	13	58	188	70	—	1.0
								Means	—	12.0	151.0	271.0	161.3	—	2.0

OBSERVATIONAL RESULTS from MURMANSK, RUSSIA, for **2000** continued.

DATE	UT	g	f	WN	IS	AREA	C
OCTOBER 2000							
03	1415	9	60	150	67	—	3.5
05	1100	8	90	170	97	—	2.0
07	0915	7	48	118	52	—	1.0
08	1255	5	21	71	25	—	3.0
10	0950	5	31	81	34	—	3.0
11	1240	5	38	88	42	—	3.5
12	0940	10	70	170	79	—	2.5
13	1015	10	70	170	80	—	2.0
15	0930	7	51	121	57	—	2.0
16	1240	7	48	118	54	—	3.5
17	1205	6	19	79	24	—	4.5
20	1140	5	97	147	102	—	2.0
21	0945	5	47	97	51	—	3.0
24	0940	6	31	91	35	—	2.5
27	1140	6	20	80	25	—	4.0
28	1030	8	46	126	53	—	3.0
29	1040	9	67	157	75	—	2.5
31	1010	6	37	97	43	—	4.0
Means	—	6.4	46.2	110.1	51.6	—	2.9

DATE	UT	g	f	WN	IS	AREA	C
NOVEMBER 2000							
01	1110	9	53	143	61	—	3.5
02	1035	10	70	170	78	—	3.0
22	0940	4	7	47	9	—	3.0
Means	—	7.7	43.3	120.0	49.3	—	3.2

DECEMBER 2000

No observations, due to polar night.

2000	Means	8.7	86.9	174.3	94.1	—	2.6
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Section B

SUNSPOT REGIONAL BREAKDOWNS — 2002.

This section states all regions observed by the GDSO in the format of;

- * NOAA/SEC region number (if known);
- * co-ordinates of regions in degrees of heliographic latitude (B) [+ if NORTH, - if SOUTH], and in degrees of heliographic longitude (CMD) in respect to the central meridian [+ if WEST, - if EAST]. CMD increases with time.
- * f (spots), p (penumbrae), s (outlying spots) and five columns which state the distribution of umbrae within penumbrae (see page B2);
- * GDSO's determination of the McIntosh classifications of each observed region.

The central meridian value (CM) is based on the Carrington system of heliographic longitude.

All regions observed are listed in increasing longitudinal order. East is to the LEFT of North when it comes to co-ordinates on the Sun.

Observations during 2002 are numbered 4029 to 4204 inclusive.

NOTE:

On 14th June 2002 (UT), NOAA Region Numbers (used in Section B) reached 9999. The NOAA decided to keep the numbers four-digit, therefore 9999 was followed by 0000, then 0001.

ALL TIMES IN UNIVERSAL TIME (UT).

OBS = Number of GDSO observation.

CM values are stated in degrees.

REG. No are NOAA/SEC region numbers.

B = HELIOGRAPHIC LATITUDE OF REGION (+ IF NORTH, - IF SOUTH).

CMD = HELIOGRAPHIC DEGREES AWAY FROM THE CENTRAL MERIDIAN (- IF EAST,

+ IF WEST). EAST IS TO THE **LEFT** OF NORTH.

L = CARRINGTON LONGITUDE OF REGION.

f = NUMBER OF SUNSPOTS IN REGION.

p = NUMBER OF PENUMBRAE IN REGION.

s = NUMBER OF PENUMBRA-FREE SUNSPOTS IN REGION.

gr = NUMBER OF MULTI-SPOT GROUPS (in individual lines, single spot regions = 0, multi-spot regions = 1).

grfp = NUMBER OF UMBRAE WITHIN PENUMBRAE WITHIN THE GROUPS gr.

grf = NUMBER OF NON-PENUMBRAL SPOTS WITHIN THE GROUPS gr.

efp = NUMBER OF SINGLE PENUMBRAL SPOTS.

ef = NUMBER OF SINGLE NON-PENUMBRAL SPOTS.

LETTERS IN 'CLASS' COLUMN ARE McINTOSH CLASSIFICATIONS DETERMINED BY THE GDSO.

BRUNNER (SINGLE LETTER 'ZURICH') CLASSIFICATIONS ARE THE SAME AS THE INITIAL McINTOSH CLASS LETTER, EXCEPT THE FOLLOWING:

E?O, F?O = G; and HAX, HRX & HSX = J.

gr + efp + ef = g.

grfp + grf + efp + ef = f.

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4029	2002 / 01 / 01	2030	68.5	9767	-23	-52	016	17	5	5	1	12	5	0	0	FKC	—	
				9766	+04	-38	030	1	0	1	0	0	0	0	0	1	AXX	small
				9765	+06	-27	041	6	2	3	1	3	3	0	0	0	DAI	—
				9763	+06	-10	058	1	1	0	0	0	0	0	1	0	HSX	—
				9761	+10	+02	070	1	1	0	0	0	0	0	1	0	HSX	—
				9768	-06	+12	080	5	1	3	1	2	3	0	0	0	CAI	—
				9755	-08	+26	094	10	3	4	1	6	4	0	0	0	DAC	—
				9764	+14	+34	102	15	3	5	1	10	5	0	0	0	EAC	—
				9754	-07	+52	120	9	3	4	1	5	4	0	0	0	DAC	—
9751	+03	+74	142	3	2	0	1	3	0	0	0	0	DAO	—				
4030	2002 / 01 / 02	2040	55.2	9767	-23	-39	016	24	6	7	1	17	7	0	0	FHC	—	
				9766	+04	-24	031	3	1	2	1	1	2	0	0	0	CSI	small
				9771	-20	-20	035	3	0	3	1	0	3	0	0	0	BXI	—
				9765	+06	-14	041	4	1	3	1	1	3	0	0	0	CSI	—
				9763	+06	+03	058	1	1	0	0	0	0	0	1	0	HSX	—
				9761	+11	+15	070	1	1	0	0	0	0	0	1	0	HSX	—
				9768	-06	+25	080	5	2	3	1	2	3	0	0	0	DSI	—
				9770	+08	+26	081	3	1	2	1	1	2	0	0	0	CSI	—
				9769	-19	+30	085	4	2	0	1	4	0	0	0	0	DAO	—
				9755	-04	+39	094	3	1	2	1	1	2	0	0	0	CSI	—
				9764	+14	+47	102	5	3	2	1	3	2	0	0	0	EHI	class correct
				9754	-07	+65	120	9	3	3	1	6	3	0	0	0	DAC	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4031	2002 / 01 / 03	2215	41.2	9772	-18	-84	317	1	1	0	0	0	0	1	0	HSX	—	
				9767	-23	-24	017	28	6	14	1	14	14	0	0	0	FAC	—
				9771	-20	-06	035	9	2	5	1	4	5	0	0	0	DAI	—
				9766	+07	-09	032	1	0	1	0	0	0	0	0	1	AXX	—
				9765	+06	+02	043	3	1	2	1	1	2	0	0	0	CSI	—
				9763	+07	+18	059	1	1	0	0	0	0	0	1	0	HSX	—
				9761	+11	+30	071	2	1	1	1	1	1	0	0	0	CSO	—
				9770	+09	+40	081	5	3	2	1	3	2	0	0	0	DSC	small
				9768	-07	+42	083	3	2	1	1	2	1	0	0	0	DSI	—
				9769	-19	+44	085	2	2	0	1	2	0	0	0	0	DSO	—
				9755	-04	+54	095	2	1	1	1	1	1	0	0	0	CSO	—
9764	+14	+63	104	4	2	2	1	2	2	0	0	0	DSI	—				
4032	2002 / 01 / 04	2020	29.1	9772	-16	-67	322	1	1	0	0	0	0	1	0	HSX	—	
				9773	+14	-66	323	2	1	1	1	1	1	0	0	0	CRO	—
				9767	-22	-10	019	31	5	17	1	14	17	0	0	0	FAC	—
				9771	-20	+08	037	5	1	4	1	1	4	0	0	0	CSI	—
				9765	+06	+14	043	3	1	2	1	1	2	0	0	0	CSI	—
				9763	+06	+32	061	1	1	0	0	0	0	0	1	0	HSX	—
				9761	+11	+43	072	1	1	0	0	0	0	0	1	0	HSX	—
				9768	-06	+56	085	7	2	4	1	3	4	0	0	0	DAI	—
				9769	-19	+59	088	3	2	0	1	3	0	0	0	0	DAO	—
				9755	-03	+69	098	1	1	0	0	0	0	0	1	0	HSX	—
				9764	+14	+78	107	1	1	0	0	0	0	0	1	0	HSX	—
4033	2002 / 01 / 06	2100	2.3	9773	+13	-38	324	4	3	0	1	4	0	0	0	DAC	—	
				9772	-17	-40	322	1	1	0	0	0	0	1	0	HSX	—	
				9767	-22	+15	017	22	6	9	1	13	9	0	0	0	EAC	—
				9771	-23	+32	034	2	0	2	1	0	2	0	0	0	BXO	—
				9774	+12	+22	024	3	0	3	1	0	3	0	0	0	BXI	—
				9765	+06	+49	041	2	1	1	1	1	1	0	0	0	CSO	—
				9768	-05	+82	084	3	1	2	1	1	2	0	0	0	CSI	—
4034	2002 / 01 / 09	2035	323.1	9778	-16	-60	263	12	4	3	1	9	3	0	0	DAC	—	
				9779	+28	-55	268	2	1	1	1	1	1	0	0	0	CSO	—
				9776	+11	-34	289	3	2	0	1	3	0	0	0	0	DAO	—
				9775	-05	-13	310	10	3	5	1	5	5	0	0	0	DAC	—
				9772	-16	-00	323	1	1	0	0	0	0	0	1	0	HSX	—
				9773	+14	+03	326	31	4	13	1	18	13	0	0	0	FAC	—
				9780	-11	+38	010	4	2	1	1	3	1	0	0	0	DAI	—
9767	-18	+59	022	4	2	2	1	2	2	0	0	0	DSI	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4035	2002 / 01 / 11	2015	296.9	9782	+09	-76	221	5	2	2	1	3	2	0	0	EHI	—	
				9781	-06	-67	230	1	1	0	0	0	0	0	1	0	HSX	—
				9778	-16	-36	261	26	4	13	1	13	13	0	0	0	EAC	—
				9779	+28	-30	267	2	1	1	1	1	1	0	0	0	CSO	—
				9776	+11	-07	290	4	1	3	1	1	3	0	0	0	CSI	—
				9775	-05	+13	310	24	6	13	1	11	13	0	0	0	EAC	—
				9772	-16	+25	322	2	1	0	1	2	0	0	0	0	HAX	—
				9773	+14	+29	326	27	3	11	1	16	11	0	0	0	FKC	—
				9780	-10	+75	012	1	0	1	0	0	0	0	0	1	AXX	—
				9767	-18	+84	021	1	0	1	0	0	0	0	0	1	AXX	—
4036	2002 / 01 / 12	2035	283.6	9783	-10	-79	205	1	1	0	0	0	0	1	0	HHX	—	
				9782	+09	-65	219	7	3	2	1	5	2	0	0	EHC	—	
				9781	-05	-55	229	1	1	0	0	0	0	1	0	HSX	—	
				9778	-16	-24	260	17	3	5	1	12	5	0	0	0	EAC	—
				9779	+29	-16	268	1	1	0	0	0	0	1	0	0	HSX	—
				?	-11	+03	287	1	0	1	0	0	0	0	1	0	AXX	—
				9776	+11	+10	294	3	1	2	1	1	2	0	0	0	CSI	—
				9775	-05	+27	311	26	6	11	1	15	11	0	0	0	FAC	—
				9772	-16	+38	322	1	1	0	0	0	0	1	0	0	HSX	—
				9773	+15	+43	327	19	3	9	1	10	9	0	0	0	FKC	—
4037	2002 / 01 / 15	2040	244.0	9783	-11	-42	202	2	1	0	1	2	0	0	0	HAX	—	
				9782	+06	-22	222	15	4	5	1	10	5	0	0	0	EAC	—
				9781	-05	-15	229	2	1	1	1	1	1	0	0	0	CSO	—
				9778	-15	+16	260	9	2	7	1	2	7	0	0	0	DSI	—
				9779	+29	+22	266	1	1	0	0	0	0	1	0	0	HSX	—
				9775	-06	+67	311	8	2	2	1	6	2	0	0	0	FAI	—
				9773	+16	+80	324	5	2	1	1	4	1	0	0	0	DAI	—
				9775	-06	+83	314	2	1	1	1	1	1	0	0	0	HSX	—
4038	2002 / 01 / 16	2055	230.7	9783	-12	-28	203	2	1	0	1	2	0	0	0	HAX	—	
				9782/5	+08	-13	218	11	4	3	1	8	3	0	0	0	EAC	—
				9786	-26	-10	221	4	2	1	1	3	1	0	0	0	DAI	small
				?	-15	-07	224	1	0	1	0	0	0	0	1	0	AXX	—
				9781	-05	-02	229	2	1	1	1	1	1	0	0	0	CSO	—
				9778	-14	+32	263	1	1	0	0	0	0	1	0	0	HSX	small
				9779	+29	+35	266	1	1	0	0	0	0	1	0	0	HSX	—
				9775	-06	+83	314	2	1	1	1	1	1	0	0	0	HSX	—
4039	2002 / 01 / 18	2045	204.5	9787	-07	-73	131	2	1	1	1	1	1	0	0	CHO	—	
				9788	+16	-54	150	1	1	0	0	0	0	1	0	0	HSX	—
				9789	+14	-12	192	2	0	2	1	0	2	0	0	0	BXO	—
				9783	-11	-03	201	4	1	1	1	3	1	0	0	0	CAO	—
				?	+18	+00	204	1	0	1	0	0	0	0	1	0	AXX	—
				9782/5	+07	+16	220	17	4	6	1	11	6	0	0	0	EAC	—
				9786	-26	+17	221	10	2	4	1	6	4	0	0	0	DAI	—
				9781	-05	+26	230	1	1	0	0	0	0	1	0	0	HSX	—
				9779	+29	+62	266	3	1	1	1	2	1	0	0	0	CAO	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4040	2002 / 01 / 20	2035	178.2	9787	-07	-48	130	5	1	3	1	2	3	0	0	CHI	—	
				9793	-15	-34	144	3	2	1	1	2	1	0	0	DSI	—	
				9788	+17	-29	149	11	4	4	1	7	4	0	0	DAC	—	
				9790	+28	-14	164	1	0	1	0	0	0	0	0	1	AXX	—
				9789	+15	+13	191	7	2	3	1	4	3	0	0	DAI	—	
				9791	-03	+17	195	6	4	2	1	4	2	0	0	DAI	—	
				9783	-11	+23	201	9	1	6	1	3	6	0	0	CAI	—	
				9782/5	+09	+42	220	6	2	3	1	3	3	0	0	EAO	—	
				9786	-25	+43	221	5	2	2	1	3	2	0	0	DSI	—	
				9781	-04	+53	231	1	1	0	0	0	0	1	0	HSX	—	
4041	2002 / 01 / 21	2045	165.0	9787	-07	-35	130	7	2	3	1	4	3	0	0	DHI	—	
				9793	-15	-22	143	2	1	1	1	1	1	0	0	CSO	close	
				9788	+18	-16	149	14	5	6	1	8	6	0	0	DAC	—	
				9790	+28	-01	164	1	1	0	0	0	0	1	0	HSX	—	
				9789	+17	+26	191	5	1	4	1	1	4	0	0	CSI	—	
				9791	-03	+30	195	8	2	3	1	5	3	0	0	DAI	—	
				9783	-11	+36	201	5	2	2	1	3	2	0	0	DAI	—	
				9782/5	+09	+55	220	4	2	1	1	3	1	0	0	EAO	—	
				9786	-25	+56	221	1	1	0	0	0	0	1	0	HSX	—	
				9781	-04	+66	231	1	1	0	0	0	0	1	0	HSX	—	
4042	2002 / 01 / 22	2015	152.1	9798	-03	-58	094	1	0	1	0	0	0	0	1	AXX	small	
				9796	+09	-34	118	1	0	1	0	0	0	0	1	AXX	—	
				9787	-06	-22	130	10	3	4	1	6	4	0	0	DKC	—	
				9793	-12	-08	144	4	2	2	1	2	2	0	0	DSI	—	
				9788	+18	-03	149	15	6	5	1	10	5	0	0	EAC	—	
				9790	+29	+12	164	1	0	1	0	0	0	0	1	AXX	—	
				9791	-02	+43	195	5	2	2	1	3	2	0	0	DAI	—	
				9783	-10	+49	201	9	4	3	1	6	3	0	0	DAC	—	
				9782/5	+11	+68	220	4	2	1	1	3	1	0	0	EAO	—	
				9786	-26	+70	222	1	1	0	0	0	0	1	0	HSX	—	
9781	-06	+79	231	1	1	0	0	0	0	1	0	HSX	—					
4043	2002 / 01 / 27	2155	85.3	9802	-15	-62	023	7	3	3	1	4	3	0	0	DAC	—	
				9801	-03	-52	033	3	2	1	1	2	1	0	0	DSI	—	
				9804	-19	-42	043	2	0	2	1	0	2	0	0	BXO	—	
				9800	+07	-37	048	31	6	8	1	23	8	0	0	FKC	—	
				9799	-24	-05	080	6	2	2	1	4	2	0	0	DAI	—	
				9798	-02	+11	096	2	0	2	1	0	2	0	0	BXO	—	
				9794	+13	+28	113	5	2	2	1	3	2	0	0	DAI	—	
				9803	-24	+45	130	1	1	0	0	0	0	1	0	HRX	small	
				9787	-08	+46	131	8	2	2	1	6	2	0	0	DKI	—	
				9788	+17	+68	153	6	2	4	1	2	4	0	0	DSI	—	

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4044	2002 / 01 / 28	2020	73.0	9806	+11	-73	000	1	1	0	0	0	0	1	0	HSX	—	
				9802	-16	-52	021	17	3	8	1	9	8	0	0	DAC	—	
				9801	-03	-41	032	3	2	0	1	3	0	0	0	DAO	—	
				9804	-19	-30	043	3	0	3	1	0	3	0	0	BXI	—	
				9800	+07	-26	047	23	4	6	1	17	6	0	0	EKC	—	
				?	+22	-04	069	1	0	1	0	0	0	0	0	1	AXX	—
				9799	-24	+07	080	6	2	4	1	2	4	0	0	0	DSI	—
				9798	-03	+19	092	1	0	1	0	0	0	0	0	1	AXX	—
				9803	-25	+57	130	4	1	3	1	1	3	0	0	0	CSI	—
9787	-08	+57	130	5	2	0	1	5	0	0	0	0	DKO	—				
4045	2002 / 01 / 29	2035	59.7	9806	+10	-60	000	1	1	0	0	0	0	1	0	HSX	—	
				9805	+14	-54	006	2	0	2	1	0	2	0	0	BXO	—	
				?	-11	-52	008	1	0	1	0	0	0	0	1	AXX	small	
				9802	-16	-39	021	19	3	4	1	15	4	0	0	EHC	—	
				9801	-03	-27	033	2	2	0	1	2	0	0	0	DSO	—	
				9804	-19	-16	044	2	0	2	1	0	2	0	0	0	BXO	small
				9800	+07	-13	047	33	7	16	1	17	16	0	0	0	EKC	—
				9799	-23	+20	080	6	1	3	1	3	3	0	0	0	CAI	—
				9803	-24	+70	130	1	1	0	0	0	0	1	0	0	HSX	—
9787	-07	+70	130	2	1	1	1	1	1	0	0	0	CKO	class correct				
4046	2002 / 01 / 30	2025	46.7	9809	-06	-84	323	1	1	0	0	0	0	1	0	HSX	—	
				9807	-27	-77	330	3	2	1	1	2	1	0	0	0	ESI	—
				9806	+10	-47	000	1	1	0	0	0	0	1	0	0	HSX	—
				9805	+14	-42	005	1	0	1	0	0	0	0	0	1	AXX	—
				?	-11	-40	007	1	0	1	0	0	0	0	0	1	AXX	small
				9802	-17	-25	022	20	6	11	1	9	11	0	0	0	EAC	—
				9801	-04	-15	032	10	1	8	1	2	8	0	0	0	CAI	—
				9800	+08	+00	047	26	7	12	1	14	12	0	0	0	FAC	—
				9799	-23	+32	079	1	1	0	0	0	0	1	0	0	HSX	—
9787	-07	+86	133	1	1	0	0	0	0	1	0	0	HSX	—				
4047	2002 / 01 / 31	2050	33.3	9809	-06	-70	323	2	2	0	1	2	0	0	0	DSO	—	
				9807	-26	-66	327	7	2	2	1	5	2	0	0	0	EAI	—
				9808	+15	-56	337	2	0	2	1	0	2	0	0	0	BXO	—
				9806	+12	-33	000	1	1	0	0	0	0	1	0	0	HSX	—
				9802	-16	-11	022	31	5	12	1	19	12	0	0	0	EKC	—
				9801	-04	-00	033	6	1	5	1	1	5	0	0	0	CSI	—
				9800	-23	+47	080	26	6	11	1	15	11	0	0	0	FAC	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4048	2002 / 02 / 02	2035	7.1	9811	-27	-86	281	1	1	0	0	0	0	1	0	HSX	—	
				9810	+09	-71	296	1	1	0	0	0	0	0	1	0	HHX	—
				9809	-06	-45	322	2	2	0	1	2	0	0	0	0	DSO	—
				9807	-27	-41	326	12	5	3	1	9	3	0	0	0	EAC	—
				9808	+16	-31	336	4	2	2	1	2	2	0	0	0	DSI	—
				9806	+11	-07	000	3	1	2	1	1	2	0	0	0	CSI	—
				9813	-24	-02	005	1	1	0	0	0	0	1	0	0	HRX	small
				9812	+12	+13	020	3	2	0	1	3	0	0	0	0	DAO	—
				9802	-14	+15	022	31	6	7	1	24	7	0	0	0	EAC	—
				9801	-04	+26	033	3	1	2	1	1	2	0	0	0	CSI	—
9800	+10	+41	048	25	7	9	1	16	9	0	0	0	FAC	—				
4049	2002 / 02 / 05	2040	327.5	9819	-29	-70	258	2	1	1	1	1	1	0	0	CSO	—	
				9811	-25	-47	281	9	3	4	1	5	4	0	0	0	DAC	—
				9815	+12	-45	283	2	1	0	1	2	0	0	0	0	HAX	—
				9810	+10	-28	300	2	2	0	1	2	0	0	0	0	DHO	—
				9817	-07	-25	303	1	1	0	0	0	0	1	0	0	HSX	small
				9809	-06	-05	323	6	2	4	1	2	4	0	0	0	DSI	—
				9807	-25	-03	325	7	1	6	1	1	6	0	0	0	ESO	—
				9814	+07	+12	339	1	0	1	0	0	0	0	1	0	AXX	—
				9808	+17	+12	339	12	3	7	1	5	7	0	0	0	DAC	—
				9806	+11	+34	002	1	1	0	0	0	0	1	0	0	HSX	—
9802	-15	+54	022	34	9	11	1	23	11	0	0	0	FAC	—				
9812	+13	+55	023	1	0	1	0	0	0	0	1	0	AXX	—				
9801	-04	+69	037	1	1	0	0	0	0	1	0	0	HSX	—				
4050	2002 / 02 / 07	1950	301.6	9820	+15	-49	253	2	1	1	1	1	1	0	0	CSO	—	
				9819	-31	-46	256	2	1	1	1	1	1	0	0	0	CSO	close
				9815	+12	-20	282	8	2	3	1	5	3	0	0	0	DAI	—
				9811	-26	-23	279	13	2	6	1	7	6	0	0	0	DAI	—
				9810	+10	-04	298	3	1	1	1	2	1	0	0	0	CKO	—
				9807	-27	+19	321	3	1	1	1	2	1	0	0	0	CAO	—
				9809	-05	+21	323	2	2	0	1	2	0	0	0	0	DSO	—
				9808	+18	+37	339	5	1	2	1	3	2	0	0	0	CAI	—
				9806	+13	+60	002	1	1	0	0	0	0	1	0	0	HSX	small
				?	+19	+61	003	1	0	1	0	0	0	0	1	0	AXX	—
9802	-14	+77	019	4	2	1	1	3	1	0	0	0	DAI	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4051	2002/02/08	2105	287.8	9825	+12	-84	204	1	1	0	0	0	0	1	0	HHX	—	
				9822	+18	-71	217	3	1	1	1	2	1	0	0	CAO	—	
				9819	-30	-35	253	1	0	1	0	0	0	0	0	1	AXX	—
				9820	+15	-32	256	1	1	0	0	0	0	0	1	0	HSX	—
				9821	-14	-18	270	8	2	3	1	5	3	0	0	DAI	—	
				9811	-26	-08	280	13	2	7	1	6	7	0	0	DAI	—	
				9815	+11	-04	284	6	2	3	1	3	3	0	0	DAI	—	
				9810	+11	+12	300	6	1	4	1	2	4	0	0	CAI	—	
				9807	-27	+32	320	1	0	1	0	0	0	0	0	1	AXX	—
				9809	-04	+36	324	3	2	1	1	2	1	0	0	DSI	—	
				9814	+08	+49	337	1	1	0	0	0	0	0	1	0	HSX	—
9808	+18	+52	340	2	0	2	1	0	2	0	0	BXO	—					
4052	2002/02/12	2025	235.5	9825	+13	-32	203	26	4	12	1	14	12	0	0	FAC	—	
				9824	+22	-32	203	1	1	0	0	0	0	1	0	HSX	big	
				?	-10	-15	220	2	0	2	1	0	2	0	0	BXO	—	
				9822	+18	-14	221	2	1	1	1	1	1	0	0	CSO	—	
				9826	-22	-14	221	4	1	3	1	1	3	0	0	CSI	—	
				9823	-04	+17	252	4	1	2	1	2	2	0	0	CAI	—	
				9821	-13	+36	271	23	3	9	1	14	9	0	0	DAC	—	
				9811	-26	+43	278	1	1	0	0	0	0	1	0	HSX	—	
				9810	+10	+66	301	1	1	0	0	0	0	1	0	HSX	—	
4053	2002/02/13	2055	222.0	9825	+14	-18	204	31	6	14	1	17	14	0	0	FAC	—	
				9824	+22	-18	204	1	1	0	0	0	0	1	0	HSX	big	
				9826	-23	+00	222	4	0	4	1	0	4	0	0	BXI	—	
				9822	+17	+03	225	1	0	1	0	0	0	0	1	AXX	—	
				9819	-29	+31	253	2	1	1	1	1	1	0	0	CSO	—	
				9823	-04	+34	256	1	0	1	0	0	0	0	1	AXX	—	
				9821	-13	+51	273	11	4	5	1	6	5	0	0	DAC	—	
				9811	-25	+58	280	1	1	0	0	0	0	1	0	HSX	—	
				9810	+10	+82	304	1	1	0	0	0	0	1	0	HSX	—	
4054	2002/02/14	2030	209.1	9828	-16	-12	197	3	0	3	1	0	3	0	0	BXI	—	
				9824	+22	-06	203	1	1	0	0	0	0	1	0	HSX	—	
				9825	+13	-03	206	35	6	16	1	15	16	0	0	FAC	—	
				9822	+17	+16	225	1	0	1	0	0	0	0	1	AXX	—	
				9819	-29	+42	251	3	1	2	1	1	2	0	0	CSI	—	
				9821	-12	+64	273	10	4	3	1	7	3	0	0	DAC	—	

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4055	2002 / 02 / 16	2025	182.8	9829	-06	-54	129	4	2	2	1	2	2	0	0	ESI	small
				9830	-20	-46	137	18	5	7	1	11	7	0	0	FAC	—
				9824	+23	+20	203	1	1	0	0	0	0	1	0	HSX	—
				9825	+13	+22	205	22	6	12	1	10	12	0	0	FAC	—
				9831	-11	+39	222	2	2	0	1	2	0	0	0	DSO	small peumbs
4056	2002 / 02 / 17	2025	169.6	9829	-05	-39	131	5	2	1	1	4	1	0	0	DAI	—
				9830	-18	-35	135	29	9	8	1	21	8	0	0	FAC	—
				?	+17	+27	197	2	0	2	1	0	2	0	0	BXO	—
				9824	+24	+32	202	1	1	0	0	0	0	1	0	HSX	—
				9825	+12	+33	203	11	4	6	1	5	6	0	0	FAC	—
4057	2002 / 02 / 22	2120	103.3	9840	-12	-59	044	1	1	0	0	0	0	1	0	HSX	—
				9843	-26	-59	044	1	0	1	0	0	0	0	1	AXX	small
				9837	+09	-45	058	3	1	1	1	2	1	0	0	CAO	—
				9842	-18	-04	099	1	1	0	0	0	0	1	0	HRX	—
				9839	-17	+05	108	3	0	3	1	0	3	0	0	BXI	—
				9841	-21	+19	122	7	3	3	1	4	3	0	0	DAC	—
				9838	+05	+30	133	2	0	2	1	0	2	0	0	BXO	—
				9830	-19	+33	136	21	5	6	1	15	6	0	0	FAC	—
4058	2002 / 02 / 23	2100	90.3	9845	+15	-73	017	1	1	0	0	0	0	1	0	HSX	—
				9840	-11	-48	042	1	0	1	0	0	0	0	1	AXX	—
				9844	+22	-35	055	3	2	1	1	2	1	0	0	DSI	—
				9837	+09	-34	056	7	2	2	1	5	2	0	0	DAI	—
				?	-04	+11	101	1	0	1	0	0	0	0	1	AXX	—
				9839	-18	+18	108	4	2	2	1	2	2	0	0	DSI	—
				9841	-20	+31	121	5	3	2	1	3	2	0	0	DSC	—
				9830	-19	+47	137	21	5	8	1	13	8	0	0	FAC	—
4059	2002 / 02 / 25	2025	64.3	9845	+17	-49	015	5	2	2	1	3	2	0	0	DAI	—
				9847	-14	-39	025	3	2	0	1	3	0	0	0	DAO	—
				9848	-20	-35	029	6	2	4	1	2	4	0	0	DSI	—
				9840	-11	-22	042	1	0	1	0	0	0	0	1	AXX	small
				9843	-26	-20	044	4	1	3	1	1	3	0	0	CSI	—
				9844	+22	-07	057	14	5	6	1	8	6	0	0	DAC	—
				9837	+09	-05	059	7	1	4	1	3	4	0	0	CAI	—
				9842	-19	+34	098	13	3	3	1	10	3	0	0	DAC	—
				9839	-17	+46	110	12	3	7	1	5	7	0	0	EAC	—
				9846	-04	+51	115	9	2	3	1	6	3	0	0	DAI	—
				9841	-21	+58	122	2	1	1	1	1	1	0	0	CSO	—
				?	-12	+70	134	1	1	0	0	0	0	1	0	HSX	—
				9830	-18	+77	141	7	2	2	1	5	2	0	0	DAI	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks		
4060	2002 / 02 / 26	2045	50.9	9845	+17	-37	014	12	3	4	1	8	4	0	0	EAC	—		
				9847	-14	-26	025	1	1	0	0	0	0	0	1	0	HSX	small	
				9848	-20	-22	029	9	2	3	1	6	3	0	0	0	0	DAI	—
				9843	-26	-08	043	5	0	5	1	0	5	0	0	0	0	BXI	—
				9844	+22	+06	057	13	4	4	1	9	4	0	0	0	0	EAC	—
				9837	+09	+07	058	3	1	1	1	2	1	0	0	0	0	CAO	—
				?	-17	+13	064	1	0	1	0	0	0	0	0	1	1	AXX	—
				9842	-19	+47	098	10	3	3	1	7	3	0	0	0	0	DAI	class correct
				9839	-17	+60	111	9	4	2	1	7	2	0	0	0	0	DAC	—
				9841	-22	+65	116	1	1	0	0	0	0	0	1	0	0	HSX	small
9846	-03	+66	117	5	2	1	1	4	1	0	0	0	0	DAI	—				
4061	2002 / 02 / 27	2055	37.7	9845	+17	-23	015	17	5	4	1	13	4	0	0	FAC	—		
				9847	-14	-12	026	1	0	1	0	0	0	0	0	1	AXX	—	
				9848	-20	-07	031	5	2	1	1	4	1	0	0	0	DAO	—	
				?	+03	+00	038	1	0	1	0	0	0	0	0	1	AXX	—	
				9843	-26	+06	044	7	3	3	1	4	3	0	0	0	DAC	small	
				9844	+22	+19	057	16	5	6	1	10	6	0	0	0	0	EAC	—
				?	-21	+29	067	2	0	2	1	0	2	0	0	0	0	BXO	—
				9850	+27	+49	087	3	1	1	1	2	1	0	0	0	0	CAO	—
				9842	-19	+61	099	6	2	3	1	3	3	0	0	0	0	DAI	—
				9839	-18	+73	111	8	3	2	1	6	2	0	0	0	0	DAC	—
9846	-03	+80	118	3	2	0	1	3	0	0	0	0	0	DAO	—				
4062	2002 / 03 / 02	2025	358.4	9853	-24	-71	287	1	0	1	0	0	0	0	1	AXX	—		
				9852	+15	-54	304	2	0	2	1	0	2	0	0	0	BXO	—	
				9851	-05	-44	314	5	1	3	1	2	3	0	0	0	CAI	—	
				9845	+18	+16	014	17	6	5	1	12	5	0	0	0	FAC	—	
				9848	-19	+32	030	1	0	1	0	0	0	0	0	1	AXX	—	
				9843	-26	+45	043	9	4	3	1	6	3	0	0	0	DAC	—	
				9840	-14	+50	048	1	0	1	0	0	0	0	0	1	AXX	—	
				9844	+22	+59	057	3	1	2	1	1	2	0	0	0	0	CSI	—
4063	2002 / 03 / 05	2030	318.9	9861	+07	-69	250	1	0	1	0	0	0	0	1	AXX	—		
				9860	-06	-64	255	1	0	1	0	0	0	0	0	1	AXX	—	
				9856	-06	-51	268	3	1	2	1	1	2	0	0	0	CHI	—	
				9859	-10	-37	282	1	0	1	0	0	0	0	0	1	AXX	—	
				9853	-23	-31	288	7	2	3	1	4	3	0	0	0	DAI	—	
				9851	-06	-05	314	13	3	9	1	4	9	0	0	0	FAC	long	
				9855	+13	+01	320	1	0	1	0	0	0	0	0	1	AXX	—	
				9858	-30	+05	324	1	0	1	0	0	0	0	0	1	AXX	—	
				9854	+10	+35	354	2	0	2	1	0	2	0	0	0	0	BXO	—
				9845	+17	+57	016	16	6	6	1	10	6	0	0	0	0	FAC	—
9857	-04	+69	028	1	0	1	0	0	0	0	0	0	1	AXX	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4064	2002 / 03 / 16	2040	173.8	9871	-21	-34	140	10	2	4	1	6	4	0	0	EHI	—
				9873	-17	-07	167	12	3	6	1	6	6	0	0	DAC	—
				9872	-31	+02	176	4	2	2	1	2	2	0	0	DSI	—
				9870	-20	+04	178	2	1	0	1	2	0	0	0	HAX	—
				9866	-09	+16	190	28	5	9	1	19	9	0	0	FAC	—
				9864	+19	+44	218	2	1	1	1	1	1	0	0	CSO	—
4065	2002 / 03 / 17	2100	160.4	9871	-18	-22	138	13	2	5	1	8	5	0	0	EAI	—
				9873	-17	+07	167	11	3	4	1	7	4	0	0	DAC	—
				9872	-32	+16	176	6	2	4	1	2	4	0	0	DSI	—
				9870	-20	+18	178	3	1	1	1	2	1	0	0	CAO	—
				9866	-09	+31	191	14	3	4	1	10	4	0	0	EAC	—
				9864	+17	+60	220	2	1	1	1	1	1	0	0	CSO	—
4066	2002 / 03 / 18	2030	147.5	9871	-19	-10	138	15	2	9	1	6	9	0	0	EAI	—
				9873	-18	+18	166	12	4	5	1	7	5	0	0	DAC	—
				9872	-32	+27	175	3	1	1	1	2	1	0	0	CAO	—
				9870	-20	+32	180	7	1	4	1	3	4	0	0	CAI	—
				9866	-09	+43	191	13	2	4	1	9	4	0	0	EAI	—
				9864	+18	+70	218	1	1	0	0	0	0	1	0	HSX	—
4067	2002 / 03 / 19	2055	134.1	9876	-16	-80	054	1	1	0	0	0	0	1	0	HSX	small
				9875	-19	-64	070	2	1	1	1	1	1	0	0	CSO	tight
				9874	+17	-23	111	3	0	3	1	0	3	0	0	BXI	—
				?	-10	-04	130	1	0	1	0	0	0	0	1	AXX	—
				9871	-19	+04	138	12	3	6	1	6	6	0	0	EAI	class correct
				9873	-18	+33	167	8	2	5	1	3	5	0	0	DAI	—
				9870	-20	+45	179	7	1	4	1	3	4	0	0	CAI	—
				9866	-09	+57	191	6	2	0	1	6	0	0	0	EAO	—
4068	2002 / 03 / 20	2100	120.9	9878	+08	-77	044	1	1	0	0	0	0	1	0	HSX	—
				9876	-16	-67	054	1	1	0	0	0	0	1	0	HSX	—
				9875	-18	-50	071	9	2	2	1	7	2	0	0	DAI	—
				9874	+18	-10	111	2	0	2	1	0	2	0	0	BXO	—
				9871	-19	+17	138	12	2	4	1	8	4	0	0	EAI	—
				9877	+18	+27	148	2	2	0	1	2	0	0	0	DSO	small
				9873	-17	+47	168	2	1	0	1	2	0	0	0	HAX	—
				9870	-21	+59	180	2	1	1	1	1	1	0	0	CSO	—
				9866	-08	+71	192	4	2	0	1	4	0	0	0	EAO	—
4069	2002 / 03 / 21	2100	107.7	9878	+09	-66	042	4	2	1	1	3	1	0	0	DAI	—
				9876	-15	-56	052	3	2	1	1	2	1	0	0	DSI	—
				9880	+08	-37	071	1	0	1	0	0	0	0	1	AXX	big
				9875	-19	-37	071	10	2	4	1	6	4	0	0	DAI	—
				9871	-18	+30	138	11	3	3	1	8	3	0	0	EAC	—
				9877	+16	+42	150	3	2	1	1	2	1	0	0	DSI	—
				9873	-18	+65	173	2	1	0	1	2	0	0	0	HAX	—
				9870	-20	+71	179	1	1	0	0	0	0	1	0	HSX	—
				9866	-09	+82	190	1	1	0	0	0	0	1	0	HSX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4070	2002 / 03 / 22	2055	94.6	9882	+14	-75	020	2	1	1	1	1	1	0	0	CSO	—
				9878	+08	-56	039	8	2	6	1	2	6	0	0	ESI	—
				9876	-16	-47	048	4	2	1	1	3	1	0	0	DAI	—
				9875	-20	-25	070	13	3	6	1	7	6	0	0	EAC	—
				9880	+06	-23	072	1	0	1	0	0	0	0	1	AXX	—
				9881	-05	+06	101	2	0	2	1	0	2	0	0	BXO	—
				9871	-19	+44	139	6	3	3	1	3	3	0	0	ESC	—
				9877	+15	+55	150	7	3	1	1	6	1	0	0	DAC	—
				9873	-18	+79	174	1	1	0	0	0	0	0	1	0	HSX
4071	2002 / 03 / 23	2050	81.4	9883	+06	-69	012	1	1	0	0	0	0	1	0	HSX	—
				9882	+14	-56	025	2	1	0	1	2	0	0	0	HAX	—
				9878E*	+11	-49	032	2	0	2	1	0	2	0	0	BXO	—
				9878W*	+10	-39	042	5	2	3	1	2	3	0	0	DSI	—
				9876	-16	-32	049	10	5	3	1	7	3	0	0	EAC	—
				9875	-20	-10	071	9	1	4	1	5	4	0	0	CAI	—
				9880	+06	-09	072	7	1	6	1	1	6	0	0	CSI	—
				9881	-04	+18	099	1	0	1	0	0	0	0	1	AXX	—
				9871	-18	+58	139	6	3	1	1	5	1	0	0	DAC	—
9879	+14	+74	155	5	2	2	1	3	2	0	0	DAI	—				
4072	2002 / 03 / 25	2125	54.7	9883	+06	-46	009	1	1	0	0	0	0	1	0	HSX	—
				9882	+16	-30	025	2	2	0	1	2	0	0	0	DSO	tight
				9878	+08	-15	040	9	3	3	1	6	3	0	0	DAC	—
				9876	-15	-07	048	17	7	8	1	9	8	0	0	EAC	—
				9880	+08	+20	075	11	4	5	1	6	5	0	0	DAC	—
				9875	-20	+20	075	3	1	1	1	2	1	0	0	CAO	—
				9881	-03	+46	101	9	2	3	1	6	3	0	0	DAI	—
4073	2002 / 03 / 26	2130	41.5	9884	-18	-54	348	2	1	1	1	1	1	0	0	CSO	—
				9883	+06	-32	010	2	1	0	1	2	0	0	0	HAX	—
				9882	+16	-16	026	3	1	2	1	1	2	0	0	CRI	—
				9878	+08	-02	040	13	4	3	1	10	3	0	0	DAC	—
				9876	-15	+06	048	16	4	6	1	10	6	0	0	EAC	—
				9880	+08	+34	076	11	3	4	1	7	4	0	0	DAC	—
				9875	-21	+34	076	2	1	0	1	2	0	0	0	HAX	—
				9881	-03	+60	102	4	2	1	1	3	1	0	0	DSI	—
4074	2002 / 03 / 28	2030	15.7	9888	-11	-83	293	1	1	0	0	0	0	1	0	HSX	—
				9885	+11	-59	317	7	2	2	1	5	2	0	0	EHI	—
				9884	-19	-28	348	7	3	3	1	4	3	0	0	DAC	—
				9883	+06	-07	009	2	1	1	1	1	1	0	0	CRO	—
				9878	+09	+23	039	9	3	4	1	5	4	0	0	DAC	—
				9876	-14	+32	048	17	5	10	1	7	10	0	0	EAC	small
				9880	+09	+60	076	12	4	2	1	10	2	0	0	DAC	—

* GDSO designation.

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4075	2002 / 04 / 01	2050	322.7	9888	-13	-34	289	12	3	3	1	9	3	0	0	DKC	—	
				9889	-20	-32	291	2	0	2	1	0	2	0	0	BXO	—	
				9887	+01	-26	297	29	5	13	1	16	13	0	0	EKC	—	
				9886	+11	-18	305	21	4	11	1	10	11	0	0	EAC	—	
				?	-06	-07	316	2	0	2	1	0	2	0	0	BXO	—	
				9885	+11	-03	320	26	6	10	1	16	10	0	0	FKC	—	
				?	+01	+04	327	1	0	1	0	0	0	0	0	1	AXX	—
				9884	-19	+23	346	7	1	6	1	1	6	0	0	0	CSI	—
				9890	-15	+33	356	2	0	2	1	0	2	0	0	0	BXO	—
4076	2002 / 04 / 02	2140	309.1	9892	+05	-65	244	3	1	2	1	1	2	0	0	CSI	—	
				9888	-12	-21	288	13	3	6	1	7	6	0	0	DAC	—	
				9889	-19	-20	289	1	0	1	0	0	0	0	0	1	AXX	small
				9887	+02	-13	296	25	6	10	1	15	10	0	0	EKC	—	
				9886	+12	-04	305	14	3	6	1	8	6	0	0	EAC	—	
				9891	-08	+06	315	3	0	3	1	0	3	0	0	BXI	—	
				9885	+13	+12	321	17	7	5	1	12	5	0	0	FHC	—	
				?	+01	+18	327	2	1	0	1	2	0	0	0	0	HAX	—
				9884	-18	+37	346	4	1	2	1	2	2	0	0	0	CAI	—
4077	2002 / 04 / 03	2150	295.8	9893	+18	-80	216	1	1	0	0	0	0	1	0	HSX	—	
				9892	+04	-51	245	3	1	1	1	2	1	0	0	CAO	—	
				9888	-13	-09	287	12	2	7	1	5	7	0	0	DAI	—	
				9889	-19	-07	289	3	0	3	1	0	3	0	0	BXI	—	
				9887	+02	+00	296	24	6	5	1	19	5	0	0	FKC	—	
				9886	+12	+08	304	11	3	4	1	7	4	0	0	EAC	—	
				9885	+13	+24	320	19	4	6	1	13	6	0	0	FHC	—	
				?	+01	327	327	2	1	1	1	1	1	0	0	0	CSO	—
				9884	-17	+51	347	4	1	2	1	2	2	0	0	0	CAI	—
4078	2002 / 04 / 06	2025	257.0	9899	+18	-74	183	1	1	0	0	0	0	1	0	HSX	—	
				9898	-19	-68	189	2	1	1	1	1	1	0	0	0	CSO	small
				9896	-11	-63	194	1	1	0	0	0	0	1	0	0	HSX	—
				9893	+19	-42	215	15	5	7	1	8	7	0	0	0	FKC	—
				9900	-29	-23	234	1	0	1	0	0	0	0	0	1	AXX	—
				9892	+05	-09	248	1	0	1	0	0	0	0	0	1	AXX	small
				9897	-01	+00	257	8	2	3	1	5	3	0	0	0	DAI	—
				9894	+14	+20	277	1	0	1	0	0	0	0	0	1	AXX	—
				9888	-12	+30	287	6	1	3	1	3	3	0	0	0	CAI	—
				9887	+03	+40	297	23	5	6	1	17	6	0	0	0	FKC	—
				9886	+14	+49	306	7	3	2	1	5	2	0	0	0	DAC	—
				9885	+13	+62	319	8	3	3	1	5	3	0	0	0	FHO	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4079	2002/04/09	2100	217.1	9903	+19	-63	154	3	2	0	1	3	0	0	0	DAO	—
				9902	+13	-56	161	5	3	2	1	3	2	0	0	ESC	—
				9899	+18	-34	183	7	2	3	1	4	3	0	0	DAI	—
				9896	-11	-23	194	1	1	0	0	0	0	1	0	HSX	—
				9905	-17	-19	198	5	0	5	1	0	5	0	0	BXI	—
				9901	+19	-13	204	21	6	5	1	16	5	0	0	EAC	—
				9893	+19	-02	215	12	3	6	1	6	6	0	0	DKC	—
				9904	-16	+05	222	5	1	2	1	3	2	0	0	CAI	—
				9900	-29	+17	234	15	4	7	1	8	7	0	0	EAC	—
				9897	-02	+41	258	1	1	0	0	0	0	1	0	HSX	small
9887	+04	+80	297	3	2	1	1	2	1	0	0	ESI	—				
4080	2002/04/10	2115	203.7	9906	-16	-55	149	2	1	1	1	1	1	0	0	CSO	—
				9903	+19	-49	155	3	2	1	1	2	1	0	0	DSI	—
				9902	+13	-45	159	4	2	2	1	2	2	0	0	FSI	—
				9899	+18	-24	180	6	3	1	1	5	1	0	0	DAC	—
				9896	-11	-10	194	1	1	0	0	0	0	1	0	HSX	—
				9905	-17	-06	198	6	2	3	1	3	3	0	0	DAI	—
				9901	+20	-00	204	20	6	5	1	15	5	0	0	EAC	—
				9893	+19	+12	216	12	3	4	1	8	4	0	0	DKC	—
				9904	-16	+19	223	4	2	2	1	2	2	0	0	DSI	—
				9900	-28	+30	234	17	5	8	1	9	8	0	0	DAC	small
9897	-02	+57	261	1	0	1	0	0	0	0	1	AXX	—				
4081	2002/04/11	2115	190.5	9907	-04	-76	115	8	3	2	1	6	2	0	0	EAC	—
				9906	-16	-42	149	13	3	7	1	6	7	0	0	DAC	—
				9903	+19	-37	154	5	2	2	1	3	2	0	0	DAI	—
				9902	+13	-30	161	5	2	2	1	3	2	0	0	FAI	sparse
				?	-10	-20	171	1	0	1	0	0	0	0	1	AXX	—
				9899	+18	-08	183	4	2	1	1	3	1	0	0	DAI	—
				9896	-11	+03	194	1	1	0	0	0	0	1	0	HSX	—
				9905	-17	+07	198	6	1	4	1	2	4	0	0	CAI	—
				9908	+05	+09	200	5	1	4	1	1	4	0	0	CSI	—
				9901	+19	+13	204	24	5	8	1	16	8	0	0	FAC	—
				9893	+19	+24	215	11	3	5	1	6	5	0	0	DAC	—
				9904	-16	+31	222	3	1	2	1	1	2	0	0	CSI	—
9900	-29	+43	234	10	3	4	1	6	4	0	0	DAC	—				
4082	2002/04/15	2105	137.8	9909	+11	-58	080	1	1	0	0	0	0	1	0	HSX	—
				9910	-21	-52	086	2	1	1	1	1	1	0	0	CSO	small
				9907	-04	-23	115	23	6	10	1	13	10	0	0	EAC	—
				9903	+16	+11	149	3	1	1	1	2	1	0	0	CAO	small
				9906	-15	+12	150	21	5	9	1	13	9	0	0	EKC	—
				9902	+12	+26	164	7	1	5	1	2	5	0	0	CAI	—
				9899	+19	+42	180	2	1	0	1	2	0	0	0	HAX	—
				9896	-09	+58	196	1	1	0	0	0	0	1	0	HSX	—
				9905	-14	+67	205	4	2	2	1	2	2	0	0	DSI	—
9901	+21	+68	206	9	2	3	1	6	3	0	0	EKI	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4083	2002 / 04 / 16	2110	124.6	9909	+11	-44	081	2	2	0	1	2	0	0	0	DSO	tight	
				9910	-20	-39	086	5	1	4	1	1	4	0	0	CSI	—	
				?	+24	-32	093	1	0	1	0	0	0	0	0	1	AXX	small
				9907	-03	-09	116	18	3	11	1	7	11	0	0	EAC	—	
				?	-08	+06	131	1	0	1	0	0	0	0	0	1	AXX	—
				9906	-15	+26	151	19	3	2	1	17	2	0	0	EKC	—	
				9902	+12	+40	165	4	1	2	1	2	2	0	0	CAI	—	
				9899	+18	+56	181	1	1	0	0	0	0	1	0	HSX	—	
				9896	-10	+72	197	1	1	0	0	0	0	1	0	HSX	—	
				9905	-15	+81	206	1	1	0	0	0	0	1	0	HSX	small	
4084	2002 / 04 / 17	2055	111.5	9909	+08	-29	082	3	2	1	1	2	1	0	0	DSI	close	
				9910	-20	-23	088	9	2	5	1	4	5	0	0	DAI	—	
				?	-04	-10	101	1	0	1	0	0	0	0	1	AXX	—	
				9907	-03	+06	117	13	3	8	1	5	8	0	0	DAC	small	
				9906	-14	+40	151	27	3	7	1	20	7	0	0	EAC	—	
				9902	+12	+54	165	2	1	0	1	2	0	0	0	HAX	—	
				9899	+19	+70	181	1	1	0	0	0	0	1	0	HSX	—	
4085	2002 / 04 / 20	2100	71.8	9915	+11	-69	003	2	0	2	1	0	2	0	0	BXO	—	
				9914	+05	-61	011	3	1	1	1	2	1	0	0	CAO	—	
				9912	+10	-04	068	13	4	5	1	9	5	0	0	DAC	—	
				9909	+07	+08	080	4	1	2	1	2	2	0	0	CAI	—	
				9910	-20	+16	088	11	2	7	1	4	7	0	0	DAI	—	
				?	+02	+31	103	1	0	1	0	0	0	0	1	AXX	—	
				9907	-03	+46	118	3	1	2	1	1	2	0	0	CSI	—	
				9906	-14	+77	149	9	4	4	1	5	4	0	0	EAC	—	
4086	2002 / 04 / 28	2040	326.3	9926	+13	-12	314	5	1	2	1	3	2	0	0	CAI	—	
				9919	+14	-02	324	6	2	3	1	3	3	0	0	DAI	—	
				9921	+14	+26	352	2	0	2	1	0	2	0	0	BXO	—	
				9915	+12	+39	005	12	2	5	1	7	5	0	0	DAI	—	
				9914	+05	+50	016	5	2	2	1	3	2	0	0	DAI	—	
4087	2002 / 04 / 29	2050	313.0	9928	+18	-77	236	1	1	0	0	0	0	1	0	HSX	—	
				9927	-28	-70	243	2	1	1	1	1	1	0	0	CSO	—	
				9929	+22	-31	282	3	0	3	1	0	3	0	0	BXI	—	
				9926	+14	-01	312	5	1	2	1	3	2	0	0	CAI	—	
				9919	+15	+11	324	4	1	3	1	1	3	0	0	CSI	—	
				9922	+22	+22	335	1	0	1	0	0	0	0	1	AXX	—	
				9915	+12	+51	004	7	4	2	1	5	2	0	0	DAC	—	
				?	-09	+61	014	1	0	1	0	0	0	0	1	AXX	—	
9914	+06	+62	015	3	2	1	1	2	1	0	0	DSI	—					

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4088	2002 / 04 / 30	2055	299.7	9933	+16	-79	221	1	1	0	0	0	0	1	0	HSX	—	
				9928	+18	-63	237	3	1	1	1	2	1	0	0	0	CAO	—
				9927	-29	-57	243	3	1	1	1	2	1	0	0	0	CAO	—
				9931	+15	-34	266	3	1	2	1	1	2	0	0	0	CSI	small
				9930	+12	+02	302	4	1	3	1	1	3	0	0	0	CSI	—
				9926	+14	+13	313	6	1	3	1	3	3	0	0	0	CAI	—
				9919	+14	+26	326	1	1	0	0	0	0	0	1	0	HSX	—
				9922	+22	+36	336	1	0	1	0	0	0	0	0	1	AXX	—
				9915	+12	+67	007	4	2	2	1	2	2	0	0	0	DSI	—
9914	+05	+78	018	1	1	0	0	0	0	0	1	0	HSX	—				
4089	2002 / 05 / 06	2115	220.3	9945	-05	-81	139	1	1	0	0	0	0	1	0	HHX	—	
				9943	-11	-51	169	1	0	1	0	0	0	0	0	1	AXX	—
				9944	+08	-50	170	1	0	1	0	0	0	0	0	1	AXX	—
				9940	+13	-43	177	1	1	0	0	0	0	0	1	0	HSX	—
				9939	+17	-41	179	1	1	0	0	0	0	0	1	0	HSX	—
				9938	-05	-33	187	1	1	0	0	0	0	0	1	0	HSX	—
				9937	-10	-30	190	7	2	2	1	5	2	0	0	0	DAI	—
				9942	+21	-22	198	2	0	2	1	0	2	0	0	0	BXO	—
				9934	-17	-09	211	23	4	9	1	14	9	0	0	0	DKC	—
				9933	+18	-01	219	2	1	1	1	1	1	0	0	0	CSO	—
				9941	-22	+02	222	2	1	0	1	2	0	0	0	0	HAX	—
				9932	-28	+07	227	3	1	1	1	2	1	0	0	0	CAO	—
				9936	-16	+12	232	3	1	2	1	1	2	0	0	0	CSI	—
				9928	+18	+17	237	5	1	3	1	2	3	0	0	0	CAI	—
				9935	-19	+22	242	1	1	0	0	0	0	0	1	0	HSX	small
				9931	+15	+50	270	1	1	0	0	0	0	0	1	0	HRX	—
9929	+23	+65	285	4	2	1	1	3	1	0	0	0	DAI	—				
4090	2002 / 05 / 15	2120	101.2	9957	+06	-82	019	1	1	0	0	0	0	1	0	HSX	—	
				9955	-14	-69	032	1	1	0	0	0	0	0	1	0	HSX	—
				9954	-22	-67	034	6	2	3	1	3	3	0	0	0	DAI	—
				9951	+11	-30	071	2	0	2	1	0	2	0	0	0	BXO	—
				9948	-22	-16	085	5	3	2	1	3	2	0	0	0	EHC	loose
				9950	-06	+07	108	7	1	5	1	2	5	0	0	0	CAI	—
				?	-21	+15	116	1	0	1	0	0	0	0	0	1	AXX	—
				9945	-05	+37	138	9	4	3	1	6	3	0	0	0	DKC	—
9953	+06	+50	151	3	2	0	1	3	0	0	0	0	DAO	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4091	2002 / 05 / 19	2230	47.6	9961	-22	-78	330	5	2	1	1	4	1	0	0	DAI	—	
				9962	+15	-75	333	1	1	0	0	0	0	0	1	0	HSX	small
				9960	+14	-60	348	3	1	0	1	3	0	0	0	0	HAX	—
				9957	+08	-36	012	33	6	4	1	29	4	0	0	0	FAC	—
				9958	+04	-26	022	1	1	0	0	0	0	0	1	0	HSX	—
				9955	-14	-17	031	1	1	0	0	0	0	0	1	0	HSX	—
				9954	-22	-16	032	6	1	2	1	4	2	0	0	0	CAI	—
				9948	-21	+42	090	1	1	0	0	0	0	0	1	0	HHX	—
				9950	-04	+64	110	1	0	1	0	0	0	0	0	0	1	AXX
4092	2002 / 05 / 23	2040	355.7	9965	-10	-51	305	3	1	2	1	1	2	0	0	CSI	—	
				9967	+13	-49	307	1	1	0	0	0	0	0	1	0	HSX	small
				9963	+14	-39	317	8	3	3	1	5	3	0	0	0	DHC	—
				9966	+10	-37	319	1	0	1	0	0	0	0	0	1	AXX	—
				9961	-22	-25	331	14	3	6	1	8	6	0	0	0	EAC	—
				9962	+15	-24	332	2	1	1	1	1	1	0	0	0	CSO	—
				9960	+14	-09	347	7	2	2	1	5	2	0	0	0	DAI	—
				9964	-14	+02	358	2	0	2	1	0	2	0	0	0	BXO	—
				9957	+10	+16	012	35	8	6	1	29	6	0	0	0	FAC	—
				9958	+04	+29	025	1	1	0	0	0	0	0	1	0	HSX	—
				9954	-22	+35	031	2	1	1	1	1	1	0	0	0	CRO	—
4093	2002 / 05 / 24	2030	342.6	9965	-10	-40	303	3	1	2	1	1	2	0	0	CSI	—	
				9967	+13	-36	307	1	1	0	0	0	0	0	1	0	HSX	small
				9968	-13	-29	314	1	1	0	0	0	0	0	1	0	HSX	—
				9963	+15	-26	317	14	6	5	1	9	5	0	0	0	EKC	—
				9966	+09	-23	320	1	0	1	0	0	0	0	0	1	AXX	—
				9961	-22	-12	331	18	6	4	1	14	4	0	0	0	FAC	—
				9962	+15	-11	332	2	1	1	1	1	1	0	0	0	CSO	—
				9960	+14	+06	349	7	2	3	1	4	3	0	0	0	DAI	—
				9957	+11	+29	012	26	5	7	1	19	7	0	0	0	FAC	—
				9958	+04	+41	024	1	1	0	0	0	0	0	1	0	HSX	—
				9954	-21	+47	030	1	0	1	0	0	0	0	0	1	AXX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4094	2002 / 05 / 25	2100	329.1	9969	+09	-69	260	2	2	0	1	2	0	0	0	DSO	small	
				9968	-14	-21	308	1	0	1	0	0	0	0	0	1	AXX	—
				9965	-08	-21	308	2	1	1	1	1	1	0	0	0	CSO	tight
				9963	+14	-11	318	16	5	9	1	7	9	0	0	0	EHC	—
				9966	+10	-06	323	3	1	2	1	1	2	0	0	0	CSI	—
				9961	-21	+02	331	17	5	10	1	7	10	0	0	0	FAC	—
				9962	+16	+05	334	1	1	0	0	0	0	0	1	0	HSX	—
				9960	+14	+18	347	8	2	5	1	3	5	0	0	0	DAI	—
				9957	+10	+43	012	19	4	5	1	14	5	0	0	0	FAC	—
9958	+05	+56	025	1	1	0	0	0	0	0	1	0	HSX	—				
4095	2002 / 05 / 26	2110	315.8	9969	+09	-58	258	3	2	1	1	2	1	0	0	DSI	—	
				9970	+05	-57	259	4	2	0	1	4	0	0	0	0	DAO	—
				9965	-08	-08	308	2	1	1	1	1	1	0	0	0	CSO	tight
				9963	+14	+00	316	14	3	5	1	9	5	0	0	0	EKC	—
				9966	+11	+03	319	3	1	2	1	1	2	0	0	0	CSI	—
				9961	-21	+14	330	13	3	8	1	5	8	0	0	0	FAC	—
				9962	+16	+18	334	1	1	0	0	0	0	0	1	0	HSX	—
				9960	+15	+28	344	3	1	2	1	1	2	0	0	0	CSI	—
				9964	-14	+43	359	1	0	1	0	0	0	0	0	1	AXX	—
9957	+10	+55	011	17	6	4	1	13	4	0	0	0	FAC	—				
9958	+04	+68	024	1	1	0	0	0	0	0	1	0	HSX	—				
4096	2002 / 05 / 27	2205	302.0	9972	-20	-71	231	1	0	1	0	0	0	0	1	AXX	—	
				9969	+09	-44	258	4	2	1	1	3	1	0	0	0	DAI	—
				9970	+05	-43	259	8	3	4	1	4	4	0	0	0	DAC	—
				9965	-08	+05	307	2	1	0	1	2	0	0	0	0	HAX	—
				9963	+14	+15	317	14	3	5	1	9	5	0	0	0	EHC	—
				9966	+11	+19	321	1	1	0	0	0	0	0	1	0	HSX	—
				9961	-22	+28	330	5	2	2	1	3	2	0	0	0	EAO	—
				9962	+16	+32	334	1	1	0	0	0	0	0	1	0	HSX	—
				9960	+15	+41	343	2	1	1	1	1	1	0	0	0	CSO	—
9957	+10	+71	013	7	3	4	1	3	4	0	0	0	ESC	—				
4097	2002 / 05 / 28	2155	288.9	9973	-16	-75	214	10	3	2	1	8	2	0	0	FKC	huge	
				9974	+18	-73	216	1	0	1	0	0	0	0	1	AXX	—	
				9972	-21	-58	231	4	2	1	1	3	1	0	0	0	DAI	—
				9969	+09	-32	257	5	1	4	1	1	4	0	0	0	CSI	—
				9970	+05	-30	259	11	2	6	1	5	6	0	0	0	DAI	—
				9965	-07	+19	308	1	1	0	0	0	0	0	1	0	HSX	—
				9966	+11	+34	323	1	1	0	0	0	0	0	1	0	HSX	small
				9963	+14	+28	317	9	3	2	1	7	2	0	0	0	DKC	—
				9961	-22	+42	331	5	2	3	1	2	3	0	0	0	ESO	—
9962	+15	+45	334	1	1	0	0	0	0	0	1	0	HSX	small				
9960	+14	+54	343	1	0	1	0	0	0	0	0	1	AXX	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4098	2002 / 05 / 29	2140	275.8	9975	+23	-65	211	2	1	1	1	1	1	0	0	CSO	—
				9973	-16	-63	213	16	3	4	1	12	4	0	0	FKC	huge
				9974	+18	-60	216	1	1	0	0	0	0	1	0	HSX	—
				9972	-21	-46	230	10	3	2	1	8	2	0	0	DAC	—
				9969	+09	-19	257	3	2	1	1	2	1	0	0	DSI	small
				9970	+06	-16	260	8	4	2	1	6	2	0	0	DAC	—
				9965	-08	+32	308	4	2	2	1	2	2	0	0	DSI	—
				9963	+16	+41	317	9	3	3	1	6	3	0	0	DHC	—
				9961	-21	+57	333	2	1	1	1	1	1	0	0	CSO	—
				9962	+16	+59	335	1	0	1	0	0	0	0	0	1	AXX
4099	2002 / 05 / 30	2200	262.4	9975	+23	-51	211	2	0	2	1	0	2	0	0	BXO	—
				9973	-16	-49	213	22	6	4	1	18	4	0	0	FKC	large
				9974	+18	-46	216	1	1	0	0	0	0	1	0	HSX	—
				9972	-21	-32	230	9	3	3	1	6	3	0	0	DAC	—
				9969	+09	-05	257	1	0	1	0	0	0	0	1	AXX	—
				9970	+06	-02	260	7	2	4	1	3	4	0	0	DAI	—
				9977	-20	+26	288	2	0	2	1	0	2	0	0	BXO	—
				9967	+12	+50	312	1	1	0	0	0	0	1	0	HSX	small
				9965	-08	+46	308	3	1	2	1	1	2	0	0	CSI	—
				9963	+16	+55	317	6	2	3	1	3	3	0	0	DAI	—
9961	-21	+71	333	1	1	0	0	0	0	1	0	HSX	—				
4100	2002 / 06 / 01	2230	235.6	9979	-30	-65	171	9	2	3	1	6	3	0	0	DAI	—
				9978	-20	-49	187	8	3	2	1	6	2	0	0	DAC	—
				9973	-17	-25	211	28	7	7	1	21	7	0	0	FKC	—
				9974	+19	-21	215	1	1	0	0	0	0	1	0	HSX	—
				9980	-29	-10	226	1	0	1	0	0	0	0	1	AXX	—
				9972	-21	-06	230	7	2	4	1	3	4	0	0	DAI	—
				9970	+05	+24	260	4	2	0	1	4	0	0	0	DAO	—
				9977	-20	+52	288	5	2	2	1	3	2	0	0	DAI	—
				9963	+17	+82	318	1	1	0	0	0	0	1	0	HHX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks		
4101	2002/06/02	2145	222.8	9982	-03	-76	147	1	0	1	0	0	0	0	1	AXX	—		
				9983	+24	-74	149	1	0	1	0	0	0	0	0	1	AXX	—	
				9981	-22	-72	151	1	1	0	0	0	0	0	1	0	HSX	—	
				9979	-30	-52	171	6	3	3	1	3	3	1	3	0	0	DSC	—
				9978	-19	-36	187	6	2	1	1	5	1	0	0	0	0	DAI	—
				9973	-17	-12	211	31	8	9	1	22	9	0	0	0	0	FKC	—
				9975	+22	-08	215	2	1	1	1	1	1	0	0	0	0	CSO	—
				9974	+18	-08	215	3	0	3	1	0	3	0	0	0	0	BXI	—
				9980	-29	+03	226	3	0	3	1	0	3	0	0	0	0	BXI	—
				9972	-20	+09	232	4	2	2	1	2	2	0	0	0	0	DSI	—
				9970	+06	+38	261	2	2	0	1	2	0	0	0	0	0	DSO	—
9977	-21	+65	288	5	1	3	1	2	3	0	0	0	0	CAI	—				
4102	2002/06/03	2135	209.7	9982	-02	-64	146	1	0	1	0	0	0	0	1	AXX	big		
				9983	+24	-59	151	1	0	1	0	0	0	0	0	1	AXX	big	
				9981	-22	-58	152	1	1	0	0	0	0	1	0	0	HSX	—	
				9985	+17	-44	166	3	0	3	1	0	3	0	0	0	BXI	—	
				9979	-28	-38	172	5	3	2	1	3	2	0	0	0	DSC	—	
				9978	-20	-23	187	14	4	5	1	9	5	0	0	0	DAC	—	
				9973	-16	+01	211	27	4	9	1	18	9	0	0	0	EKC	—	
				9975	+21	+05	215	6	2	3	1	3	3	0	0	0	DAI	—	
				9974	+15	+07	217	2	1	1	1	1	1	0	0	0	CSO	—	
				9980	-20	+19	229	2	0	2	1	0	2	0	0	0	BXO	—	
				9972	-21	+21	231	1	0	1	0	0	0	0	0	1	AXX	—	
9970	+06	+51	261	2	2	0	1	2	0	0	0	0	DSO	—					
9977	-20	+77	287	1	1	0	0	0	0	1	0	0	HSX	—					
4103	2002/06/05	2225	182.8	9986	+04	-59	124	1	1	0	0	0	0	1	0	HSX	—		
				9982	-04	-38	145	2	0	2	1	0	2	0	0	0	BXO	—	
				9983	+24	-31	152	1	1	0	0	0	0	1	0	0	HSX	—	
				9981	-22	-31	152	1	1	0	0	0	0	1	0	0	HSX	—	
				9985	+18	-18	165	9	3	4	1	5	4	0	0	0	DAC	—	
				9979	-30	-12	171	5	1	3	1	2	3	0	0	0	CAI	—	
				9978	-20	+05	188	11	4	5	1	6	5	0	0	0	DAC	—	
				9973	-16	+28	211	15	5	4	1	11	4	0	0	0	EHC	—	
9975	+22	+31	214	6	1	4	1	2	4	0	0	0	CAI	—					

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4104	2002 / 06 / 06	2250	169.3	9991	-22	-82	087	1	1	0	0	0	0	1	0	HHX	—	
				9986	+03	-45	124	1	1	0	0	0	0	0	1	0	HSX	—
				9987	-16	-25	144	10	4	4	1	6	4	0	0	0	DAC	—
				9983	+24	-18	151	1	1	0	0	0	0	1	0	0	HSX	—
				9981	-22	-18	151	1	1	0	0	0	0	1	0	0	HSX	—
				9988	-14	-05	164	1	0	1	0	0	0	0	0	1	AXX	—
				9985	+17	-03	166	14	3	9	1	5	9	0	0	0	DAC	—
				9979	-29	+01	170	2	1	1	1	1	1	0	0	0	CSO	—
				9989	-33	+17	186	3	2	0	1	3	0	0	0	0	DAO	tight
				9978	-21	+19	188	9	2	4	1	5	4	0	0	0	DAI	—
4105	2002 / 06 / 07	2235	156.2	9991	-22	-70	086	1	1	0	0	0	0	1	0	HHX	—	
				9986	+03	-32	124	1	1	0	0	0	0	1	0	HSX	—	
				9990	-23	-20	136	3	2	1	1	2	1	0	0	DSI	small	
				9987	-16	-12	144	15	5	6	1	9	6	0	0	0	DAC	—
				9983	+24	-04	152	1	1	0	0	0	0	1	0	0	HSX	small
				9981	-22	-04	152	1	1	0	0	0	0	1	0	0	HSX	—
				9985	+18	+10	166	12	4	6	1	6	6	0	0	0	DAC	—
				9979	-28	+14	170	1	0	1	0	0	0	0	0	1	AXX	small
				9989	-33	+30	186	5	1	4	1	1	4	0	0	0	CSI	—
				9978	-21	+32	188	7	3	2	1	5	2	0	0	0	DAC	—
4106	2002 / 06 / 15	2115	51.0	0003	+00	-65	346	2	0	2	1	0	2	0	0	BXO	—	
				0001	+20	-60	351	5	2	1	1	4	1	0	0	DAI	—	
				0000	+18	-38	013	9	3	4	1	5	4	0	0	DAC	—	
				0004	-16	-12	039	5	2	1	1	4	1	0	0	0	DAI	—
				9991	-21	+32	083	1	1	0	0	0	0	1	0	0	HHX	—
				9999	-05	+73	124	1	0	1	0	0	0	0	0	1	AXX	—
4107	2002 / 06 / 22	2115	318.4	0011	-12	-64	254	3	2	1	1	2	1	0	0	DSI	small	
				0008	-09	-28	290	9	3	4	1	5	4	0	0	0	DHC	—
				0005	+13	-02	316	3	2	0	1	3	0	0	0	0	DSO	—
				0010	-12	-02	316	3	0	3	1	0	3	0	0	0	BXI	—
				0001	+21	+33	351	1	1	0	0	0	0	1	0	0	HSX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4108	2002/06/23	2135	305.0	0011	-12	-51	254	5	3	2	1	3	2	0	0	DSI	—	
				0012	+19	-22	283	1	0	1	0	0	0	0	0	1	AXX	—
				0008	-09	-15	290	11	3	3	1	8	3	0	0	0	DKC	—
				0005E*	+14	+03	308	3	0	3	1	0	3	0	0	0	BXI	—
				0010	-12	+11	316	1	0	1	0	0	0	0	0	1	AXX	—
				0005	+13	+14	319	4	2	2	1	2	2	0	0	0	DSI	—
				0001	+21	+46	351	1	1	0	0	0	0	1	0	0	HSX	—
4109	2002/06/24	2055	292.1	0015	-27	-41	251	3	2	1	1	2	1	0	0	DSI	small	
				0011	-12	-37	255	8	3	2	1	6	2	0	0	DAC	—	
				0013	+04	+04	296	3	1	2	1	1	2	0	0	CSI	—	
				0008	-10	-01	291	14	3	6	1	8	6	0	0	DKC	—	
				0005	+14	+27	319	7	2	5	1	2	5	0	0	DSI	—	
				0001	+20	+59	351	1	1	0	0	0	0	1	0	HSX	—	
4110	2002/06/25	2100	278.8	0016	-15	-73	206	1	1	0	0	0	0	1	0	HSX	—	
				0015	-27	-28	251	2	0	2	1	0	2	0	0	BXO	big	
				0011	-12	-25	254	8	4	0	1	8	0	0	0	DAC	—	
				0008	-11	+13	292	9	2	6	1	3	6	0	0	DKI	—	
				0005	+11	+42	321	2	1	1	1	1	1	0	0	CSO	—	
				0001	+20	+73	352	1	1	0	0	0	0	1	0	HSX	—	
4111	2002/06/28	2055	239.1	0016	-16	-33	206	3	1	2	1	1	2	0	0	CSI	—	
				?	-14	-17	222	1	0	1	0	0	0	0	1	AXX	—	
				0017	-19	-04	235	6	2	2	1	4	2	0	0	DAI	—	
				0011	-11	+14	253	3	1	2	1	1	2	0	0	CSI	small	
				0011W*	-10	+19	258	2	0	2	1	0	2	0	0	BXO	—	
				0008	-10	+54	293	2	1	0	1	2	0	0	0	HKX	—	
				0005	+13	+82	321	1	1	0	0	0	0	1	0	HSX	—	
4112	2002/06/30	2130	212.3	0019	-18	-62	150	12	3	3	1	9	3	0	0	EKC	—	
				0016	-15	-05	207	2	1	1	1	1	1	0	0	CSO	—	
				0017	-19	+22	234	14	5	6	1	8	6	0	0	DAC	—	
				0018	+14	+81	293	3	2	1	1	2	1	0	0	DSI	—	
				0008	-10	+82	294	1	1	0	0	0	0	1	0	HHX	—	
4113	2002/07/01	2130	199.1	0019	-18	-51	148	9	4	3	1	6	3	0	0	DKC	—	
				0016	-16	+09	208	2	1	1	1	1	1	0	0	CSO	—	
				?	-18	+18	217	1	0	1	0	0	0	0	1	AXX	—	
				0017	-19	+36	235	9	3	4	1	5	4	0	0	DAC	—	
				0011	-10	+66	265	3	2	0	1	3	0	0	0	DSO	—	
4114	2002/07/02	2050	186.2	0019	-18	-35	151	11	4	4	1	7	4	0	0	DAC	—	
				0016	-15	+21	207	2	1	1	1	1	1	0	0	CSO	—	
				0017	-18	+50	236	12	3	3	1	9	3	0	0	DKC	—	
				0011	-12	+76	262	4	2	1	1	3	1	0	0	DAI	—	

* GDSO designation.

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4115	2002/07/04	2240	158.8	0025	-18	-76	083	1	1	0	0	0	0	1	0	HSX	—
				0024	-33	-51	108	7	3	3	1	4	3	0	0	DAC	—
				0022	-20	-21	138	5	2	2	1	3	2	0	0	DAI	—
				0019	-17	-08	151	16	5	8	1	8	8	0	0	EAC	—
				0021	-29	+07	166	6	3	2	1	4	2	0	0	DAC	—
				0016	-17	+47	206	2	1	1	1	1	1	0	0	CSO	—
				0017	-18	+75	234	6	3	1	1	5	1	0	0	DAC	—
4116	2002/07/05	2120	146.3	0025	-19	-65	081	2	1	1	1	1	1	0	0	CSO	—
				0024	-33	-39	107	8	2	2	1	6	2	0	0	DAI	—
				0023	-22	-32	114	1	0	1	0	0	0	0	1	AXX	—
				0022	-20	-07	139	3	1	2	1	1	2	0	0	CSI	—
				0019	-18	+06	152	10	4	4	1	6	4	0	0	EAC	—
				0021	-29	+19	165	9	4	3	1	6	3	0	0	DAC	—
				0026	+24	+56	202	2	1	1	1	1	1	0	0	CSO	small
0016	-17	+61	207	1	1	0	0	0	0	1	0	HSX	—				
4117	2002/07/09	2125	93.3	0030	+18	-76	017	3	1	0	1	3	0	0	0	HKX	—
				0029	-15	-40	053	3	2	0	1	3	0	0	0	DAO	—
				0028	-16	-28	065	1	0	1	0	0	0	0	1	AXX	—
				0025	-20	-11	082	1	1	0	0	0	0	1	0	HSX	—
				0024	-34	+12	105	7	2	3	1	4	3	0	0	DAI	—
				0023	-22	+24	117	1	0	1	0	0	0	0	1	AXX	small
				0019	-18	+55	148	6	2	3	1	3	3	0	0	DSC	—
4118	2002/07/12	2205	53.2	0030	+19	-38	015	31	7	9	1	22	9	0	0	FAC	—
				0029	-14	-00	053	2	1	1	1	1	1	0	0	CSO	—
				0025	-20	+28	081	1	1	0	0	0	0	1	0	HSX	—
4119	2002/07/13	2055	40.6	0030	+19	-26	015	42	11	14	1	28	14	0	0	FKC	—
				0029	-14	+12	053	2	1	1	1	1	1	0	0	CSO	—
				0025	-20	+40	081	1	1	0	0	0	0	1	0	HSX	—
4120	2002/07/14	2125	27.1	0031	+10	-25	002	1	0	1	0	0	0	0	1	AXX	small
				0030	+19	-14	013	58	14	18	1	40	18	0	0	FKC	—
				0034	-20	-07	020	3	0	3	1	0	3	0	0	BXI	—
				?	+31	-05	032	1	0	1	0	0	0	0	1	AXX	—
				0029	-14	+26	053	3	1	1	1	2	1	0	0	CAO	—
				0028	-16	+39	066	3	0	3	1	0	3	0	0	BXI	—
				0025	-20	+54	081	1	1	0	0	0	0	1	0	HSX	—
4121	2002/07/15	2110	14.0	0036	-07	-78	296	3	2	0	1	3	0	0	0	DAO	—
				0035	-09	-65	309	1	0	1	0	0	0	0	1	AXX	big
				0031	+09	-13	001	1	0	1	0	0	0	0	1	AXX	small
				0030	+18	-02	012	55	11	14	1	41	14	0	0	FKC	—
				?	+12	+11	025	1	0	1	0	0	0	0	1	AXX	—
				0034	-20	+07	021	1	0	1	0	0	0	0	1	AXX	—
				0033	+08	+24	038	3	1	2	1	1	2	0	0	CSI	—
				0028	-16	+57	071	2	0	2	1	0	2	0	0	BXO	—
				0025	-19	+69	083	1	0	1	0	0	0	0	1	AXX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4122	2002/07/17	2125	347.4	0037	+16	-62	285	2	1	0	1	2	0	0	0	HAX	big	
				0036	-07	-52	295	22	5	4	1	18	4	0	0	EKC	—	
				?	-13	-50	297	1	0	1	0	0	0	0	1	AXX	—	
				0035	-08	-36	311	1	0	1	0	0	0	0	0	1	AXX	—
				0031	+12	+12	359	1	0	1	0	0	0	0	0	1	AXX	small
				0030	+19	+24	011	78	13	23	1	55	23	0	0	0	FKC	—
4123	2002/07/18	2120	334.2	0037	+14	-48	286	1	1	0	0	0	0	1	0	HHX	—	
				0036	-07	-38	296	25	6	5	1	20	5	0	0	EKC	—	
				0035	-08	-23	311	11	3	7	1	4	7	0	0	DAC	very small	
				0031	+12	+25	359	1	0	1	0	0	0	0	0	1	AXX	small
				0030	+18	+37	011	63	10	22	1	41	22	0	0	0	FKC	—
				?	+11	+44	018	1	0	1	0	0	0	0	0	1	AXX	—
4124	2002/07/23	2100	268.3	0039	-15	-60	208	27	4	5	1	22	5	0	0	FKC	large	
				0044	-19	-58	210	5	2	2	1	3	2	0	0	DAI	—	
				0043	+12	-57	211	3	2	0	1	3	0	0	0	DSO	—	
				0045	+04	-32	236	2	1	1	1	1	1	0	0	CSO	—	
				0042	-19	-27	241	2	0	2	1	0	2	0	0	BXO	—	
				0038	+16	-25	243	8	2	3	1	5	3	0	0	DAI	—	
				0041	+17	-05	263	2	1	1	1	1	1	0	0	CSO	—	
				0040	-22	+13	281	1	0	1	0	0	0	0	0	1	AXX	—
				0037	+15	+18	286	1	1	0	0	0	0	0	1	0	HRX	—
				0036	-07	+27	295	41	6	5	1	36	5	0	0	0	FKC	—
0035	-09	+45	313	6	3	3	1	3	3	0	0	0	ESC	small				
4125	2002/07/24	2140	254.7	0039	-15	-50	205	35	5	9	1	26	9	0	0	FKC	—	
				0044	-20	-45	210	11	3	4	1	7	4	0	0	DAC	—	
				0043	+12	-43	212	12	4	5	1	7	5	0	0	DAC	—	
				0046	+14	-24	231	1	1	0	0	0	0	0	1	0	HSX	—
				0045	+04	-19	236	1	1	0	0	0	0	0	1	0	HSX	—
				0042	-20	-16	239	7	1	4	1	3	4	0	0	0	CAI	—
				0038	+17	-14	241	3	1	1	1	2	1	0	0	0	CAO	—
				0037	+14	+30	285	2	1	0	1	2	0	0	0	0	HAX	big
				0036	-07	+40	295	28	10	11	1	17	11	0	0	0	FKC	—
0035	-09	+57	312	4	1	3	1	1	3	0	0	0	CSI	small				
4126	2002/07/25	2130	241.5	0039	-16	-36	206	46	7	10	1	36	10	0	0	FKC	—	
				0044	-21	-32	210	24	7	6	1	18	6	0	0	EAC	—	
				0043	+12	-30	212	17	4	5	1	12	5	0	0	DAC	—	
				0046	+15	-11	231	1	0	1	0	0	0	0	0	1	AXX	—
				0045	+04	-05	237	11	4	3	1	8	3	0	0	0	DAC	—
				0038	+16	-01	241	4	1	2	1	2	2	0	0	0	CAI	—
				0042	-20	+00	242	3	1	1	1	2	1	0	0	0	CAO	—
				0037	+14	+43	285	5	2	2	1	3	2	0	0	0	DAI	—
				0047	+07	+46	288	2	2	0	1	2	0	0	0	0	DSO	—
0036	-07	+52	294	21	5	9	1	12	9	0	0	0	FKC	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4127	2002/07/28	2045	202.3	0054	-21	-72	130	2	2	0	1	2	0	0	0	DSO	—	
				0051	-16	-56	146	1	1	0	0	0	0	0	1	0	HSX	—
				0048	+21	-27	175	9	3	5	1	4	5	0	0	0	DAC	small
				0052	+09	-19	183	2	1	1	1	1	1	0	0	0	CSO	—
				0050	-07	-11	191	23	5	8	1	15	8	0	0	0	DKC	—
				0039	-15	+02	204	47	6	12	1	35	12	0	0	0	FKC	—
				0044	-21	+09	211	42	8	11	1	31	11	0	0	0	FAC	—
				0043	+12	+11	213	25	6	12	1	13	12	0	0	0	EAC	—
				0045	+05	+37	239	13	3	8	1	5	8	0	0	0	DAC	—
0037	+13	+85	287	1	1	0	0	0	0	0	1	0	HHX	—				
4128	2002/07/29	2110	188.8	0055	+14	-77	112	2	1	0	1	2	0	0	0	HAX	—	
				0054	-22	-57	132	2	2	0	1	2	0	0	0	0	DSO	—
				0051	-17	-42	147	1	1	0	0	0	0	1	0	0	HSX	—
				0048	+20	+14	175	5	1	4	1	1	4	0	0	0	CSI	—
				0053	-17	-14	175	4	1	3	1	1	3	0	0	0	CSI	—
				0050	-07	+04	193	39	6	8	1	31	8	0	0	0	FKC	—
				0039	-15	+16	205	52	8	13	1	39	13	0	0	0	FKC	—
				0044	-21	+22	211	48	10	12	1	36	12	0	0	0	FAC	—
				0043	+12	+24	213	18	4	7	1	11	7	0	0	0	EAC	—
				0045	+06	+51	240	1	0	1	0	0	0	0	0	1	AXX	—
0038	+18	+53	242	2	1	1	1	1	1	0	0	0	CSO	—				
4129	2002/07/30	2110	175.6	0055	+14	-67	109	3	1	1	1	2	1	0	0	CAO	—	
				0054	-22	-45	131	1	1	0	0	0	0	1	0	0	HSX	—
				0051	-16	-31	145	1	1	0	0	0	0	1	0	0	HSX	—
				?	+16	-28	148	1	0	1	0	0	0	0	1	0	AXX	—
				0048	+21	-03	173	1	0	1	0	0	0	0	0	1	AXX	big
				0050	-08	+16	192	30	5	9	1	21	9	0	0	0	FKC	—
				?	+07	+25	201	1	1	0	0	0	0	1	0	0	HSX	small
				0039	-14	+27	203	38	8	10	1	28	10	0	0	0	FKC	—
				0043	+12	+36	212	13	3	7	1	6	7	0	0	0	EAC	—
0044	-20	+30	206	35	6	12	1	23	12	0	0	0	FKC	—				
4130	2002/07/31	2100	162.4	0055	+14	-53	109	3	1	1	1	2	1	0	0	CAO	—	
				0056	+04	-51	111	2	1	1	1	1	1	0	0	0	CSO	close
				0054	-22	-29	133	1	1	0	0	0	0	1	0	0	HSX	small
				0051	-17	-17	145	1	1	0	0	0	0	1	0	0	HSX	—
				0057	-08	-17	145	5	0	5	1	0	5	0	0	0	BXI	—
				0053	-17	+13	175	1	0	1	0	0	0	0	1	0	AXX	—
				0050	-08	+30	192	34	6	5	1	29	5	0	0	0	FKC	—
				0039	-15	+42	204	30	7	10	1	20	10	0	0	0	FAC	—
				0044	-21	+47	209	29	5	5	1	24	5	0	0	0	FKC	—
0043	+12	+51	213	4	1	2	1	2	2	0	0	0	CAI	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks			
4131	2002/08/02	2055	136.0	0059	+14	-69	067	3	1	2	1	1	2	0	0	CSI	—			
				0058	-07	-59	077	1	0	1	0	0	0	0	0	1	AXX	big		
				0055	+15	-28	108	5	2	2	1	3	2	1	3	2	0	0	DAI	—
				0057	-08	+08	144	18	6	9	1	9	9	1	9	9	0	0	DAC	small
				0051	-16	+10	146	1	1	0	0	0	0	0	0	0	1	0	HSX	—
				0054	-22	-01	135	2	0	2	1	0	2	1	0	2	0	0	BXO	—
				0050	-08	+57	193	17	5	4	1	13	4	1	13	4	0	0	FHC	—
				0039	-15	+68	204	14	4	3	1	11	3	1	11	3	0	0	FAC	—
				0044	-21	+74	210	9	3	3	1	6	3	1	6	3	0	0	FKC	—
4132	2002/08/06	2125	82.9	0063	+15	-81	006	2	2	0	1	2	0	0	0	ESO	—			
				0061	+08	-47	040	15	3	8	1	7	8	1	7	8	0	0	DAC	—
				?	+03	-33	054	2	0	2	1	0	2	1	0	2	0	0	BXO	—
				0059	+13	-20	067	5	2	2	1	3	2	1	3	2	0	0	DAI	—
				0058	-06	-09	078	8	3	2	1	6	2	1	6	2	0	0	DAC	—
				?	-15	+02	089	2	0	2	1	0	2	1	0	2	0	0	BXO	small
				0055	+14	+23	110	3	1	1	1	2	1	1	2	1	0	0	CAO	—
				0051	-14	+59	146	1	1	0	0	0	0	0	0	0	1	0	HSX	—
				0057	-07	+60	147	13	4	5	1	8	5	1	8	5	0	0	FAC	—
4133	2002/08/07	2120	69.7	0063	+17	-69	001	4	2	0	1	4	0	0	0	EAO	—			
				0061	+09	-30	040	23	5	8	1	15	8	1	15	8	0	0	EAC	—
				0064	-20	-16	054	2	1	0	1	2	0	1	2	0	0	0	HAX	—
				0059	+13	-03	067	3	1	2	1	1	2	1	1	2	0	0	CSI	—
				0058	-06	+05	075	4	2	2	1	2	2	1	2	2	0	0	DSI	—
				0055	+12	+41	111	1	0	1	0	0	0	0	0	0	0	1	AXX	—
				0051	-16	+74	144	1	1	0	0	0	0	0	0	0	1	0	HSX	—
				0057	-08	+76	146	2	2	0	1	2	0	1	2	0	0	0	ESO	—
4134	2002/08/09	2125	43.2	0063	+17	-40	003	8	2	5	1	3	5	0	0	EAI	small			
				0061	+08	-02	041	17	5	10	1	7	10	1	7	10	0	0	EAC	small
				0059	+14	+24	067	2	0	2	1	0	2	1	0	2	0	0	BXO	—
				0058	-07	+33	076	10	2	5	1	5	5	1	5	5	0	0	DAI	—
4135	2002/08/14	2120	337.1	0080	+16	-71	266	4	2	1	1	3	1	0	0	DAI	—			
				0079	-20	-57	280	2	1	1	1	1	1	1	1	0	0	CSO	—	
				?	-15	-54	283	1	0	1	0	0	0	0	0	0	1	AXX	—	
				0076	+12	-53	284	1	1	0	0	0	0	0	0	0	1	0	HSX	—
				0069	-08	-39	298	33	3	6	1	27	6	1	27	6	0	0	EKC	—
				0068	-08	-23	314	4	2	1	1	3	1	1	3	1	0	0	EAO	class correct
				0067	+11	-22	315	30	5	13	1	17	13	1	17	13	0	0	EAC	—
				0075	-12	-06	331	4	2	0	1	4	0	1	4	0	0	0	DAO	—
				0066	+13	-05	332	13	4	4	1	9	4	1	9	4	0	0	DAC	—
				0078	-13	+10	347	6	2	1	1	5	1	1	5	1	0	0	DAI	—
				?	+11	+22	359	1	0	1	0	0	0	0	0	0	0	1	AXX	—
				0063	+18	+24	001	6	2	3	1	3	3	1	3	3	0	0	DAI	—
				0072	-17	+58	035	4	2	2	1	2	2	1	2	2	0	0	DAO	—
0061	+08	+67	044	1	1	0	0	0	0	0	0	0	1	0	HSX	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4136	2002/08/15	2110	324.0	0081	+17	-75	249	1	0	1	0	0	0	0	1	AXX	—	
				0080	+16	-58	266	7	3	2	1	5	2	0	0	0	EAC	—
				0079	-19	-45	279	9	3	5	1	4	5	0	0	0	DAC	—
				0076	+12	-41	283	1	1	0	0	0	0	1	0	0	HSX	—
				0069	-07	-27	297	39	5	7	1	32	7	0	0	0	EKC	old 0036
				0067	+12	-10	314	24	8	7	1	17	7	0	0	0	EAC	small
				0068	-07	-10	314	2	2	0	1	2	0	0	0	0	ESO	—
				0066	+14	+07	331	14	4	5	1	9	5	0	0	0	DAC	—
				0075	-11	+08	332	2	0	2	1	0	2	0	0	0	BXO	—
				0078	-13	+23	347	6	2	3	1	3	3	0	0	0	DAI	—
				0063	+17	+36	360	4	2	2	1	2	2	0	0	0	DSI	—
				0072	-18	+75	039	4	2	0	1	4	0	0	0	0	DAO	—
0061	+06	+82	046	1	1	0	0	0	0	0	1	0	HSX	—				
4137	2002/08/16	2120	310.7	0081	+17	-64	247	1	1	0	0	0	0	1	0	HSX	—	
				0080	+16	-45	266	8	3	3	1	5	3	0	0	0	EAC	—
				0079	-19	-32	279	13	4	4	1	9	4	0	0	0	EAC	short
				0076	+12	-28	283	1	1	0	0	0	0	1	0	0	HSX	—
				0082	+21	-22	289	2	0	2	1	0	2	0	0	0	BXO	—
				0069	-07	-14	297	43	3	6	1	37	6	0	0	0	EKC	old 0036
				0067	+12	+03	314	29	4	13	1	16	13	0	0	0	EAC	—
				0068	-07	+03	314	4	2	2	1	2	2	0	0	0	ESO	—
				0066	+14	+20	331	16	4	5	1	11	5	0	0	0	DAC	—
				0078	-13	+36	347	2	2	0	1	2	0	0	0	0	DSO	—
				0063	+17	+48	359	2	1	1	1	1	1	0	0	0	CSO	—
4138	2002/08/17	2130	297.4	0084	-16	-79	218	1	1	0	0	0	0	1	0	HSX	—	
				0083	-18	-69	228	3	1	2	1	1	2	0	0	0	CSI	—
				0081	+17	-49	248	4	1	3	1	1	3	0	0	0	CSI	—
				0080	+16	-32	265	10	3	4	1	6	4	0	0	0	DAC	—
				?	-12	-25	272	2	0	2	1	0	2	0	0	0	BXO	—
				0079	-21	-20	277	28	9	8	1	20	8	0	0	0	EAC	—
				0076	+12	-13	284	1	1	0	0	0	0	1	0	0	HSX	—
				0082	+21	-08	289	2	1	0	1	2	0	0	0	0	HAX	small
				0069	-07	+01	298	58	3	9	1	49	9	0	0	0	EKC	old 0036
				0067	+12	+18	315	19	5	8	1	11	8	0	0	0	EAC	—
				0068	-08	+18	315	3	1	2	1	1	2	0	0	0	CSI	—
				0066	+13	+34	331	8	4	4	1	4	4	0	0	0	DSC	small
				0078	-14	+51	348	1	0	1	0	0	0	0	0	1	AXX	—
0063	+18	+60	357	1	1	0	0	0	0	1	0	0	HSX	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4139	2002/08/18	2100	284.5	0085	-11	-82	202	1	1	0	0	0	0	1	0	HHX	—	
				0084	-16	-66	218	1	1	0	0	0	0	0	1	0	HSX	—
				0083	-18	-54	230	2	1	1	1	1	1	1	0	0	CSO	—
				0080	+16	-19	265	10	2	6	1	4	6	0	0	0	DAI	—
				0079	-22	-06	278	26	6	9	1	17	9	0	0	0	EAC	—
				0076	+12	-00	284	3	1	2	1	1	2	0	0	0	CSI	—
				0082	+20	+05	289	2	0	2	1	0	2	0	0	0	BXO	—
				0069	-08	+16	300	56	5	10	1	46	10	0	0	0	EKC	old 0036
				0067	+12	+32	316	12	3	9	1	3	9	0	0	0	ESC	—
				0068	-08	+37	321	1	0	1	0	0	0	0	0	1	AXX	—
				0066	+14	+46	330	5	2	2	1	3	2	0	0	0	CAI	—
0063	+18	+73	357	1	1	0	0	0	0	0	1	0	HSX	—				
4140	2002/08/20	2125	257.8	0085	-11	-58	200	1	1	0	0	0	0	1	0	HHX	—	
				0084	-17	-41	217	2	1	1	1	1	1	0	0	CAO	class correct	
				?	-10	-40	218	1	0	1	0	0	0	0	1	AXX	—	
				0083	-17	-27	231	4	1	3	1	1	3	0	0	0	CSI	—
				0080	+16	+08	266	12	2	7	1	5	7	0	0	0	DAI	—
				0079	-22	+20	278	23	7	11	1	12	11	0	0	0	EAC	—
				0076	+13	+27	285	1	0	1	0	0	0	0	0	1	AXX	—
				0069	-08	+42	300	48	3	5	1	43	5	0	0	0	EKC	—
				0067	+10	+60	318	6	3	2	1	4	2	0	0	0	DAC	—
4141	2002/08/21	2055	244.8	0085	-11	-45	200	3	1	2	1	1	2	0	0	CHI	—	
				0086	-21	-45	200	1	0	1	0	0	0	0	1	AXX	—	
				?	-11	-30	215	3	0	3	1	0	3	0	0	BXI	—	
				0084	-16	-29	216	2	1	1	1	1	1	0	0	0	CSO	—
				0083	-18	-14	231	12	4	6	1	6	6	0	0	0	DAC	small
				?	+29	+08	253	1	0	1	0	0	0	0	1	AXX	small	
				0080	+15	+20	265	9	2	5	1	4	5	0	0	0	DAI	—
				?	+07	+26	271	2	0	2	1	0	2	0	0	0	BXO	—
				0079	-22	+32	277	13	3	7	1	6	7	0	0	0	EAC	small
0069	-08	+55	300	28	3	4	1	24	4	0	0	0	EKC	—				
0067	+11	+70	315	6	3	1	1	5	1	0	0	0	EAC	—				
4142	2002/08/22	2045	231.7	0087	-07	-77	155	3	1	2	1	1	2	0	0	CHI	—	
				0085	-10	-32	200	12	1	8	1	4	8	0	0	0	CKI	—
				0084	-17	-15	217	13	2	9	1	4	9	0	0	0	DAI	small
				0083	-18	+00	232	20	3	10	1	10	10	0	0	0	DAC	—
				0080	+15	+30	262	1	0	1	0	0	0	0	1	AXX	—	
				0079	-21	+49	281	6	2	2	1	4	2	0	0	0	DAI	—
				0069	-07	+68	300	15	3	2	1	13	2	0	0	0	EKC	—
				0067	+10	+81	313	1	1	0	0	0	0	1	0	0	HSX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4143	2002/08/24	2135	204.8	0087	-07	-49	156	9	2	6	1	3	6	0	0	DKI	—
				0085	-09	-05	200	4	1	3	1	1	3	0	0	CHI	—
				?	+11	+06	211	1	0	1	0	0	0	0	1	AXX	—
				0084	-16	+10	215	8	3	5	1	3	5	0	0	DAC	—
				0083	-18	+25	230	18	3	13	1	5	13	0	0	EAC	—
				0088	-22	+39	244	17	4	7	1	10	7	0	0	DAC	—
				0069	+08	+83	288	1	1	0	0	0	0	1	0	HHX	—
4144	2002/08/26	2045	178.9	0090	-03	-51	128	1	0	1	0	0	0	0	1	AXX	big
				0087	-08	-24	155	10	1	2	1	8	2	0	0	CKI	—
				0085	-09	+16	195	13	3	5	1	8	5	0	0	DKC	—
				0084	-17	+36	215	3	2	1	1	2	1	0	0	DSI	—
				0083	-19	+53	232	2	1	1	1	1	1	0	0	CRO	—
				0088	-23	+65	244	6	2	1	1	5	1	0	0	DAI	—
4145	2002/08/27	2105	165.5	0093	-17	-42	123	1	0	1	0	0	0	0	1	AXX	—
				0090	-04	-35	130	1	1	0	0	0	0	1	0	HSX	small
				0087	-08	-08	157	18	2	6	1	12	6	0	0	DKI	—
				0092	-19	-06	159	1	0	1	0	0	0	0	1	AXX	—
				?	+04	+13	178	1	0	1	0	0	0	0	1	AXX	—
				0085	-08	+35	200	8	3	3	1	5	3	0	0	DHC	—
				0084	-17	+51	216	5	2	2	1	3	2	0	0	DAI	—
				0083	-18	+69	234	1	1	0	0	0	0	1	0	HSX	—
4146	2002/08/28	2030	152.6	0093	-16	-29	124	1	0	1	0	0	0	0	1	AXX	—
				0090	-04	-23	130	4	2	1	1	3	1	0	0	DSI	—
				0087	-08	+04	157	16	4	6	1	10	6	0	0	DAC	—
				0092	-19	+06	159	3	1	1	1	2	1	0	0	CAO	—
				0085	-08	+47	200	6	3	2	1	4	2	0	0	DHC	—
				0084	-17	+63	216	1	0	1	0	0	0	0	1	AXX	big
4147	2002/08/30	2045	126.0	0096	-14	-77	049	2	2	0	1	2	0	0	0	DSO	—
				0095	+07	-67	059	23	6	9	1	14	9	0	0	FAC	—
				0094	-17	-56	070	9	2	4	1	5	4	0	0	DAI	—
				0090	-04	+04	130	8	3	4	1	4	4	0	0	DAC	—
				0087	-08	+31	157	26	7	8	1	18	8	0	0	DAC	—
				0092	-19	+33	159	2	1	1	1	1	1	0	0	CSO	—
				0085	-08	+74	200	2	1	1	1	1	1	0	0	CHO	—
4148	2002/08/31	2040	112.9	0098	-10	-79	034	1	1	0	0	0	0	1	0	HSX	—
				0096	-14	-64	049	3	2	0	1	3	0	0	0	DAO	—
				0095	+07	-54	059	29	7	5	1	24	5	0	0	FAC	—
				0094	-17	-43	070	7	2	3	1	4	3	0	0	DAI	—
				0097	+13	-39	074	3	1	2	1	1	2	0	0	CSI	—
				0090	-04	+17	130	9	2	7	1	2	7	0	0	DSI	—
				0087	-08	+44	157	23	3	2	1	21	2	0	0	DAC	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4149	2002/09/01	2055	99.5	0102	+09	-81	019	1	1	0	0	0	0	1	0	HSX	—	
				0101	+03	-74	026	1	1	0	0	0	0	0	1	0	HSX	—
				0100	-20	-70	030	3	2	1	1	2	1	0	0	0	DSI	—
				0098	-12	-68	032	1	1	0	0	0	0	0	1	0	HSX	—
				0096	-15	-53	047	7	2	3	1	4	3	0	0	0	DAI	—
				0095	+08	-41	059	43	8	12	1	31	12	0	0	0	FKC	—
				0099	-03	-30	070	5	3	1	1	4	1	0	0	0	DAC	—
				0097	+10	-24	076	9	3	3	1	6	3	0	0	0	DAC	—
				0094	-18	-30	070	6	2	1	1	5	1	0	0	0	DAI	—
				0090	-06	+33	133	2	1	1	1	1	1	0	0	0	CSO	long
0087	-08	+58	158	9	3	4	1	5	4	0	0	0	DAC	—				
4150	2002/09/03	2045	73.2	0103	+15	-75	358	3	2	0	1	3	0	0	0	DAO	—	
				0102	+08	-55	018	1	1	0	0	0	0	1	0	HSX	—	
				0101	+03	-46	027	3	1	0	1	3	0	0	0	HAX	—	
				0100	-15	-45	028	6	1	5	1	1	5	0	0	0	CSI	—
				0098	-10	-40	033	2	1	1	1	1	1	0	0	0	CSO	small
				0096	-14	-27	046	13	5	6	1	7	6	0	0	0	DAC	—
				0095	+08	-13	060	34	10	13	1	21	13	0	0	0	FKC	—
				0094	-18	-03	070	4	1	2	1	2	2	0	0	0	CAI	—
				0099	-05	+00	073	9	2	5	1	4	5	0	0	0	DAI	—
				0097	+12	+04	077	14	5	7	1	7	7	0	0	0	DAC	—
0090	-05	+65	138	1	1	0	0	0	0	0	1	0	HSX	—				
4151	2002/09/06	2035	33.7	0104	+11	-75	319	1	0	1	0	0	0	0	1	AXX	—	
				0103	+15	-34	000	18	4	10	1	8	10	0	0	0	DAC	—
				0100	-19	-09	025	8	1	5	1	3	5	0	0	0	CAI	—
				0101	+02	-08	026	1	0	1	0	0	0	0	0	1	AXX	small
				0096	-16	+12	046	17	3	10	1	7	10	0	0	0	EAC	—
				0095	+08	+28	062	28	7	9	1	19	9	0	0	0	FAC	—
				0094	-19	+38	072	2	1	1	1	1	1	0	0	0	CSO	—
				0099	-05	+41	075	1	1	0	0	0	0	0	1	0	HSX	—
0097	+12	+44	078	7	2	3	1	4	3	0	0	0	DAI	—				
4152	2002/09/10	2135	340.3	0107	+11	-44	296	14	5	5	1	9	5	0	0	DAC	—	
				0105	-08	-43	297	43	7	15	1	28	15	0	0	0	FKC	old 0069
				0110	+20	-19	321	9	3	4	1	5	4	0	0	0	DAC	—
				0109	-08	-19	321	7	3	2	1	5	2	0	0	0	DAC	—
				0104	+10	-16	324	1	0	1	0	0	0	0	0	1	AXX	small
				?	+08	+08	348	2	0	2	1	0	2	0	0	0	BXO	small
				?	+27	+13	353	1	0	1	0	0	0	0	0	1	AXX	—
				0103	+15	+19	359	34	6	10	1	24	10	0	0	0	EAC	short
0100	-19	+49	029	2	1	1	1	1	1	0	0	0	CSO	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4153	2002/09/11	2125	327.2	0105	-09	-30	297	52	5	23	1	29	23	0	0	FKC	—	
				0107	+11	-32	295	15	4	5	1	10	5	0	0	DAC	—	
				0112	+00	-19	308	3	0	3	1	0	3	0	0	BXI	—	
				0110	+20	-07	320	7	3	3	1	4	3	0	0	DAC	—	
				0109	-08	-07	320	10	4	4	1	6	4	0	0	DAC	—	
				0103	+15	+31	358	29	6	12	1	17	12	0	0	EAX	—	
				0100	-19	+62	029	1	1	0	0	0	0	0	1	0	HSX	—
4154	2002/09/13	2015	301.4	0115	-03	-60	241	1	0	1	0	0	0	0	1	AXX	big	
				0105	-08	-05	296	34	4	13	1	21	13	0	0	FKC	—	
				0107	+11	-05	296	16	3	7	1	9	7	0	0	DAC	—	
				0112	+00	+07	308	1	0	1	0	0	0	0	0	1	AXX	—
				0110	+19	+20	321	2	0	2	1	0	2	0	0	BXO	—	
				0109	-08	+21	322	6	3	2	1	4	2	0	0	DAC	—	
				0103	+16	+56	357	12	5	4	1	8	4	0	0	EAC	—	
4155	2002/09/20	2010	209.0	0128	+11	-65	144	2	0	2	1	0	2	0	0	BXO	—	
				0126	-24	-64	145	3	2	1	1	2	1	0	0	DSI	—	
				0125	-09	-42	167	1	0	1	0	0	0	0	0	1	AXX	—
				0122	-18	-23	186	14	4	8	1	6	8	0	0	DAC	—	
				0121	-13	-14	195	1	1	0	0	0	0	1	0	HSX	—	
				0117	-10	-07	202	1	1	0	0	0	0	1	0	HHX	—	
				0120	-18	-05	204	2	0	2	1	0	2	0	0	BXO	—	
				?	-11	-03	206	2	1	1	1	1	1	0	0	CSO	—	
				?	-10	+02	211	6	2	1	1	5	1	0	0	DAI	—	
				0123	-14	+08	217	4	2	1	1	3	1	0	0	DAI	—	
				0119	-14	+22	231	23	5	10	1	13	10	0	0	EKC	—	
				0115	-04	+36	245	2	1	1	1	1	1	0	0	CSO	—	
				0116	+14	+60	269	2	1	1	1	1	1	0	0	CSO	—	
4156	2002/09/21	2115	195.3	0126	-23	-53	142	3	2	1	1	3	0	0	0	DAO	—	
				0125	-09	-28	167	1	0	1	0	0	0	0	0	1	AXX	—
				0132	+18	-14	181	1	1	0	0	0	0	1	0	HRX	—	
				0122/7	-16	-08	187	23	6	7	1	16	7	0	0	DAC	—	
				0121	-13	+01	196	1	1	0	0	0	0	1	0	HSX	—	
				0117	-09	+06	201	1	1	0	0	0	0	1	0	HHX	—	
				?	-10	+16	211	2	1	1	1	1	1	0	0	CSO	—	
				0123	-15	+20	215	4	1	3	1	1	3	0	0	CSI	—	
				0119	-14	+35	230	32	5	9	1	23	9	0	0	EKC	—	
				0115	-04	+54	249	3	1	2	1	1	2	0	0	CSI	—	

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks		
4157	2002/09/23	2055	169.0	0129	+26	-43	126	3	1	2	1	1	2	0	0	CSI	—		
				0130	+06	-39	130	2	1	1	1	1	1	1	0	0	CSO	—	
				0126	-22	-26	143	1	1	0	0	0	0	0	0	1	0	HSX	small
				0131	-06	-23	146	1	0	1	0	0	0	0	0	0	1	AXX	—
				0133	-25	-22	147	9	2	4	1	5	4	0	0	0	0	DAI	—
				0125	-09	-03	166	4	0	4	1	0	4	0	0	0	0	BXI	—
				0132	+19	+12	181	16	3	5	1	11	5	0	0	0	0	DAC	—
				0122/7	-15	+17	186	20	6	5	1	15	5	0	0	0	0	EAC	—
				0121	-13	+26	195	2	1	0	1	2	0	0	0	0	0	HAX	—
				0117	-10	+32	201	2	1	0	1	2	0	0	0	0	0	HKX	—
				0123	-16	+52	221	1	1	0	0	0	0	0	1	0	0	HSX	small
0119	-14	+57	226	17	4	9	1	8	9	0	0	0	0	EKC	—				
4158	2002/09/25	2010	143.1	0134	+10	-66	077	7	4	2	1	5	2	0	0	DAC	—		
				0129	+26	-14	129	4	2	2	1	2	2	0	0	0	DSI	—	
				0130	+06	-12	131	9	2	2	1	7	2	0	0	0	DAI	—	
				?	-30	+00	143	1	1	0	0	0	0	1	0	0	HSX	—	
				0133	-26	+05	148	3	1	2	1	1	2	0	0	0	CSI	small	
				0131	-06	+07	150	1	0	1	0	0	0	0	0	1	1	AXX	—
				?	-19	+18	161	1	0	1	0	0	0	0	0	1	1	AXX	small
				0125	-07	+22	165	1	1	0	0	0	0	1	0	0	0	HSX	—
				0132	+19	+39	182	18	3	4	1	14	4	0	0	0	0	DAC	—
				0122/7	-16	+44	187	15	4	6	1	9	6	0	0	0	0	EAC	—
0117	-09	+58	201	1	1	0	0	0	0	1	0	0	0	HSX	—				
4159	2002/09/26	2045	129.5	0134	+11	-52	078	11	4	3	1	8	3	0	0	EAC	—		
				0129	+27	-01	129	5	2	2	1	3	2	0	0	0	DAI	—	
				0130	+06	+02	132	4	2	0	1	4	0	0	0	0	DAO	—	
				?	-30	+13	143	1	0	1	0	0	0	0	1	1	AXX	—	
				0133	-26	+18	148	1	0	1	0	0	0	0	1	1	AXX	small	
				0132	+20	+51	181	13	2	3	1	10	3	0	0	0	0	DAI	—
				0122/7	-15	+58	188	8	4	2	1	6	2	0	0	0	0	EAC	—
				0117	-08	+74	204	1	1	0	0	0	0	1	0	0	0	HSX	—
4160	2002/09/29	2105	89.8	?	-15	-62	028	1	0	1	0	0	0	0	1	AXX	—		
				0137	-16	-52	038	3	1	1	1	2	1	0	0	0	CAO	—	
				0134	+12	-13	077	27	7	11	1	16	11	0	0	0	EAC	—	
				0135	-25	+19	109	1	0	1	0	0	0	0	1	1	AXX	—	
				0129	+26	+37	127	2	0	2	1	0	2	0	0	0	BXO	—	
				0130	+05	+42	132	3	1	1	1	2	1	0	0	0	0	CAO	—
				0125	-09	+76	166	1	1	0	0	0	0	1	0	0	0	HSX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4161	2002 / 10 / 02	2045	50.4	0139	+14	-73	337	3	1	1	1	2	1	0	0	CAO	—
				?	-09	-22	028	1	0	1	0	0	0	0	1	AXX	—
				0137	-18	-09	041	21	2	9	1	12	9	0	0	DAI	—
				0134	+13	+28	078	16	4	7	1	9	7	0	0	DAC	—
4162	2002 / 10 / 03	2035	37.3	0139	+14	-61	336	7	2	3	1	4	3	0	0	DAI	—
				0137	-19	+03	040	17	5	5	1	12	5	0	0	DAC	—
				0138	+10	+35	072	2	1	1	1	1	1	0	0	CSO	—
				0134	+14	+40	077	14	2	4	1	10	4	0	0	DAI	—
4163	2002 / 10 / 04	2035	24.1	0140	-07	-78	306	1	1	0	0	0	0	1	0	HHX	—
				0139	+14	-49	335	22	4	7	1	15	7	0	0	DKC	—
				?	+15	-32	352	1	1	0	0	0	0	1	0	HRX	small
				?	+06	-01	023	2	0	2	1	0	2	0	0	BXO	—
				0137	-19	+18	042	18	4	7	1	11	7	0	0	DAC	—
				0134	+14	+54	078	8	2	2	1	6	2	0	0	DAI	—
4164	2002 / 10 / 05	2005	11.1	0142	+07	-67	304	1	1	0	0	0	0	1	0	HSX	small
				0140	-07	-65	306	1	1	0	0	0	0	1	0	HHX	—
				0139	+12	-35	336	23	5	6	1	17	6	0	0	DKC	—
				0141	-07	-23	348	5	2	1	1	4	1	0	0	DAI	—
				?	+15	-19	352	1	0	1	0	0	0	0	1	AXX	—
				0137	-19	+30	041	15	6	4	1	11	4	0	0	DAC	—
				0134	+13	+67	078	3	2	0	1	3	0	0	0	DAO	—
4165	2002 / 10 / 06	2010	357.9	0142	+06	-53	305	1	1	0	0	0	0	1	0	HSX	—
				0140	-07	-53	305	4	1	3	1	1	3	0	0	CSI	—
				?	-14	-28	330	1	0	1	0	0	0	0	1	AXX	small
				0139	+11	-22	336	21	4	6	1	15	6	0	0	DKC	—
				0141	-07	-08	350	7	3	3	1	4	3	0	0	DAC	—
				0137	-19	+45	043	11	3	4	1	7	4	0	0	DAC	—
4166	2002 / 10 / 07	2030	344.5	0144	+12	-47	298	6	2	3	1	3	3	0	0	DAI	—
				0142	+05	-39	306	1	1	0	0	0	0	1	0	HSX	—
				0140	-08	-39	306	5	1	3	1	2	3	0	0	CKI	—
				0139	+11	-09	336	27	5	9	1	18	9	0	0	DKC	—
				0141	-08	+05	350	10	2	7	1	3	7	0	0	DAI	—
				0137	-19	+57	042	3	1	1	1	2	1	0	0	CAO	—
4167	2002 / 10 / 08	2025	331.4	0149	+16	-86	245	1	1	0	0	0	0	1	0	HSX	—
				0145	+12	-79	252	1	1	0	0	0	0	1	0	HSX	—
				0146	-10	-41	290	2	0	2	1	0	2	0	0	BXO	—
				0144	+12	-33	298	5	2	2	1	3	2	0	0	DAI	—
				0140	-08	-28	303	2	1	1	1	1	1	0	0	CSO	—
				0142	+05	-25	306	1	1	0	0	0	0	1	0	HSX	small
				0150	-09	-11	320	1	0	1	0	0	0	0	1	AXX	—
				0139	+11	+04	335	22	3	11	1	11	11	0	0	DKC	—
				0141	-08	+20	351	4	2	2	1	2	2	0	0	DAI	small
				0143	-17	+48	019	8	3	2	1	6	2	0	0	DAC	small
0137	-20	+72	043	2	1	1	1	1	1	0	0	CSO	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4168	2002 / 10 / 09	2020	318.2	0149	+16	-75	243	1	1	0	0	0	0	1	0	HSX	—	
				0148	-21	-73	245	1	1	0	0	0	0	0	1	0	HSX	—
				0145	+11	-65	253	1	1	0	0	0	0	0	1	0	HSX	—
				0147	-03	-42	276	1	0	1	0	0	0	0	0	1	AXX	—
				0140/6	-09	-22	296	6	3	2	1	4	2	0	0	0	DAC	—
				0144	+12	-20	298	9	3	4	1	5	4	0	0	0	DAC	—
				0142	+04	-12	306	1	1	0	0	0	0	0	1	0	HRX	—
				0152	+20	-00	318	1	0	1	0	0	0	0	0	1	AXX	—
				0139	+11	+16	334	9	1	4	1	5	4	0	0	0	CKI	—
0143	-17	+57	015	4	1	3	1	1	3	0	0	0	CSI	—				
4169	2002 / 10 / 10	2125	304.4	0154	-12	-70	234	1	1	0	0	0	0	1	0	HSX	—	
				0149	+16	-63	241	6	1	4	1	2	4	0	0	CAI	—	
				0148	-21	-59	245	1	1	0	0	0	0	0	1	0	HSX	—
				0145	+12	-51	253	1	1	0	0	0	0	0	1	0	HSX	—
				0156	-09	-25	279	2	0	2	1	0	2	0	0	0	BXO	—
				0140/6	-10	-08	296	12	2	9	1	3	9	0	0	0	DHI	—
				0144	+12	-06	298	12	4	4	1	8	4	0	0	0	DAC	—
				?	-15	-05	299	3	0	3	1	0	3	0	0	0	BXI	—
				0142	+04	+04	308	5	2	2	1	3	2	0	0	0	DAI	small
				0152	+20	+14	318	2	1	1	1	1	1	0	0	0	CSO	—
0139	+11	+31	335	17	5	4	1	13	4	0	0	0	DAC	—				
4170	2002 / 10 / 12	2010	278.7	0158	-08	-83	196	1	1	0	0	0	0	1	0	HSX	—	
				0157	+17	-52	227	1	0	1	0	0	0	0	1	AXX	—	
				0154	-12	-47	232	6	3	3	1	3	3	0	0	0	DSC	small
				0149	+16	-37	242	19	4	6	1	13	6	0	0	0	DKC	—
				0148	-20	-34	245	2	1	0	1	2	0	0	0	0	HAX	—
				0145	+13	-24	255	4	2	2	1	2	2	0	0	0	DSI	—
				0156	+09	+02	281	1	0	1	0	0	0	0	0	1	AXX	big
				0144	+12	+21	300	7	2	4	1	3	4	0	0	0	DAI	—
				0140	-08	+22	301	4	1	2	1	2	2	0	0	0	CSI	class correct
0139	+08	+56	335	18	3	2	1	16	2	0	0	0	DKC	—				
4171	2002 / 10 / 14	2020	252.3	0159	-11	-60	192	1	1	0	0	0	0	1	0	HSX	—	
				0160	-20	-57	195	2	0	2	1	0	2	0	0	0	BXO	—
				0158	-08	-50	202	3	1	1	1	2	1	0	0	0	CAO	—
				0154	-12	-24	228	8	2	5	1	3	5	0	0	0	DAI	small
				0149	+14	-09	243	31	6	13	1	18	13	0	0	0	DHC	—
				0148	-20	-07	245	3	1	2	1	1	2	0	0	0	CSI	—
				0145	+12	+02	254	4	1	2	1	2	2	0	0	0	CAI	—
				0144	+11	+49	301	2	1	1	1	1	1	0	0	0	CSO	—
				0140	-08	+49	301	2	1	0	1	2	0	0	0	0	HAX	—
0139	+08	+82	334	2	1	0	1	2	0	0	0	0	HKX	—				

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4172	2002 / 10 / 16	2010	225.9	0159	-11	-34	192	4	1	1	1	3	1	0	0	CAO	—
				0160	-20	-31	195	11	2	5	1	6	5	0	0	DAI	—
				0158N*	-03	-28	198	5	2	3	1	2	3	0	0	DSI	small
				0158	-08	-24	202	1	1	0	0	0	0	1	0	HSX	—
				0154	-12	+02	228	10	2	6	1	4	6	0	0	DAI	—
				0157	+15	+03	229	1	0	1	0	0	0	0	1	AXX	—
				0161	+06	+10	236	3	0	3	1	0	3	0	0	BXI	—
				0148	-20	+19	245	1	1	0	0	0	0	1	0	HSX	small
				0145/9	+13	+22	248	25	6	13	1	12	13	0	0	EAC	—
				0144	+11	+75	301	1	1	0	0	0	0	1	0	HSX	—
0140	-08	+75	301	1	1	0	0	0	0	1	0	HSX	—				
4173	2002 / 10 / 18	2030	199.4	0162	+25	-73	126	11	4	2	1	9	2	0	0	FHC	—
				0159	-11	-07	192	7	1	2	1	5	2	0	0	CAI	—
				0160	-20	-04	195	15	4	5	1	10	5	0	0	DAC	—
				0158	-10	-00	199	3	1	1	1	2	1	0	0	CAO	—
				0158N*	-07	-00	199	13	4	4	1	9	4	0	0	DAC	—
				?	-05	+15	214	3	0	3	1	0	3	0	0	BXI	—
				0154	-12	+29	228	2	0	2	1	0	2	0	0	BXO	—
				0148	-20	+46	245	2	1	1	1	1	1	0	0	CSO	—
				0145/9	+13	+50	249	18	5	7	1	11	7	0	0	EAC	—
4174	2002 / 10 / 19	2050	186.1	0165	+20	-85	101	1	1	0	0	0	0	1	0	HHX	—
				0162	+26	-62	124	25	5	4	1	21	4	0	0	FHC	—
				?	-16	-10	176	1	0	1	0	0	0	0	1	AXX	—
				0159	-12	+05	191	4	2	0	1	4	0	0	0	DAO	—
				0160	-22	+09	195	22	4	9	1	13	9	0	0	EAO	—
				0158N	-06	+14	200	11	4	5	1	6	5	0	0	DAI	small
				0158	-10	+15	201	3	1	1	1	2	1	0	0	CAO	—
				0154	-14	+59	245	1	0	1	0	0	0	0	1	AXX	—
				0145/9	+13	+63	249	14	4	4	1	10	4	0	0	EAC	—
4175	2002 / 10 / 21	2120	159.4	0165	+21	-60	099	5	1	1	1	4	1	0	0	CKO	—
				0162	+26	-36	123	32	7	10	1	22	10	0	0	FHC	—
				?	+27	-14	145	1	0	1	0	0	0	0	1	AXX	—
				0160	-22	+38	197	6	1	3	1	3	3	0	0	CAI	—
				0158N	-04	+43	202	2	2	0	1	2	0	0	0	DSO	small
				0158	-08	+45	204	2	1	1	1	1	1	0	0	CSO	—
4176	2002 / 10 / 23	2020	133.6	0167	+18	-78	056	1	1	0	0	0	0	1	0	HSX	—
				0165	+20	-34	100	6	1	3	1	3	3	0	0	CKI	—
				0162	+26	-13	121	41	8	16	1	25	16	0	0	FHC	—
				0166	-06	-11	123	1	0	1	0	0	0	0	1	AXX	small
				0160	-19	+69	203	3	2	1	1	2	1	0	0	DSI	—

* GDSO designation

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4177	2002 / 10 / 25	1935	107.6	0171	+10	-80	028	1	1	0	0	0	0	1	0	HSX	—	
				0170	-12	-69	039	1	1	0	0	0	0	0	1	0	HSX	small
				0169	-19	-65	043	2	2	0	1	2	0	0	0	0	DSO	—
				0167	+17	-54	054	1	1	0	0	0	0	0	1	0	HSX	—
				?	-06	-28	080	1	0	1	0	0	0	0	0	1	AXX	small
				0165	+20	-08	100	5	1	2	1	3	2	0	0	0	CAI	—
				0164	+11	+09	117	2	0	2	1	0	2	0	0	0	BXO	—
				0162	+26	+14	122	29	4	18	1	11	18	0	0	0	FKC	—
4178	2002 / 10 / 30	2020	41.3	0177	+16	-72	329	1	1	0	0	0	0	1	0	HSX	—	
				0176	+12	-67	334	1	1	0	0	0	0	0	1	0	HSX	—
				0175	+16	-47	354	11	4	5	1	6	5	0	0	0	DAC	—
				0174	-24	-45	356	4	2	1	1	3	1	0	0	0	DAI	—
				0172	-16	-19	022	1	0	1	0	0	0	0	0	1	AXX	big
				0171	+11	-15	026	2	1	0	1	2	0	0	0	0	HAX	—
				?	-08	-08	033	2	0	2	1	0	2	0	0	0	BXO	—
				0170	-12	-00	041	3	0	3	1	0	3	0	0	0	BXI	—
				0169	-20	+02	043	1	0	1	0	0	0	0	0	1	AXX	—
				0167	+16	+14	055	1	1	0	0	0	0	0	1	0	HSX	—
				?	+12	+24	065	1	0	1	0	0	0	0	0	1	AXX	—
				0165	+20	+57	098	3	1	1	1	2	1	0	0	0	CAO	—
				0162	+25	+81	122	16	2	5	1	11	5	0	0	0	EKI	—
4179	2002 / 11 / 01	2110	14.4	0182	-17	-83	291	1	1	0	0	0	0	1	0	HSX	—	
				0179	+02	-74	300	1	1	0	0	0	0	0	1	0	HSX	—
				0180	-11	-72	302	3	2	1	1	2	1	0	0	0	DSI	—
				0177	+15	-45	329	14	3	5	1	9	5	0	0	0	DKC	—
				0176	+10	-39	335	1	1	0	0	0	0	0	1	0	HSX	—
				?	+16	-32	342	2	1	1	1	1	1	0	0	0	CSO	—
				0175	+15	-20	354	11	4	5	1	6	5	0	0	0	DAC	—
				0174	-26	-20	354	6	2	4	1	2	4	0	0	0	DSI	—
				0171	+10	+12	026	2	1	0	1	2	0	0	0	0	HAX	—
				0178	+01	+28	042	9	3	5	1	4	5	0	0	0	DAC	—
				0167	+17	+40	054	1	1	0	0	0	0	0	1	0	HSX	—
4180	2002 / 11 / 02	2000	1.9	0182	-17	-71	291	2	2	0	1	2	0	0	0	DSO	—	
				0184	-06	-67	295	1	0	1	0	0	0	0	0	1	AXX	—
				0180	-10	-60	302	5	2	1	1	4	1	0	0	0	DAI	—
				0179	+02	-59	303	1	1	0	0	0	0	0	1	0	HSX	—
				?	-12	-50	312	3	0	3	1	0	3	0	0	0	BXI	—
				0181	-06	-45	317	2	0	2	1	0	2	0	0	0	BXO	—
				0177	+16	-34	328	16	4	10	1	6	10	0	0	0	DHC	—
				0176	+10	-27	335	1	1	0	0	0	0	0	1	0	HHX	—
				0175	+14	-07	355	13	2	9	1	4	9	0	0	0	EAI	—
				0174	-26	-05	357	2	0	2	1	0	2	0	0	0	BXO	—
				0171	+11	+25	027	1	0	1	0	0	0	0	0	1	AXX	—
				0178	+01	+42	044	8	2	5	1	3	5	0	0	0	DAI	—
				0167	+17	+54	056	1	1	0	0	0	0	0	1	0	HSX	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4181	2002 / 11 / 06	2000	309.1	0189	+12	-59	250	1	1	0	0	0	0	1	0	HSX	small	
				0185	-13	-39	270	9	2	3	1	6	3	0	0	DKI	—	
				0188	+11	-25	284	8	1	5	1	3	5	0	0	CAI	—	
				0182	-18	-19	290	3	1	2	1	1	2	0	0	CSI	—	
				0179	+03	-05	304	1	0	1	0	0	0	0	0	1	AXX	big
				0180	-10	-02	307	47	8	19	1	28	19	0	0	FKC	—	
				0186	+19	+09	318	6	2	2	1	4	2	0	0	DAI	—	
				0177	+17	+19	328	17	4	8	1	9	8	0	0	DAC	—	
				0176	+10	+25	334	1	1	0	0	0	0	1	0	HHX	—	
0175	+14	+51	360	1	1	0	0	0	0	1	0	HSX	—					
4182	2002 / 11 / 11	2100	242.7	0191	-18	-42	201	40	11	19	1	21	19	0	0	FAC	—	
				0192	+13	-11	232	2	0	2	1	0	2	0	0	BXO	—	
				0190	-22	-03	240	3	1	2	1	1	2	0	0	CSI	—	
				0185	-13	+27	270	6	4	2	1	4	2	0	0	DSC	—	
				0182	-19	+47	290	1	1	0	0	0	0	1	0	HSX	—	
				0180	-11	+66	309	12	3	4	1	8	4	0	0	FAC	—	
4183	2002 / 11 / 12	2020	229.9	0191	-18	-28	202	43	11	17	1	26	11	0	0	FAC	—	
				0193	-02	-24	206	3	1	1	1	2	1	0	0	CAO	—	
				0192	+14	+04	234	1	0	1	0	0	0	0	1	AXX	—	
				0190	-21	+11	241	4	1	3	1	1	3	0	0	DSC	—	
				0185	-13	+40	270	9	3	2	1	7	2	0	0	DAC	—	
				0182	-18	+62	292	1	1	0	0	0	0	1	0	HSX	—	
				0180	-11	+79	309	6	3	2	1	4	2	0	0	EAC	—	
4184	2002 / 11 / 16	1955	177.3	0198	-17	-69	108	12	2	3	1	9	3	0	0	EKI	—	
				0197	+25	-49	128	1	1	0	0	0	0	1	0	HHX	—	
				0195	-16	-44	133	9	4	3	1	6	3	0	0	EHC	—	
				?	-08	-29	148	2	0	2	1	0	2	0	0	BXO	—	
				0194	-16	-05	172	2	0	2	1	0	2	0	0	BXO	—	
				0191	-18	+25	202	45	6	15	1	30	15	0	0	FKC	—	
0192	+12	+58	235	18	3	5	1	13	5	0	0	FHC	—					
4185	2002 / 11 / 17	2030	163.8	0198	-18	-58	106	11	3	5	1	6	5	0	0	FKC	—	
				0197	+24	-36	128	1	1	0	0	0	0	1	0	HHX	—	
				0195	-17	-31	133	8	3	2	1	6	2	0	0	EKC	—	
				0191	-18	+38	202	32	7	11	1	21	11	0	0	FKC	—	
				0192	+12	+71	235	9	4	3	1	6	3	0	0	FHC	—	
4186	2002 / 11 / 18	1940	151.1	0198	-18	-46	105	16	5	6	1	10	6	0	0	FKC	—	
				0201	-16	-33	118	2	0	2	1	0	2	0	0	BXO	—	
				0197	+24	-23	128	1	1	0	0	0	0	1	0	HHX	—	
				0195	-17	-18	133	9	3	4	1	5	4	0	0	EAC	—	
				0191	-18	+52	203	18	7	6	1	12	6	0	0	FAC	—	
0192	+12	+83	234	4	2	0	1	4	0	0	0	DAO	—					

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4187	2002 / 11 / 19	2145	136.8	0198	-18	-30	107	21	3	12	1	9	12	0	0	FKC	—
				0201	-16	-19	118	4	1	2	1	2	2	0	0	CAI	—
				0197	+24	-09	128	1	1	0	0	0	0	1	0	HHX	—
				0195	-17	-04	133	8	2	5	1	3	5	0	0	EAI	—
				0191	-18	+66	203	6	3	3	1	3	3	0	0	EAC	—
4188	2002 / 11 / 20	2010	124.5	0200	+00	-72	052	1	1	0	0	0	0	1	0	HSX	—
				0198	-18	-16	108	19	4	9	1	10	9	0	0	FKC	—
				0199	+27	-14	110	2	1	1	1	1	1	0	0	CSO	—
				0201	-15	-05	119	6	2	3	1	3	3	0	0	DAI	—
				0197	+24	+05	129	3	1	2	1	1	2	0	0	CHI	—
				0195	-17	+10	134	8	2	3	1	5	3	0	0	EAI	—
				0191	-18	+79	203	2	2	0	1	2	0	0	0	DSO	—
4189	2002 / 11 / 22	2010	98.1	0200	+00	-46	052	1	1	0	0	0	0	1	0	HSX	—
				0198	-18	+10	108	24	5	11	1	13	11	0	0	FKC	—
				0199	+27	+12	110	1	0	1	0	0	0	0	1	AXX	—
				0201	-16	+20	118	3	1	1	1	2	1	0	0	CAO	—
				0197	+24	+31	129	1	1	0	0	0	0	1	0	HHX	—
				0195	-17	+36	134	6	2	4	1	2	4	0	0	ESI	—
4190	2002 / 11 / 24	2000	71.8	0202	+14	-68	004	1	1	0	0	0	0	1	0	HSX	—
				0200	-01	-19	053	1	1	0	0	0	0	1	0	HSX	—
				0198	-18	+34	106	15	4	7	1	8	7	0	0	FKC	—
				0197	+26	+56	128	1	1	0	0	0	0	1	0	HHX	—
				0195	-16	+64	136	2	2	0	1	2	0	0	0	ESO	—
4191	2002 / 11 / 25	2015	58.5	0202	+13	-55	004	1	1	0	0	0	0	1	0	HSX	—
				0200	-01	-06	053	1	1	0	0	0	0	1	0	HSX	—
				?	-10	+12	071	1	0	1	0	0	0	0	1	AXX	small
				?	+08	+22	081	2	0	2	1	0	2	0	0	BXO	small
				0198	-18	+46	105	12	2	7	1	5	7	0	0	FKI	—
				0197	+25	+69	128	1	1	0	0	0	0	1	0	HHX	—
				0195	-16	+79	138	1	1	0	0	0	0	1	0	HSX	—
4192	2002 / 11 / 29	1945	6.1	0209	-20	-77	289	2	2	0	1	2	0	0	0	DSO	—
				0208	+09	-77	289	2	1	1	1	1	1	0	0	CSO	—
				0207	-19	-46	320	10	3	3	1	7	3	0	0	EAC	—
				0205	+19	-38	328	1	1	0	0	0	0	1	0	HSX	—
				0203	+10	-31	335	1	0	1	0	0	0	0	1	AXX	—
				0202	+13	-01	005	2	0	2	1	0	2	0	0	BXO	—
4193	2002 / 11 / 30	2035	352.4	0208	+10	-64	288	6	2	3	1	3	3	0	0	DAI	—
				0209	-20	-63	289	4	2	2	1	2	2	0	0	DSI	—
				0207	-19	-32	320	9	3	4	1	5	4	0	0	EAC	—
				0205	+19	-24	328	1	1	0	0	0	0	1	0	HSX	—
				0210	-09	+76	068	2	1	1	1	1	1	0	0	CSO	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks
4194	2002 / 12 / 01	2000	339.6	0208	+10	-51	289	10	5	5	1	5	5	0	0	DSC	—
				0209	-21	-50	290	7	2	3	1	4	3	0	0	DAI	—
				0207	-19	-22	318	15	4	6	1	9	6	0	0	EAC	—
				0211	-08	-20	320	2	0	2	1	0	2	0	0	BXO	—
				0205	+19	-12	328	1	1	0	0	0	0	1	0	HSX	—
				0204	+20	+13	353	1	0	1	0	0	0	0	0	1	AXX
4195	2002 / 12 / 04	2125	299.3	0213	+14	-65	234	3	2	1	1	2	1	0	0	DSI	—
				0212	+13	-50	249	6	2	3	1	3	3	0	0	DAI	—
				0208	+10	-09	290	16	3	6	1	10	6	0	0	EAC	—
				0209	-19	-08	291	5	1	4	1	1	4	0	0	CSI	—
				?	+13	+03	302	2	0	2	1	0	2	0	0	BXO	—
				0207	-19	+20	319	7	3	3	1	4	3	0	0	EAC	—
				0205	+20	+28	327	1	0	1	0	0	0	0	0	1	AXX
4196	2002 / 12 / 08	2115	246.7	0221	+22	-76	171	1	0	1	0	0	0	0	1	AXX	big
				0218	-20	-70	177	1	1	0	0	0	0	1	0	HSX	—
				0220	-12	-62	185	2	1	1	1	1	1	0	0	CSO	—
				0217	+12	-58	189	1	1	0	0	0	0	1	0	HSX	small
				0215	-18	-34	213	4	1	2	1	2	2	0	0	CAI	—
				0212	+14	+03	250	6	3	2	1	4	2	0	0	DAC	—
				0219	-05	+10	257	1	0	1	0	0	0	0	1	AXX	—
				0216	-24	+37	284	3	1	2	1	1	2	0	0	CSI	—
				0209	-18	+50	297	1	1	0	0	0	0	1	0	HSX	—
				0214	+13	+68	315	3	2	1	1	2	1	0	0	DSI	—
				?	+22	+70	317	1	1	0	0	0	0	1	0	HSX	—
0207	-17	+79	326	1	1	0	0	0	0	1	0	HSX	—				
4197	2002 / 12 / 09	2055	233.7	0221	+22	-63	171	1	1	0	0	0	0	1	0	HSX	—
				0218	-20	-57	177	4	1	2	1	2	2	0	0	CAI	—
				0220	-12	-49	185	12	3	3	1	9	3	0	0	DAC	—
				0217	+12	-45	189	2	1	0	1	2	0	0	0	HAX	—
				0215	-18	-21	213	9	2	4	1	5	4	0	0	DAI	—
				0213	+14	-03	231	2	0	2	1	0	2	0	0	BXO	—
				0212	+14	+16	250	8	3	2	1	6	2	0	0	DAC	tight
				0219	-05	+23	257	1	1	0	0	0	0	1	0	HSX	—
				0216	-24	+50	284	2	1	1	1	1	1	0	0	CSO	—
0209	-18	+63	297	2	1	1	1	1	1	0	0	CSO	—				
4198	2002 / 12 / 22	2140	62.0	0230	-08	+05	067	11	2	6	1	5	6	0	0	DAI	—
				0229	+19	+40	102	5	2	2	1	3	2	0	0	DAI	—
				0231	-25	+24	086	3	2	0	1	3	0	0	0	DAO	—
				0223	+25	+56	118	1	1	0	0	0	0	1	0	HSX	—
				0224	-14	+56	118	13	4	5	1	8	5	0	0	EAC	short
				0226	-28	+65	127	8	4	3	1	5	3	0	0	FHC	—

OBS	DATE	UT	CM	REG.No	B	CMD	L	f	p	s	gr	grfp	grf	efp	ef	Class.	Remarks	
4199	2002 / 12 / 24	1910	37.0	0234	+18	-77	320	1	1	0	0	0	0	1	0	HSX	—	
				0230	-08	+30	067	3	1	1	1	2	1	0	0	CAO	—	
				0231	-25	+49	086	2	1	1	1	1	1	0	0	CSO	—	
				0229	+25	+59	096	1	0	1	0	0	0	0	0	1	AXX	big
				0224	-14	+77	114	4	3	1	1	3	1	0	0	DSC	—	
4200	2002 / 12 / 26	1940	10.4	0234	+17	-48	322	1	1	0	0	0	0	1	0	HSX	—	
				0230	-07	+60	070	1	1	0	0	0	0	0	1	0	HSX	—
				0231	-24	+74	084	2	2	0	1	2	0	0	0	DSO	—	
4201	2002 / 12 / 28	1935	344.1	0239	-10	+54	290	1	0	1	0	0	0	0	1	AXX	big	
				0234	+19	-22	322	1	1	0	0	0	0	0	1	0	HSX	—
				0238	+09	+18	326	1	0	1	0	0	0	0	0	1	AXX	—
				0236	+16	+38	022	2	1	1	1	1	1	0	0	CSO	small	
4202	2002 / 12 / 29	2000	330.7	0239	-10	-41	290	8	3	4	1	4	4	0	0	DAC	small	
				0234	+18	+09	322	3	1	2	1	1	2	0	0	CSI	—	
				0237	-26	+10	341	2	1	1	1	1	1	0	0	CSO	—	
				0235	+14	+18	349	1	0	1	0	0	0	0	0	1	AXX	—
4203	2002 / 12 / 30	2015	317.4	0239	-10	-27	290	6	2	3	1	3	3	0	0	DAI	—	
				0234	+18	+05	322	1	1	0	0	0	0	0	1	0	HSX	—
4204	2002 / 12 / 31	1920	304.7	0239/40	-08	-19	286	7	1	5	1	2	5	0	0	CAI	—	
				0234	+20	+17	322	3	1	2	1	1	2	0	0	CSI	—	



Section C

DAILY SUNSPOT AREA TOTALS - 2002.

All data obtained from United States observatories through the US NOAA.

Data in this section might have accumulated errors of up to 50 units or micro-hemispheres.

All dates are UT dates.

Unit used is 1 000 000th of the visible solar hemisphere, or micro-hemisphere.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	1360	2160	860	1880	960	1460	1000	2170	1560	650	950	620	01
02	1205	1990	670	1890	1080	1250	1010	2210	1890	870	1050	850	02
03	1170	1660	790	1690	1490	1130	1200	1680	1750	720	1280	740	03
04	1190	1970	1120	1820	1480	1030	1270	1310	1380	910	1540	770	04
05	1120	1790	900	2030	1680	1190	1050	780	1260	1370	1660	860	05
06	850	1130	870	2010	1320	980	830	910	990	1095	1550	700	06
07	570	780	630	1970	1320	1060	690	970	1060	1100	1430	490	07
08	680	780	610	1930	1440	1140	530	880	1620	1010	1510	660	08
09	1090	1010	900	1710	1620	1050	780	770	1920	1470	1730	750	09
10	1160	1340	1210	1290	2230	1180	840	870	2570	1420	1560	580	10
11	1480	1210	1360	1430	2300	960	860	1280	2240	1310	1340	500	11
12	1500	1130	1270	1800	2130	940	750	1930	1850	1680	1250	430	12
13	1650	1220	1340	2160	1640	830	840	2110	1760	1570	1190	810	13
14	1580	1080	1350	2170	880	650	850	2620	1770	1490	1290	1260	14
15	1510	910	1140	2400	990	640	1140	2820	1460	1090	1640	1350	15
16	1030	710	1020	1540	1440	670	2080	2830	1530	1330	2130	1200	16
17	1140	850	1120	1100	1820	710	2330	2730	1480	1210	2360	1550	17
18	1030	840	910	1380	1760	950	2150	2850	1570	1660	2070	1820	18
19	1110	990	770	1430	1730	1060	2050	3420	1500	1610	1580	1360	19
20	1150	910	950	1330	2140	870	1650	2940	1730	1770	1360	1650	20
21	1400	1130	910	1030	1980	940	1640	2710	1500	1420	1190	1180	21
22	1130	810	1040	980	1870	870	1900	2570	1500	1610	1110	930	22
23	1250	910	1050	1060	1450	960	2390	2370	1600	1580	1120	1600	23
24	1180	1170	670	1290	1240	960	2330	1440	1430	1480	990	700	24
25	1120	1010	680	850	1200	950	2130	1380	1670	1340	880	350	25
26	1320	1180	690	920	1400	860	2710	1320	1270	1300	790	310	26
27	1440	1100	960	880	1280	820	2580	1070	970	1020	760	200	27
28	1670	970	740	690	1440	730	2410	1070	790	1230	840	150	28
29	1720	—	1360	790	1850	950	2560	910	720	1220	620	100	29
30	1670	—	1210	550	1620	1070	1860	1300	520	1390	740	90	30
31	1970	—	1270	—	1540	—	2230	1740	—	920	—	150	31
MEAN	1272.42	1169.29	979.68	1466.67	1558.71	962.00	1569.03	1805.16	1495.33	1285.32	1317.00	797.10	MEAN

Quarterly Means: First: 1139.50 Second: 1331.65 Third: 1624.57 Fourth: 1131.14

Annual Mean : 1307.56

SMOOTHED NOAA AREA MONTHLY VALUES — 1994 - 2002.

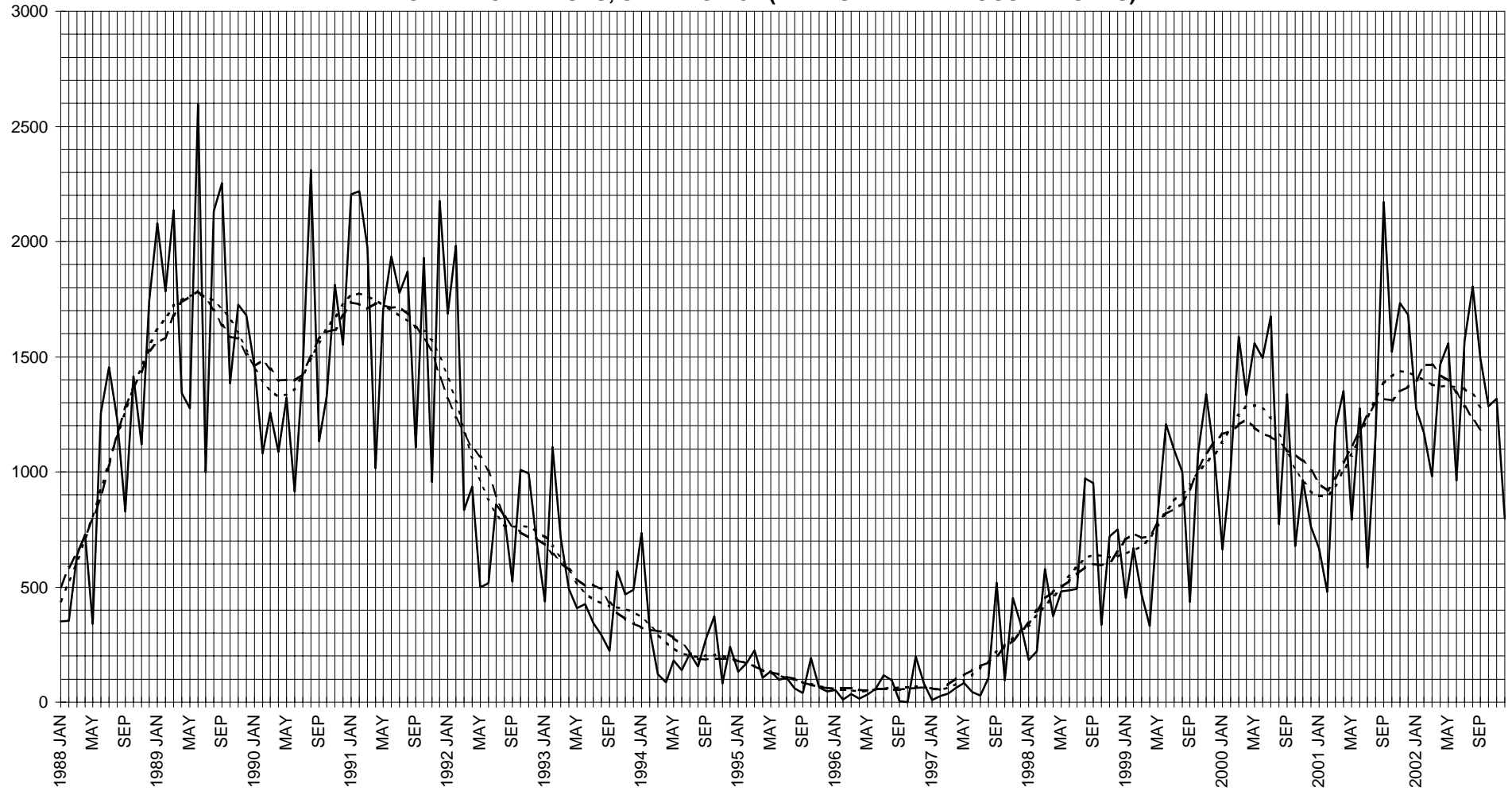
Data based upon NOAA monthly mean values.

Unit used in observed values is 1 000 000th of the visible solar hemisphere.

Smoothing methods used are the Waldmeier and the Barnes-13 methods.

MONTH	Observed	s _W	s _{B13}	MONTH	Observed	s _W	s _{B13}	MONTH	Observed	s _W	s _{B13}
1994 Jan	735.81	324.62	367.72	1997 Jan	7.74	59.50	57.91	2000 Jan	662.26	1162.54	1126.96
Feb	312.86	313.35	332.85	Feb	27.14	56.16	54.89	Feb	1007.59	1177.26	1185.82
Mar	122.26	309.96	294.64	Mar	36.45	78.04	62.75	Mar	1586.77	1205.41	1245.75
Apr	86.67	304.13	261.59	Apr	62.00	103.36	76.77	Apr	1332.33	1226.28	1283.28
May	179.68	279.85	234.28	May	83.23	117.77	92.63	May	1558.71	1194.09	1286.53
Jun	140.33	253.46	214.76	Jun	43.33	139.15	116.86	Jun	1495.33	1165.66	1271.48
Jul	210.97	218.07	200.97	Jul	27.74	157.32	147.02	Jul	1674.84	1152.96	1233.53
Aug	154.84	186.92	196.12	Aug	106.45	172.73	179.85	Aug	773.23	1131.13	1165.92
Sep	278.67	185.18	201.64	Sep	518.67	203.39	215.37	Sep	1337.33	1092.69	1083.56
Oct	374.19	190.25	204.67	Oct	93.87	238.90	249.17	Oct	677.74	1077.12	1014.63
Nov	81.00	189.20	200.08	Nov	451.67	268.38	280.06	Nov	965.00	1046.01	958.39
Dec	240.97	185.58	192.28	Dec	341.29	303.34	309.26	Dec	761.61	1004.92	917.46
1995 Jan	132.90	179.43	182.37	1998 Jan	184.19	341.10	336.57	2001 Jan	667.74	950.36	893.18
Feb	168.21	171.06	170.53	Feb	220.71	396.49	372.39	Feb	478.21	920.93	896.37
Mar	225.16	157.06	155.58	Mar	578.71	450.55	416.91	Mar	1193.55	971.66	940.40
Apr	105.52	139.51	139.57	Apr	372.00	478.68	459.89	Apr	1352.00	1041.55	1003.34
May	135.48	131.25	128.24	May	480.65	499.91	500.59	May	792.26	1108.62	1071.95
Jun	97.67	122.45	117.81	Jun	485.00	528.09	544.21	Jun	1275.67	1178.90	1149.74
Jul	106.13	111.01	106.88	Jul	492.26	556.34	588.40	Jul	585.16	1242.43	1234.53
Aug	58.71	101.19	96.88	Aug	971.29	586.24	624.53	Aug	1156.45	1296.42	1320.93
Sep	39.00	86.78	87.21	Sep	951.33	600.34	639.49	Sep	2171.70	1316.30	1384.57
Oct	192.58	75.13	79.09	Oct	336.13	594.05	635.11	Oct	1520.65	1312.17	1414.97
Nov	64.33	67.18	70.31	Nov	719.00	606.50	630.58	Nov	1731.83	1348.88	1436.18
Dec	46.45	61.27	61.41	Dec	750.32	650.75	633.72	Dec	1681.61	1367.75	1434.30
1996 Jan	52.90	60.08	55.17	1999 Jan	453.23	705.99	644.45	2002 Jan	1272.42	1395.68	1415.14
Feb	12.41	62.15	51.98	Feb	669.29	732.29	659.33	Feb	1169.29	1463.70	1399.32
Mar	35.16	62.24	50.12	Mar	468.39	711.97	675.03	Mar	979.68	1462.55	1379.55
Apr	16.00	52.80	47.11	Apr	331.33	721.41	710.06	Apr	1466.67	1424.56	1370.94
May	34.19	50.41	48.42	May	820.32	778.09	769.25	May	1558.71	1397.47	1372.26
Jun	57.00	57.46	55.03	Jun	1207.33	817.24	829.21	Jun	962.00	1343.33	1368.34
Jul	118.39	57.05	60.02	Jul	1095.48	839.35	875.31	Jul	1569.03	1282.85	1362.21
Aug	96.13	55.78	62.23	Aug	999.35	862.16	905.61	Aug	1805.16	1224.60	1336.49
Sep	3.67	56.45	62.76	Sep	435.67	922.85	942.60	Sep	1495.33	1184.40	1281.26
Oct	1.29	58.42	63.88	Oct	1078.39	1011.16	994.58	Oct	1285.32	—	—
Nov	198.33	62.38	65.16	Nov	1337.00	1083.64	1042.09	Nov	1317.00	—	—
Dec	81.67	63.85	62.97	Dec	1071.94	1126.40	1079.44	Dec	797.10	—	—

OBSERVED and SMOOTHED NOAA SUNSPOT AREA VALUES (in MICRO-HEMISPHERES) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE PAGE C2 (IN THIS AND PREVIOUS REPORTS)







Section D

MAJOR SOLAR FLARE TIMINGS .

In this section, data on flares are given in the format of beginning, maximum and ending times, along with the flares' x-ray strengths (in microWatts per square metre). This report deals with 2002's flares.

Flares with a strength of less than 1 microWatt per square metre are not stated.

Analysis of these flare data appears on pages D18 and D19 of this report.

MAJOR SOLAR FLARES for 2002.

ALL TIMES IN UNIVERSAL TIME (UT).

Times are as at the Earth, the flares actually occurred 8 minutes earlier than the stated times. Data were collected through the US NOAA from a 24-hour satellite watch over the year concerned.

Strength of the flares are stated in microWatts per square metre ($\mu\text{W}/\text{m}^2$).

If any flares are not $\geq 1 \mu\text{W}/\text{m}^2$ in strength, then they are not listed. If the strength of a flare is not known (by the GDSO), or if the strength is questionable, it is also not listed.

If no major flares ($\geq 1 \mu\text{W}/\text{m}^2$) are observed on any particular day, then the date is left out of the list.

- ◆ A in time columns means the flare continued *after* the end of the observation.
- ◆ B in time columns means the flare started *before* the observation began.
- ◆ OA after maximum time column means the maximum was that time *or after*. This occurs only when the ending time is suffixed with an A and that that time is the same as the maximum time.
- ◆ OB after the maximum time column means the maximum was that time *or before*. This occurs only when the beginning time is suffixed with a B and that that time is the same as the maximum time.
- ◆ U in time columns means 'uncertain'.

If times go beyond 24 hours UT, then 0015 is stated as 2415, etc.

UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/01/01	0859	0910	0917	4.5	2002/01/04	0818	0822	0841	3.6	2002/01/07	1559	1559	1608	2.7
01/02	0313	0319	0325	5.2		0924	0952	1035	3.7	cont.	2055	2058	2124	2.9
	0336	0341	0403	4.6		1740	1740	1745	10		2210	2221	2228	2.3
	0517	0542	0556	3.1		1827	1829	1842	5.6		2245	2248	2307	2.8
	0757	0800	0808	7.2		2013	2039U	2100	8.7	01/08	1256	1300	1307	2.5
	0905	0912	0919	6.7		2255	2256	2300	7.2		1717	1719	1749	7.2
	1249	1252	1326	24	01/05	0059	0100	0106	3.1		1814	2025	2139	9.6
	1543	1548	1554	3.2		0310	0313	0318	4.1		2207	2223	2234	6.7
	1751	1757	1804	5.1		0611	0634	0658	8.0		2253	2256	2315	7.5
	2144	2148	2151	11		1028	1037	1100	7.4	01/09	0952	0955	0957	4.3
01/03	0016	0019	0023	3.5		1708	1709	1744	3.1		1115B	1147	1214	16
	0212	0216	0242	5.9		1821	1841	1907	19		1744	1800	1900	95
	0401	0401	0408	4.0	01/06	0155	0202	0211	2.8	01/10	0738	0756	0830	4.3
	0712	0714	0731	2.8		0456	0500	0515	3.4		0938	0946	1004	7.0
	0841	0843	0848	2.1		0523	0555	0616	5.9		1419	1419	1423	2.6
	0952	0959	1003	2.6		0648	0651	0702	5.3		1511	1516	1545	3.2
	1147	1147	1155	2.7		0931	0933	0937	1.6		1605	1606	1621	3.6
	1431	1435	1441	2.3		1138	1140	1203	3.1	01/11	0324	0328	0335	3.7
	1712	1716	1722	4.4		1234	1248	1259	3.2		0757	0801	0816	10
	1928	1934	1942	2.2		1310	1310	1318	2.7		1224	1236	1245	4.2
	2051	2054	2058	1.9		1354	1356	1406	3.1		1321	1328	1340	6.1
	2303	2309	2334	6.3		1440	1444	1448	6.2		1847	1848	1855	3.7
					01/07	0227	0256	0305	2.4		1958	2007	2019	7.3
						0643	0645	0700	3.5		2049	2053	2100	4.8
						1415	1419	1439	3.8					

CONTINUED.

UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME					
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	
2002/01/12	0110	0112	0131	4.7	2002/01/19	0052	0053	0059	4.0	2002/01/29	0423	0423	0431	3.6	
	0155	0156	0157	3.0		0738	0752	0800	1.3		0842	0848	0854	7.3	
	0313	0318	0345	10		1004	1005	1011	12		1026	1028	1034	4.0	
	0717	0721	0725	2.7		1230	1239	1245	1.5		1216	1220	1224	3.6	
	0738	0744	0758	4.1		1550	1559	1604	1.6		1300	1300	1322	5.8	
	0839	0840	0844	3.1		1847	1852	1858	1.7		2127	2236	2254	3.1	
	0856	0856	0928	3.4		2008	2008	2012	1.8		01/30	0113	0117	0121	2.9
	1215	1221	1229	5.4		2116	2121	2125	1.9		0233	0234	0250A	3.6	
	1506	1517	1606	17		2255	2301	2308	1.4		1159	1225	1238	3.3	
	1832	1843	1903	34		01/20	1603	1608	1610		3.8	1333	1337	1339	2.4
1930	1930	1934	13	2310	2323	2337	2.8	1637	1639	1640	7.4				
01/13	0306	0311	0328	14	01/21	0136	0137	0153	1.7	1738	1741	1743	3.3		
	0358	0401	0405	8.0	0324	0328	0350	3.4	2151	2157	2217	2.8			
	0536	0538	0551	3.5	0537	0539	0542	1.6	01/31	1010	1012	1019	3.3		
	0751	0752	0758	3.7	0743	0744	0755	1.7	1200	1203	1211	2.2			
	1319	1321	1350	7.8	1818	1818	1822	1.7	1414	1416	1430	4.3			
	1337	1338	1342	8.0	2126	2137	2144	2.2	1436	1444	1450	36			
	1534	1536	1539	7.4	2237	2242	2245	3.5	1533	1535	1541	4.6			
	1708	1709	1712	5.4	01/22	0252	0255	0257	1.4	1640	1643	1706	4.9		
	1942	1946	1953	22	0542	0546	0550	1.9	2002/02/01	0418	0427	0523	3.4		
	2340	2341	2348	3.6	0741	0758	0826	1.6	2112	2114	2130	5.8			
01/14	0126	0145U	0155	10	0852	0900	0903	13	02/02	1132	1135	1137	1.4		
	0148	0155	0310	17	1119	1126	1135	3.3	1157	1203	1209	1.5			
	0359	0403	0415	3.0	1311	1316	1323	5.0	1535	1535	1541	2.2			
	0529	0627	0825	44	1420	1429	1434	2.6	2000	2004	2018	2.9			
	1422	1423	1427	7.7	1639	1639	1645	1.4	2154	2158	2201	2.9			
	2057	2057	2101	3.7	1808	1811	1812	1.4	02/03	0050	0101	0107	2.3		
	2238	2238	2242	11	2207	2211	2218	2.4	0306	0306	0308	3.7			
	2335	2336	2340	4.9	2241	2242	2249	1.3	0450	0454	0514	2.3			
	01/15	0433	0435	0438	2.1	2330	2333	2337	1.6	0548	0552	0559	4.7		
		0955	1001	1010	2.6	01/23	0117	0121	0125	1.9	1300	1301	1306	1.4	
1750		1751	1756	4.6	0316	0319	0324	1.6	1509	1514	1543	4.4			
1808		1808U	1830	3.4	0335	0336	0340	1.7	1718	1738	1744	1.3			
2150		2152	2213	3.9	0906	0907	0922	1.4	1851	1852	1858	1.7			
2320		2323	2328	4.7	0958	0959	1002	1.6	2216	2221	2225	3.7			
01/16		0734	0740	0744	4.3	1334	1336	1357	3.7	02/04	0152	0200	0214	7.3	
		0805	0809	0814	7.1	2227	2228	2235	2.3	0542	0602	0611	23		
		0917	0918	0921	4.3	01/24	0325	0439	0706	7.1	0641	0658	0709	15	
		0927	0932	0938	6.6	1503	1509	1513	3.7	1029B	1029U	1046A	2.7		
	1009	1010	1020	15	2040	2045	2048	3.8	1522	1531	1542	3.0			
	1351	1413	1438	9.5	01/25	0217	0224	0307	6.6	1900	1903	1946	7.8		
	1502	1508	1513	4.6	1030	1035	1055	3.5	2329B	2334U	2337	13			
	1525	1527	1545A	4.1	1130	1133	1137	2.6	02/05	0535	0549	0607	3.6		
	1542	1557	1608	5.0	1815	1818	1823	2.5	0826	0829	0835	2.2			
	1650	1655	1712	4.3	1902	1906	1909	4.6	2006	2017	2116	4.4			
1753	1756	1816	6.2	2214	2218	2224	7.5	2218	2236	2308	3.0				
2005	2005	2028	5.8	01/26	0000	0003	0005	4.5	02/06	0437	0440	0451	8.2		
2019	2024	2030	9.2	1447	1451	1454	2.7	0451	0509	0514	2.9				
01/17	0107	0116	0124	3.9	1947	1947	1950	13	0608	0609	0633	3.3			
	0215	0219	0224	2.9	2225	2226	2234	6.2	0640	0651	0703	2.1			
	0309	0311	0319	4.2	2358	2406	2414	4.3	1126	1132	1141	14			
	0432	0435	0437	3.0	01/27	1720	1722	1731	2.7	1706	1713	1726	1.7		
	0517	0521	0525	3.1	01/28	0305	0309	0313	9.6	1738	1745	1752	4.1		
	1142	1146	1152	2.5	1105	1110	1116	4.6	1930	1937	2002	4.0			
	1210	1215	1228	2.4	1749	1754	1759	8.1	2012	2013	2030	5.3			
	01/18	1156	1156	1210	1.7	2236	2238	2240	2.6						
		1520	1606	1621	2.6	2342	2349	2353	9.6						

DATE	UNIVERSAL TIME			
	BEG.	MAX.	END.	STR
2002/02/07	0054	0056	0102	4.1
	0435	0524	0540	3.2
	0849	0919	0941	1.9
	0954	1007	1025	2.6
	1113	1118	1123	2.7
02/08	0411	0431	0449	2.2
	0635	0640	0645	2.8
	0857	0908	0924	1.8
	1034	1043	1104	4.0
	1333	1337	1339	4.7
	1533	1605	1616	1.9
	2005	2006	2008	2.7
	2047	2112	2124	2.5
02/09	0524	0535	0553	2.2
	0813	0813	0824	2.6
	0930	0930	0946	2.2
	1109	1122	1141	1.6
	1430	1434U	1441	1.5
	1942	1943	1949	1.7
	2058	2058	2103	1.5
	2221	2223	2227	1.7
	2238	2247	2252	2.0
	2341	2342	2400	3.1
02/10	0009	0025	0036	2.8
	0113	0115	0118	1.9
	0200	0217	0224	1.3
	0533	0542	0549	1.2
	1844	1848	1956	16
	1919	1923	1952	5.5
	2346	2347	2349	1.8
02/11	0049	0051	0057	1.6
	0122	0128	0135	2.0
	0202	0208	0214	1.8
	0313	0330	0352	2.1
	0922	0929	0947	2.0
	1353	1356	1407	1.2
	2143	2143	2149	1.5
	2255	2258	2306	2.3
02/12	0214	0221	0231	2.0
	0252	0259	0335	5.2
	0442	0447	0504	1.4
	0852	0853	0909	2.3
	1232	1240	1256	3.0
	1424	1438	1543	5.8
	2132	2136	2151	5.0
02/13	0041	0047	0106	1.9
	0125	0133	0147	2.6
	0548	0551	0554	1.7
	0658	0712	0801	7.8
	0854	0855	0916	2.8
	0935	0947	0952	3.2
	1228	1231	1236	1.3
	1603	1607	1610	1.4
	2245	2251	2254	1.4
	2333	2335	2340	2.0
02/14	0117	0118	0123	1.8
	0138	0141	0153	4.5
	0347	0347	0355	2.4
	0604	0612	0622	2.6

CONTINUED.

DATE	UNIVERSAL TIME			
	BEG.	MAX.	END.	STR
2002/02/14	0834	0834	0839	1.5
cont.	0946	0950	0955	2.6
	1008	1010	1023	3.1
	1033	1035	1037	2.5
	1102	1106	1109	2.9
	1352	1354	1409	3.9
	1606	1609	1612	1.8
	1706	1708	1713	1.7
02/15	0024	0025	0028	2.1
	0156	0207	0216	1.9
	0311	0312	0415	1.6
	0612	0619	0628	1.3
	0713	0714	0730	1.9
	0758	0813	0821	1.2
	0953	0958	1002	1.3
	1731	1733	1742	1.9
02/16	0036	0048	0051	1.7
	1019	1025	1031	2.0
	2326	2332	2338	2.7
02/17	1020	1037	1109	3.1
	1341	1349	1356	1.8
	1403	1422	1434	1.8
	1452	1457	1515	1.7
	1721	1725	1730	1.1
	1901	1933	1948	1.9
	2018	2021	2029	2.3
	2231	2253	2318	1.6
02/18	0747	0757	0822	5.9
	2046	2052	2137	10
02/19	1152	1219	1249	2.7
	1601	1602	1607	2.9
	2227	2231	2233	1.3
02/20	0111	0116	0131	2.1
	0214	0218	0221	1.7
	0247	0254	0307	42
	0555	0611	0628	51
	0743	0745	0753	2.5
	1001	1001	1007	43
	1106	1107	1111	7.5
	1136	1139	1144	4.5
	1426	1429	1433	3.1
	1620	1627U	1647	9.7
	1712	1712	1714	35
	2103	2108	2156	24
02/21	0045	0054	0127	5.7
	0441	0448	0510	3.6
	0706	0757	0846	5.6
	0931B	0931U	0939A	7.0
	1156	1226	1236	39
	1648	1649	1656	3.5
	1807	1823	1844	10
	2028	2037	2047	14
	2205	2215	2224	3.9
	2354	2358	2505	44
02/22	0213	0229	0240	6.0
	0620	0630	0646	5.0
	0906	0918	0925	2.7
	1107	1112	1117	2.2

CONTINUED.

DATE	UNIVERSAL TIME			
	BEG.	MAX.	END.	STR
2002/02/22	1810	1839	1919	2.2
cont.	2231	2235	2251	2.7
	2240	2240	2248	2.9
02/23	0105	0147	0230	2.8
	0439	0440	0446	2.2
	0619	0625	0701	4.9
	0810	0811	0823	2.6
	1153	1157	1212	2.1
	1243	1315	1325	2.9
	1356	1356	1413	4.3
	1425	1437	1442	3.4
	2249	2249	2318	7.0
02/24	0007	0012	0017	1.5
	0435	0437	0441	1.3
	0620	0621	0632	2.2
	1253	1256	1300	1.7
	1440	1448	1515	4.4
	1539	1541	1547	2.4
	2032	2043	2103	9.0
	2052	2054	2059	5.2
	2314	2317	2322	3.7
02/25	0247	0257	0300	10
	0446	0451	0501	2.2
	0626	0631	0636	1.6
	0718	0719	0724	2.4
	0931	0939	1017	2.2
	1037	1039	1042	3.5
	1203	1203	1215	2.7
	1554	1554	1557	3.3
	1619	1620	1629	3.0
	1945	1947	1950	3.2
	2126	2127	2131	4.1
	2221	2221	2224	2.3
	2249	2250	2253	2.0
	2334	2336	2340	3.0
02/26	0039	0056	0108	7.0
	0654	0656	0702	4.4
	1027	1027	1030	9.6
	1249	1254	1301	1.7
	1355B	1356U	1407	3.5
	1512	1632	1721	6.1
	1917	1917	1927	2.3
02/27	0048	0048	0057	7.1
	0311	0346	0413	6.8
	0614	0620	0631	3.1
	1255	1302	1323	4.3
	1556	1603	1611	16
	2052	2053	2109	7.9
	2356	2412	2448	22
02/28	0925	0927	0938	4.0
	1206	1209	1212	4.2
	1413	1416	1418	5.5
	1908	1910	1921	7.6
	2230	2240	2300	7.4
2002/03/01	0005	0012	0020	9.7
	0435	0439	0441	2.1
	0528	0530	0538	7.2
	0956	0959	1001	3.2

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UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/03/01	1111	1117	1127	3.1	2002/03/12	1632	1635	1637	2.1	2002/03/23	0800	0813	0826	1.1
cont.	1404	1409	1415	1.8	cont.	1907	1909	1915	2.2	cont.	0950	0957	1009	1.6
	1437	1437	1451	2.8		2305	2305	2311	15		1009	1012	1016	1.7
	1528	1532	1536	2.0	03/13	0550	0550	0602	1.0		1304	1313	1322	1.2
	1621	1630	1649	5.6		1021	1025	1029	1.6		1430	1437	1449	3.5
	1708	1714	1719	4.7		2207	2209	2217	7.8		1538	1543	1545	1.5
03/02	0759	0759	0803	1.3		2302	2318	2403	10		1916	1916	1931	2.6
	0923	0924	0927	1.6	03/14	0137	0144	0242	57	03/24	0032	0038	0047	1.3
	1138	1142	1152	1.7		1646	1648	1710	4.9		1732	1754	1827	5.1
	1255	1259	1303	1.1		2337	2344	2400	1.0		2034	2035	2048A	4.5
	2013	2016	2028	4.4	03/15	2220	2238	2441	22		2120	2125	2131	1.8
03/03	0201	0207	0214	3.2	03/16	1038	1042	1047	1.4		2215	2223	2232	2.0
	0248	0256	0306	2.0		1127	1127	1132	2.9	03/25	0113	0118	0123	1.3
	1816	1833	1851	2.3		1316	1320	1326	1.8		0135	0140	0144	2.0
03/04	0608	0609	0613	1.4		1449	1454	1508	2.3		0254	0300	0306	2.0
	0729	0733	0735	3.2		2311	2320	2325	3.0		0629	0634	0641	2.8
	2052	2055	2057	1.4	03/17	0221	0223	0225	1.3		1034B	1038	1053	6.0
03/06	0827	0839	0853	1.3		0347	0352	0400	1.9		1124	1127	1131	2.1
03/07	0807	0822	0838	2.5		0455	0456	0504	3.1		1555	1555	1610	1.8
	1113	1122	1135	1.8		0535	0542	0550	1.5		2001	2008	2012	9.8
	1338	1359	1440	2.7		1011	1019	1024	13	03/26	0348	0355	0401	1.5
	1621	1625	1629	1.8		1121	1125	1127	1.2		0742	0745	0748	1.0
	1709	1714	1718	1.6		1438	1439	1443	1.3		1509	1516	1543	3.0
	1748	1755	1808	2.5		1536	1537	1557	1.8		2000	2002	2011	2.1
	2046	2104	2129	6.3		1704	1705	1712	4.5		2027	2030	2034	1.5
	2216	2240	2255	7.8		1713	1713	1717	1.1		2116	2120	2123	2.1
03/08	0010	0017	0020	3.5		1938B	1938U	1948	40	03/27	0355	0400	0407	2.3
	0222	0231	0245	2.4	03/18	0133	0145	0150	1.1		0552	0557	0602	1.6
	0902	0907	0911	4.3		0216	0231	0400	10		0835	0840	0842	1.2
	1103	1111	1117	2.2		1144B	1146U	1204	6.2		1009	1013	1019	1.3
	1217	1217	1227	1.9		1624	1625	1633	3.5		1254	1302	1309	3.0
	1451	1456	1501	2.0		1648	1651	1704	3.6		2040	2050	2104	2.0
	1647	1653	1655	8.6		1910	1917	1928	8.9	03/28	0021	0025	0030	1.4
	1753	1758	1803	4.4		2156	2156	2202	2.1		0152	0158	0221	1.6
03/09	0100	0149	0203	2.1	03/19	0122	0124	0135	1.8		0337	0342	0348	1.8
	0503	0511	0537	1.8		1144	1144	1313	10		0505	0509	0523	1.3
	0908	0909	0914	1.8		1859	1934	1945	1.3		0951	0953U	1004	1.4
	1050	1058	1106	2.8	03/20	0441	0504	0513	1.2		1134	1141	1213	2.5
	1401	1417	1439	3.3		0833	0834	0836	1.9		1548	1549	1552	1.6
	1616	1619	1627	1.6		1152	1156	1200	1.5		1752	1800	1816	7.6
	1837	1839	1905	26		1805	1810	1820	4.0		2149	2156	2205	2.9
	2143	2206	2340	13		2117	2120	2124	2.4	03/29	0105	0109	0111	1.4
03/10	0133	0136	0138	5.1		2359	2419	2455	5.7		0735	0745U	0750	2.5
	0504	0504	0511	6.0	03/21	0136	0141	0150	3.0		0908	0912	0925	1.9
	0938	0945	0954	2.0		0215	0230	0243	2.8		1107	1149	1202	3.1
	0959	1003	1005	2.2		0758	0811	0827	5.9		1243	1251	1319	6.5
	1057	1105	1108	2.7		1523	1534	1552	2.6		1715	1718	1721	2.2
	1158	1202	1204	1.6		1808	1811	1813	1.3		1855	1909	1933	3.7
	1225	1229	1235	2.0		2024	2045	2109	2.0		2147	2151	2156	4.2
	2159	2200	2205	2.6	03/22	0609	0618	0638	8.0	03/30	0340	0343	0345	1.5
	2221	2325	2429	23		1012	1114	1152	16		0702	0711	0724	9.1
03/11	1617	1637	1642	1.3		1818	1820	1824	1.5		0851	0851	0854	1.9
	1828	1850	1859	1.6		2256 ?	2304 ?	2318 ?	2.2		1159B	1159U	1219	5.1
	2248	2509	2804	3.0	03/23	0147	0148	0155	1.1		1247	1302	1410	34
03/12	0224	0236	0245	3.9		0322	0330	0342	2.1		1938	1939	1943	4.5
	0834	0837	0855	5.3		0436	0442	0455	3.2		2219	2226	2234	10
	1149	1152	1155	1.1		0543	0546	0553	1.0					
	1315	1316	1320	2.0		0711	0723	0733	1.1					

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UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/03/31	0039	0043	0053	2.8	2002/04/06	1406	1406	1410	2.6	2002/04/13	0506	0530	0556	3.3
	0157	0217	0228	5.7		cont.	1614	1616	1624		1.2	1008	1013	1020
	1008	1009	1019	2.9	04/07	1947	1947	2004A	2.0		1031B	1031U	1043	3.6
	1050B	1102U	1149	10		0032	0121	0153	2.0		1212	1213	1222	3.1
	1452	1454	1457	5.2		0225	0228	0244	9.6		1331	1337	1342	2.6
2002/04/01	1300	1303	1307	1.3	0444	0444	0455	1.7	1522	1523	1538	1.9		
	1444	1445	1454	1.9	0521	0522	0527	2.7	1633	1633	1646	2.3		
	1532	1534	1547	3.0	0818	0821	0833	6.0	1728	1729	1739	2.9		
	1905	1912	1920	1.9	1242	1245	1247	1.7	2159	2206	2218	3.4		
	2119	2130	2143	3.3	1428	1429	1440	4.4	04/14	0105	0105	0112	5.5	
04/02	0030	0050	0057	9.4	1509	1511	1528	2.8		0303	0342	0514	14	
	0224	0232	0242	5.3	1653	1659	1705	1.8		0450	0451	0506	8.6	
	0431	0434	0439	6.0	1813	1817	1820	1.5		0658	0701	0712	5.3	
	0742	0746	0751	2.4	1917	1923	1947	1.7		0736	0738	0746	9.6	
	1032	1036	1049	2.2	2151	2210	2219	2.7	1340	1340	1404	3.8		
1317	1321	1345	4.0	2238	2243	2247	3.3	1936	1945	1950	2.0			
1407	1407	1428	3.3	04/08	0016	0019	0021	2.1	2054	2056	2103	4.4		
1444	1444	1450	2.6		0134	0138	0216	5.1	2104	2110	2146	7.3		
1544	1545	1552	2.5		0300	0304	0320	4.7	2225	2228	2232	7.2		
1629	1630	1632	1.1		0346	0350	0405	2.1	2337	2416	2449	37		
1659	1701	1710	2.8		0523	0523	0534	2.0	04/15	0249	0253	0259	9.8	
1734	1738	1743	1.3	0942	0951	1004	1.8	0307		0325	0515	12		
1844	1847	1850	1.7	1120	1122	1130	2.1	0849		0852	0854	3.0		
1900	1904	1907	2.2	1140	1144	1148	1.7	1142		1142	1145	3.0		
1955	2007	2018	3.1	1202	1203	1207	1.5	1733		1747	1755	3.1		
2059	2102	2104	1.4	1344	1347	1401	2.1	1935	1939	1941	1.6			
2237	2243	2252	2.3	1724	1727	1735	2.3	2305	2324	2341	12			
04/03	0531	0533	0542	1.8	2041	2044	2103	6.1	04/16	0215	0219	0223	2.5	
	1133	1134	1137	1.3	2253	2259	2303	2.4		0424	0533	0655	3.8	
	1418	1424	1429	2.8	04/09	0039	0040	0104		21	1041	1047	1051	9.3
	1955	2000	2011	3.2		0536	0548	0624		7.9	1310	1320	1332	25
	2147	2152	2201	2.4		1254	1302	1310		11	1535	1540	1544	2.9
04/04	0336	0337	0344	2.8	1731	1734	1742	2.2	04/17	0038	0039	0044	9.9	
	0423	0441	0457	9.8	1906	1921	1939	4.1		0226	0235	0238	2.3	
	0652	0655	0702	3.0	2041	2147	2215	2.1		0657	0657	0703	1.8	
	1041	1048	1054	14	04/10	0044	0059	0117		5.6	0750	0815	1141A	26
	1413	1418	1423	3.0		0353	0355	0414		2.4	1338	1342	1347	6.9
1413	1418	1422	2.9	0420		0426	0430	3.0	1650	1658	1708	9.8		
1435	1437	1447	3.0	0642	0649	0708	4.3	2259	2304	2307	4.4			
1524	1532	1538	61	1226	1227	1405B	82	2311	2319	2324	4.4			
2156	2158	2200	2.0	1417	1423	1436	5.0	04/18	0335	0346	0354	4.0		
2304	2305	2308	4.0	1540	1541	1544	4.2		0527	0530	0533	1.8		
04/05	0414	0418	0425	1.6	1902	1904	1933		16	0636	0702	0729	9.4	
	0453	0457	0458	1.9	2228B	2242U	2259A		3.2	1044	1048	1051	2.6	
	1307	1313	1329	3.0	04/11	0147	0153		0211	9.9	1432	1432	1436	1.5
	1443	1447	1454	2.5		0601	0606	0641	4.4	1512	1612	1657	3.0	
	1518	1518	1543	3.4		0901	0905	0911	2.3	04/19	0648	0650U	0654A	1.7
1718	1720	1723	3.0	0924		0930	0936	3.4	0658		0704	0707	3.3	
1949	1951	2012	2.9	1553		1558	1605	2.0	0754		0754	0755	2.0	
2124	2133	2139	2.9	1619	1625	1705	9.2	0901	0905		0913	2.3		
2242	2242	2249	3.0	1833	1838	1843	7.2	1519	1520		1525	2.5		
2251	2253	2257	2.8	2259	2300	2307	1.6	1829	1830	1834	3.4			
2341	2350	2358	4.9	04/12	0117	0120	0123	1.5	2005	2008	2012	1.6		
04/06	0139B	0139U	0146		2.1	0146	0147	0153	1.8	2107	2116	2130	2.2	
	0341	0344	0346		1.6	0250	0253	0256	1.9	04/20	0045	0055	0110	1.7
	0612	0616	0652		9.5	0306	0307	0317	5.0		0417	0428	0446	2.4
	0957	1000	1006		1.3	0450	0455	0514	3.4		0513	0519	0525	2.3
	CONTINUED.					0842	0842	0846	3.0		0908	0932	0956	1.3
					1305	1310	1314	14	1141		1209	1225	2.7	
					1600	1601	1609	7.7	CONTINUED.					
					1737	1756	1850	40						

UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/04/20	1419	1426	1450	2.1	2002/04/30	0026	0036	0042	7.8	2002/05/09	0021	0027	0035	1.9
cont.	1539B	1551U	1609A	4.1		0342	0350	0401	3.1		0042	0047	0054	2.4
	1734	1748	1810	2.2		0650	0653	0703	3.2		0758	0759	0809	1.4
	1944	2014	2035	2.5		0817	0822	0827	13		1050	1052	1059	1.1
	2323	2326	2328	1.9		1112	1118	1135	3.2		2001	2003	2005	1.6
04/21	0059	0131	0251	150		1410	1418	1427	3.7	05/10	0027	0038	0102	4.0
	1725	1730	1733	7.9							0551	0554	0556	1.2
	1737	1806	1824	8.3	2002/05/01	0348	0351	0355	2.3		0822	0827	0832	1.8
	2011	2016	2018	2.9		0407	0408	0411	2.1		0939	0940	0956	3.9
	2151	2156	2158	3.4		0547	0553	0600	1.4		1028B	1029U	1032	1.9
04/22	0003	0019	0021	7.7		0856	0856	0859	1.4		1234	1252	1308	1.6
	0050	0050	0104	3.5		1001	1001	1009	2.4		1435	1442	1448	1.6
	0448	0506	0520	2.1		1918	1926	1937	1.8		1710	1710	1740	1.2
	0545	0546	0557	5.5	05/02	0257	0300	0316	1.1		2125	2126	2139	1.6
	1007	1008	1014	1.3		0326	0332	0351	1.6		2152	2153	2158	1.1
	1204	1207	1216	2.8		0902	0927	0934	1.9	05/11	0002	0002	0007	3.3
	1440	1441	1451	1.4		1121	1126	1129	3.0		0036	0041	0045	1.9
04/23	0001B	0003U	0024A	1.6		1444	1450	1455	2.3		0137	0142	0146	2.3
	1545	1545	1548	1.1		2111	2117	2303	6.3		0244	0252	0256	6.4
	2005	2030	2041	1.8	05/03	0400	0401	0405	2.0		0328	0332	0336	1.6
	2245	2250	2255	1.2		0644	0647	0655	3.3		0435	0440	0444	1.2
04/24	0409	0415	0424	1.5		1803	1807	1840	3.9		0651	0656	0701	3.6
	0505	0517	0525	1.4		2012	2020	2029	5.4		0736	0739	0743	1.6
	0537	0539	0555	1.7		2114	2121	2127	2.8		1137B	1137U	1204	14
	0638	0641	0646	1.4		2331	2335	2339	3.2		1647	1649	1654	2.7
	0732	0735	0744	1.7	05/04	0250	0251	0308	7.8		1735	1740	1754	3.7
	0756	0805	0809	1.4		0341	0342	0353	2.5		2146	2150	2153	1.5
	1023	1029	1034	1.2		1019	1022	1029	1.3	05/12	0100	0120	0140	1.4
	1046	1050	1119	2.0		1110	1110	1117	1.9		0229	0316	0400	2.2
	1315	1317	1328	1.0		1322	1325	1345	9.3		0925	0953	1012	3.7
	1412	1423	1457	1.7		1859B	1900U	1908A	2.0		1445	1451	1510	1.2
	1547	1552	1633	4.8		2124	2129	2132	1.4		1652	1653	1656	1.2
	1634	1637	1649	2.3		2143	2148	2153	2.7		1937	1937	1950	1.0
	1743	1754	1805	1.9		2154	2158	2202	3.6		1943	1957	2014	1.4
	2013	2018	2022	1.2	05/05	0507	0513	0519	1.7	05/13	0059	0059	0108	3.9
	2149	2156	2206A	17		0808	0808	0813	4.8		0236	0236	0241	1.1
04/25	0541	0546	0551	2.8		1226	1227	1236	3.0		0337	0338	0349	1.8
	0601	0606	0612	2.5		1441	1445	1501	1.9		0501	0507	0511	1.5
	1855	1905	1924	1.6		1809	1810	1816	1.6		1638	1639	1649	2.3
04/26	0133	0141	0150	1.2		1912B	1914U	1922A	2.6		1740	1745	1749	2.3
	0958	1029	1044	1.2	05/06	0226	0231	0247	1.8		2049	2056	2103	2.2
	1452	1504	1516	2.0		1402	1404	1412	1.7	05/14	0345	0350	0356	3.6
	1931	1937	1954	2.1		1554	1604	1621	2.5		0453	0504	0516	1.9
	2043	2101	2119	1.6		2201	2204	2206	1.7		0539	0603	0609	2.2
	2247	2256	2314	1.3		2353	2411	2441	6.4		0934	0939	1002	3.2
04/27	0923	0927	0930	1.1	05/07	0337	0346	0407	14		1258	1303	1320	4.2
	1053	1053	1057	2.1		0800	0804	0808	1.4	05/15	0817	0831	0848	10
	1529	1548	1629	4.0		0846	0852	0855	2.8		1421	1438	1500	1.6
04/28	1820	1822	1853A	1.0		1237	1242	1247	1.9		2108	2114	2120	1.1
	2058	2101	2109	1.2		1354	1358	1404	1.1		2344	2359	2406	3.5
	2231	2241	2256	1.3		1841	1843	1847	1.1	05/16	0011	0035	0118	4.5
04/29	0530	0537	0602	2.2		2241	2241	2252	1.6		0451	0521	0601	5.0
	0922	0928	0931	3.4	05/08	0627	0628U	0635	1.0		0941	0945	0954	1.7
	0935	0940	0944	4.8		0937	0947	1001	1.6	05/17	0055	0123	0130	15
	1032	1058	1101	4.1		1258B	1320U	1456	4.2		0520	0523	0534	7.0
	1257	1303	1315	2.2		1439	1445	1453	2.8		0727	0754	0840	15
	2010	2012	2013	2.7		1546	1552	1556	2.3		1054	1101	1123	2.1
						1705	1707	1712	1.1		1210	1210	1216	2.4
						2030	2035	2042	1.9					

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2002/05/17	1434	1437	1440	1.8	2002/05/26	1327	1331	1400	4.4	2002/06/01	0353	0356	0407	15
cont.	1556	1558	1622	29	cont.	1508	1510	1516	1.7		0633	0637	0652	4.8
	2210	2215	2221	1.3		2117	2125	2134	1.2		0841	0844	0851	1.5
	2307	2308	2325	1.6	05/27	0157	0208	0226	1.4		1048	1049	1059	11
05/18	0922	0925	0945	2.6		0308	0312	0316	1.1		1202	1205	1208	1.2
	1130	1139	1154	3.0		0602	0605	0619	3.5		2348	2351	2359	5.1
	1236	1239	1242	2.5		0744	0749	0753	2.8	06/02	0010	0050	0155	3.5
	1537	1542	1553	3.4		1158	1206	1232	2.7		0431B	0442U	0445	4.1
	1826	1828	1836	2.2		1236	1259	1351	3.7		1007	1014	1029	8.0
	2122	2126	2131	1.4		1507	1508	1512	2.4		1144	1145	1155	9.4
05/19	0017	0020	0023	1.3		1803	1811	1839	20		1557	1601	1620	1.4
	0138	0143	0149	1.4		1902	1904	1909	7.5		1658	1659	1708	3.3
	0625	0640	0656	1.1		2125	2125	2129	3.4		1858	1904	1911	2.3
	0808	0834	0902	2.5	05/28	0043	0047	0053	2.1		2021	2028	2031	1.7
	1407	1410	1412	1.4		0341	0349	0359	2.7		2036	2054	2155	11
	1554	1558	1603	1.4		0604	0607	0609	2.2		2301	2304	2309	2.5
	1621	1621	1627	2.3		0624	0709	0745	2.9	06/03	0506	0509	0511	1.2
	1706	1707	1713	2.2		1159	1203	1209	2.8		0649	0658	0702	1.5
	1841	1846	1849	2.7		1305	1308	1311	2.0		0725	0727	0735	4.4
	1909	1914	1919	3.1		1315	1335	1341	2.3		0853	0857	0902	1.0
	1946	1950	1954	2.1		1413	1428	1445	2.0		1157	1202	1205	1.0
	2001	2023	2027	2.8		1531	1550	1603	2.6		1302	1305	1308	1.4
	2143	2148	2152	4.7		1630	1632	1645	3.6		1443	1443	1505	3.7
05/20	0719	0733	0734	2.2		2155	2157	2201	2.9		1657	1701	1703	1.3
	0732	0732	0740	3.9		2247	2248	2250	1.8		1713	1714	1721	1.2
	1014	1029	1034	47	05/29	0215	0246	0322	8.6		2110	2115	2120	1.2
	1049	1053	1056	50		0509	0512	0515	8.1	06/04	1006	1009	1011	1.2
	1508	1529	1538	210		0655	0706	0716	4.7		1149	1158	1203	1.2
	1811	1819	1839	4.1		0835	0854	0906	3.5		1253	1253	1309	1.9
	1950	1950	1954	1.8		1008	1011	1018	2.1		1613	1618	1628	2.1
	2019	2027	2044	3.0		1024	1027	1033	3.4		1808	1808	1814	1.0
	2116	2120	2124	2.0		1157	1201	1209	2.4	06/05	0858	0945	1037	3.4
05/21	0142	0145	0148	2.2		1254	1259	1308	3.3		2234	2235	2241	1.4
	0501	0504U	0549	4.8		1322	1326	1329	2.6	06/06	1701	1702	1721	2.0
	1024B	1026U	1026	1.9		1353	1412	1419	2.1	06/07	0941	0946	0949	1.0
	1720	1722	1731	3.2		1445	1449	1453	1.8	06/08	0848B	0848	0854	1.1
	2124	2137	2244	15		1500	1505	1510	3.3		1642	1645	1647	1.1
	2327	2418	2517	9.7		1548	1551	1602	5.9	06/09	0927	1009	1058	1.3
05/22	0400B	0400U	0437	5.0		1745	1751	1800	2.5	06/10	0205	0209	0213	1.4
	0824	0831	0848	1.7		2244	2245	2252	1.2		1020	1027	1035	1.6
	1542	1548	1606	2.5		2325	2325	2335	1.4		2144	2155	2206	1.3
	2052	2052	2057	2.4	05/30	0010	0012	0017	1.2	06/11	0615	0643	0714	1.4
05/23	0230	0235	0243	1.1		0424	0532	0613	13		1005	1007	1013	1.1
	2051	2054	2058	1.2		0832	0841	0849	3.2		1104	1106	1111	1.2
05/24	0637	0646	0651	11		1203	1218	1238	2.2		1147	1149	1154	1.2
	0723	0740	0757	1.3		1401	1432	1458	4.1		1217	1218	1232	1.6
	0823B	0830U	0845A	2.0		1528	1540	1555	3.3		1510	1514	1529	1.5
	0955	0959	1004	1.3		1628	1637	1646	3.5	06/12	0854	0903	0914	1.0
	1050	1055	1058	2.9		1711	1726	1828	16		2117	2122	2126	1.5
	1908	1910	1920	2.6		1948	1949	2003	1.6	06/14	1004	1020	1038	1.3
	2149	2151	2153	1.1		2323	2325	2328	1.4		2137	2137	2143	1.0
05/25	0545	0547	0550	1.3	05/31	0004	0016	0025	24		2348	2458	2525	1.7
	1001	1004	1007	1.1		0237	0321	0506	3.1	06/15	0230	0236	0241	1.5
	1650	1659U	1818A	1.7		0943	0948	0951	1.1		1622	1702	1717	1.0
05/26	0045	0106	0122	1.6		1302	1306	1315	2.7	06/16	0309	0332	0351	1.4
	0241	0241	0252	1.1		1518	1518	1527	3.0		0746	0814	0909	1.0
	0804	0821	0828	1.0		1933	1940	1951	3.2		2120	2125	2132	1.2
	0922	0946	1011	1.1						06/17	1846	1854	1906	1.6
	1029	1043	1053	1.3							2001	2005	2019	1.4

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DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
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06/20	1155	1222	1235	1.3	cont.	1328	1328	1336	3.0		0330	0334	0337	1.6
	1414	1519	1559	2.9		1452	1457	1508	7.1		0404	0404	0410	1.4
06/21	0424	0506	0622	1.6		1609	1611	1614	2.2		0554	0555	0557	1.7
	1959	2020	2058	1.8		1617	1617	1623	3.4		0752	0754	0757	1.6
06/22	0234	0236	0246	2.0		1745	1747	1811	2.4		0814	0815	0823	2.2
06/23	0223	0245	0348	1.6		1846	1847	1852	5.3	07/14	0517	0517	0532	1.2
	0821	0823	0834	1.9		2211	2218	2223	1.4		0644	0644	0652	1.5
06/24	1525	1606	1659	1.4	07/05	0205	0220	0239	1.2		0655	0659	0702	1.0
06/26	0623	0630	0647	1.5		0739	0741	0748	2.6		0843	0846	0848	1.0
	0757	0820	0904	1.9		0756	0809	0820	7.8		1456	1509	1556	1.2
06/28	0628	0630	0646	1.1		1213	1221	1223	1.0		1612	1612	1617	1.2
	2002	2011	2014	1.3		1321	1332	1341	32	07/15	0046	0050	0055	1.8
06/29	0022	0034	0037	2.6		1548	1551	1614	6.3		0201	0203	0213	1.6
	0637	0640	0643	1.2		2028	2029	2035	2.0		0422	0423	0429	1.6
	0927	0933	0937	2.0		2049	2051	2101	3.6		0506	0507	0527	3.8
	1540	1550	1559	1.1		2200	2213	2225	2.0		1022	1030	1040	1.6
06/30	0915	1257	1625	2.1	07/06	0328	0342	0355	18		1112	1145	1245	9.1
	1948	1949	2000	1.7		0931	0937	1002	6.0		1402B	1403U	1409	3.6
	2107	2115	2124	1.4		1242	1245	1302	2.0		1839	1839	1852	1.9
						1933	2003	2036	1.0		1950	2011	2334A	300
2002/07/01	0317	0322	0326	1.3		2349	2426	2444	1.8		2103	2132	2148	18
	0435	0452	0516	1.2	07/07	0334	0401	0427	3.5	07/16	0008	0011	0015	4.6
	0910	0911U	0916	1.6		0541	0602	0624	1.2		0639	0640	0726	6.5
	1143	1148	1154	1.1		1115	1143	1317	10		1143	1143	1201	3.5
	1327	1452	1512	1.3		1610	1622	1639	1.8		1339	1410	1445	8.5
	2108	2111	2115	1.0	07/08	0910	0921	0927	16		1912	1915	1917	1.4
	2251	2304	2311	1.0		1824	1831	1843	3.5		2124	2139	2222A	2.6
07/02	0938	0942	0947	1.1		2017	2022	2028	1.2		2222	2224	2241	1.9
	1202	1230	1252	1.8		2309	2320	2329	23		2249	2255	2307	2.0
	1411	1411	1432	2.3	07/09	0209	0218	0229	2.5	07/17	0203	0208	0214	2.3
	1813	1817	1820	1.0		0359	0413	0443	8.6		0548	0550	0629	4.0
	1840	1840	1849	1.0		0711	0716	0722	2.5		0701	0704	0759	85
	1953	1958	2017	5.2		0855	0905	0911	10		1904	1911	1919	1.5
	2021	2029	2142	15		1428	1437	1444	1.1		1943	1950	1956	3.4
	2235	2253	2258	4.9		1511	1517	1525	1.2		2009	2013	2019	1.6
07/03	0000	0031	0045	4.1	07/10	0146	0149	0159	1.1		2045	2050	2051	1.7
	0137	0144	0152	2.0		1250	1250	1254	1.0	07/18	0330B	0336U	0345A	22
	0210	0213	0327	150		1308	1329	1411	2.7		0650	0651	0657	1.7
	0801	0818	0833	3.4		1914	1914	1920	1.4		0741	0743 U	0800A	180
	0851	0852	0856	1.1	07/11	0047	0053	0100	1.7		0830	0833	0853	1.6
	1144	1156	1223	7.3		0235	0240	0242	1.4		1153	1157	1215	2.7
	1324	1324	1334	1.2		0710	0712	0718	2.1		1348	1354	1404	5.4
	1540	1544	1549	1.1		0811	0818	0905	1.1		1745	1747	1754	1.7
	1808	1808	1812	3.0		1034	1037	1049	2.1		1800	1802	1810	1.4
	1927	2010U	2125A	53		1107	1121	1128	4.0		1952	1957	2006	2.1
	1941	1945	1949	11		1204	1208	1215	2.5		2019	2019	2049	3.3
	2317B	2319U	2323A	7.9		1234	1315	1401	1.7		2143	2152	2201	2.6
07/04	0038	0039	0045	2.8		1417	1418	1427	10		2256	2300	2302	1.8
	0127	0128	0133	4.7		1446	1448	1522	58		2308	2317	2323	8.2
	0246	0249	0253	1.5		2203	2206	2210	1.1	07/19	0507	0510	0517	1.2
	0454	0455	0458	4.5	07/12	0021	0026	0029	1.1		0837	0840	0844	1.0
	0617	0623	0640	2.8		0659	0659	0709	1.7		0915	0919	0923	1.3
	0622	0627	0630	6.5		0851	0851	0907	1.6		1019B	1021U	1037A	1.7
	0733	0733	0742	11		1334	1339	1350	1.8		1248	1249	1253	1.2
	1011	1013	1016	2.4		1914	1917	1919	1.0		1846	1847	1904	3.9
	1047	1047	1057	2.6		2324	2326	2352	2.1					
	1151	1154	1156	1.6		2354	2400	2438	11					

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	1232B	1242U	1256A	9.6		0112	0116	0118	5.3	cont.	1403	1407	1412	4.6
	1325	1329	1332	2.7		0404	0432	0454	2.8		1541	1544	1548	3.4
	2104	2130	2154	3.30		0555	0557	0612	3.6		1551	1559	1603	6.0
07/21	0307	0310	0312	7.9		0641	0643	0647	2.5		1706	1707	1711	6.0
	0605	0613	0624	6.7		0842	0844	0853	3.6		1801	1814	1846	4.6
	0735	0745	0754	6.7		1048	1049	1053	2.2		1930	1933	1935	2.2
	1335	1336	1342	1.8		1054	1104	1126	7.6		2015	2022	2027	4.8
	1414	1421	1431	3.4		1141	1142	1149	2.2		2129	2131	2135	3.6
07/22	0633	0639	0652	1.5		1458B	1459U	1506	2.3		2330B	2331U	2341	2.4
	0928	0930	0944	2.3		1541	1600	1616	2.9	08/02	0137	0141	0145	2.1
	1151	1156	1201	2.7		1659	1706	1712	4.0		0206	0206	0212	2.4
	2215B	2215U	2226A	3.1		1849	1854	1858	7.1		0304	0307	0312	1.7
07/23	0023	0029	0240	4.80		2002	2015	2022	6.4		0325	0328	0332	2.2
	0722	0814	0833	3.7		2044B	2053U	2108A	5.1		0617	0625	0635	4.2
	0901	0904	0915	4.0		2258	2312	2324	2.2		0652	0652	0656	4.2
	1059	1102	1107	2.8	07/29	0019	0023	0027	1.4		0907	0915	0920	3.1
	1218	1223	1230	2.9		0229	0238	0246	4.8		1051	1051	1134	10
	2100	2105	2108	3.0		0617B	0624U	0624A	2.9		1244	1247	1251	4.2
	2247	2248	2254	2.6		0731	0751	0804	3.4		1347	1355	1406	3.6
07/24	0029	0033	0039	2.0		1027	1044	1113	4.7		1353	1356	1359	3.6
	0101	0104	0106	2.5		1704	1706	1722	2.7		1424	1426	1455	2.8
	0242	0246	0248	3.6		1753	1756	1758	3.8		1432	1436	1442	2.8
	0322	0325U	0335	4.5		1808	1810	1813	2.5		1701	1707	1714	3.1
	1130	1139	1147	2.5		1838	1848	1856	2.2		1953	1958	2010	4.4
	1241	1245	1400	6.1		1937	1939	1956	8.6		2015	2018	2020	4.2
	1514	1545	1659	12		2033	2036	2041	3.1		2252	2253	2258A	8.3
	1812	1813	1823	3.2		2102	2109	2137	6.5		2358	2401	2404	3.2
	1845	1845	1855	2.2		2238	2245	2257	4.2	08/03	0435	0437	0455	7.5
	1914	1916	1920	2.3	07/30	0254	0257	0300	2.7		0611	0615	0619	2.1
07/25	0035	0038	0040	1.9		0314	0317	0323	2.5		0918	0919	0923	2.7
	0310	0313	0316	2.9		0527	0528	0536	3.3		1022	1025	1027	1.7
	0403	0403	0408	2.7		0717	0720	0729	3.4		1259	1304	1309	5.3
	0838	0842	0851	1.7		0824	0828	0831	3.4		1513	1528	1539	2.9
	0914	0921	0956	2.9	07/31	0050	0051	0105	4.9		1654	1655	1702	2.7
	1424	1429	1441	2.7		0113	0115	0151	3.0		1827	1833	1841	2.4
	1551	1558	1610	2.6		0144	0149	0230	1.2		1910	1910	1916	100
	1902	1902	1910	2.5		0849	0854	0900	2.4		2107	2115	2139	3.7
	2031	2034	2039	2.0		0950	0958	1006	9.6		2125	2132	2137	6.1
	2111	2111	2117	2.8		1115B	1117U	1117A	4.2		2327	2328	2343	3.8
	2155	2202	2214	3.1		1206	1209	1211	2.7	08/04	0155	0200	0206	2.8
	2258B	2307U	2317A	6.7		1449	1452	1454	2.3		0255	0259	0302	2.4
07/26	0007B	0014U	0020A	4.9		1524	1525	1529	2.6		0444	0450	0454	3.8
	0312	0319	0333	5.8		2001	2003U	2019A	2.8		0714	0720	0725	7.4
	0631	0641	0659	1.1		2018	2022	2025	3.3		0858	0955	1033	6.6
	0807	0828	0901	1.3		2227	2230	2233	2.2		1410	1418	1428	6.9
	1255	1315	1324	2.7		2250	2255	2301	3.0		1452	1458	1502	4.8
	1304	1321	1439	3.0		2328	2355	2412	4.7		1901	1905	1922	2.1
	1530	1537	1546	4.2							2139	2143	2148	2.6
	1607	1613	1634	3.8	2002/08/01	0028	0044	0054	3.9	08/05	0329	0329	0336	1.5
	1817	1821	1837	9.5		0224	0224	0236	2.5		0515	0517	0528	4.8
	1845	1901	1909	1.0		0241	0242	0252	2.6		2114	2122	2130	10
	2051	2113	2259A	8.7		0358	0401	0413	2.5	08/06	0138	0143	0213	8.3
	2203	2217	2232	5.3		0503	0519	0533	5.0		0517	0518	0527	2.1
	2236	2238	2241	4.6		0624	0647	0656	2.9		1129	1130	1140	4.3
07/27	0141	0147	0150	1.1		0705	0706	0714	3.3		1210	1210	1223	2.8
	0214	0216	0222	9.6		0744	0746	0749	4.1		1231	1232	1242	3.3
	0435	0438	0446	5.1		1049	1055	1104	3.5		1246	1258	1310	7.9
	0836	0837	0842	2.5							1521	1524	1602	7.6
	1511	1512	1515	1.7							2007	2007	2011	1.3
	1818	1828	1838	5.5										

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UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/08/07	0118	0126	0148	11	2002/08/15	0012	0017	0023	2.2	2002/08/19	1710	1741	1822	3.6
	0318	0324	0344	1.3		0109	0115	0119	2.7	cont.	2038	2041	2045	2.4
	0529	0535	0547	1.5		0140	0145	0149	2.7		2052B	2102U	2122A	31
	0635	0636	0651	1.5		0236	0251	0255	4.7		2259	2302	2305	7.0
	0711	0719	0726	2.6		0608	0608	0614	10	08/20	0135	0144	0217	50
	1033	1038	1046	1.9		0731	0735	0738	2.3		0208	0214	0225	5.5
	1336	1336	1348	1.3		0752	0753	0808	2.4		0255	0256	0314	14
	1354	1400	1409	1.4		1136	1136	1146	4.5		0334	0336	0337	2.6
08/08	0100	0104	0107	1.9		1324	1333	1411	3.9		0511	0514	0523	4.0
	0701B	0702U	0711A	1.1		1729	1729	1734	2.7		0617	0620	0623	2.7
	0934	0941	0951	1.2		1952	1959	2008	7.0		0825	0826	0837	34
	1110	1112	1115	1.4		2327	2329	2347	10		0933	0936	0938	1.9
	1155	1159	1204	1.3	08/16	0603	0611	0637	24		0944	0947	0950	2.6
08/09	0416	0422	0434	1.6		1111	1213	1409	52		1003	1006	1011	2.0
	0648B	0648U	0657	1.4		1804	1815	1820	5.2		1026	1031	1034	3.3
	0838	0900	0919	2.0		2207	2212	2215	12		1429	1438	1508	5.4
08/10	0941	0945	0949	2.0		2331	2333	2344	17		1547	1552	1555	3.0
	2007	2010	2017	1.4	08/17	0008	0013	0038	4.1		1639B	1641U	1719A	3.3
08/11	0855	0859	0907	1.5		0105	0105	0109	11		1702	1714	1724	5.2
	0923	0928	0932	1.8		0504	0505	0509	3.2		1759B	1759U	1812A	9.9
	1137	1147	1158	9.5		0621	0627	0642	4.3		1821	1828	1838	3.3
	1336	1338	1349	2.2		0632B	0632U	0636A	4.6		2044	2112	2144	12
	1350	1357	1403	1.9		0655	0657	0705	5.0		2206	2211	2213	3.5
	1409	1411	1425	2.3		0845	0848	0856	2.1		2225	2229	2238	6.2
	1441	1443	1517	2.3		0905	0912	0918	2.5		2243	2253	2258	5.4
	1645	1649	1651	3.0		1337	1444	1620	3.6		2311	2311	2317	6.4
	1735	1801	1813	7.9		1415	1415	1421	4.1	08/21	0057	0101	0106	3.3
	2022	2026	2029	1.7		1439	1442	1455	4.9		0139	0140	0148	14
	2119	2119	2126	3.6		1545	1547	1559	4.8		0447	0451	0454	3.6
	2210	2222	2231	3.3		1639	1643	1648	3.0		0530	0532	0551	100
08/12	0216	0219	0223	1.4		1927	1931	1937	3.4		1246	1248	1258	3.3
	0405	0410	0420	1.8		1945	1950	1954	4.0		1300	1309	1311	3.1
	0803	0804	0808	2.7		2047	2049	2108	34		1349	1353	1359	2.5
	1539	1543	1547	2.0	08/18	0007	0008	0012	3.3		1606	1612	1616	3.0
	2213	2217	2224	1.8		0145	0149	0203	3.2		1701	1701	1705	3.6
08/13	0243	0248	0259	4.6		0328	0336	0342	8.4		1722	1722	1730	4.8
	0447	0450	0516	3.1		0551	0559	0622	4.5		1903	1907	1911	8.9
	0546	0550	0553	2.3		0730	0731	0813	8.0		2236	2240	2243	4.4
	0707	0715	0721	1.9		0910	0924	0936	3.0		2323	2326	2329	3.5
	0818	0827	0835	1.6		0954	1005	1009	23		2358	2359	2408	3.1
	0921	0929	0939	3.3		1205	1209	1213	4.1	08/22	0013	0016	0019	3.4
	1229	1322	1335	3.0		1348	1349	1359	4.9		0144	0159	0208	3.3
	1406	1417	1425	3.0		1436	1437	1509	19		0151	0153	0225	54
	1506	1514	1532	4.8		1645	1650	1701	6.0		0309	0309	0312	3.1
	1855	1902	1932	18		1943	1947	2002	4.5		0514	0517	0522	2.8
	2046	2052	2101	3.1		2021	2036	2043	8.7		0621	0741	0908	5.6
	2120	2147	2205	2.7		2111	2121	2206	22		0803	0805	0807	5.7
	2206	2214	2226	5.0		2228	2231	2236	4.3		1047	1048	1056	4.1
	2250	2255	2259	2.5	08/19	0126	0130	0139	2.4		1322	1322	1329	2.9
08/14	0108	0110	0116	3.4		0354	0358	0408	2.6		1415	1419	1423	4.8
	0147	0201	0343	23		0442	0446	0452	2.6		1619	1622	1631	7.0
	0904	0906	0911	5.0		0625	0626	0629	2.4		1655	1658	1703	3.4
	1004	1011	1015	4.9		0806	0807	0816	2.3		1739	1751	1842	12
	1210	1212	1220	2.6		1031	1041	1103	20		1951	1956	1958	3.0
	1404	1407	1423	7.5		1124	1124	1148	1.9		2035	2038	2044	4.3
	1807	1814	1901	14		1258	1301	1309	3.5		2209	2250	2300	4.5
	2136	2136	2145	4.7		1425	1433	1509	9.5					
	2221	2222	2226	1.6										

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DATE	UNIVERSAL TIME				DATE	UNIVERSAL TIME				DATE	UNIVERSAL TIME													
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	0236	0239	0244	3.6		0245	0253	0302	16		0335	0339	0342	1.7										
	0418	0420	0430	9.4		0456	0506	0526	18		0530	0533	0539	1.0										
	0537	0549	0628	17		0713	0742	0755	7.2		0542	0542	0545	1.5										
	0619	0623	0712	8.6		1038B	1038U	1059	4.5		0625	0625	0631	2.3										
	0728	0731	0733	3.4		1058	1102	1106	3.8		0740	0743	0746	2.0										
	0945	0947	0956	15		1242	1248	1259	32		1030	1030	1037	1.6										
	1145	1151	1201	8.1		1321	1326	1330	4.9		1352	1353	1355	1.6										
	1204	1205	1208	12		1447	1450	1453	2.9		1416	1416	1425	1.2										
	1248	1315	1407	15		1522	1528	1531	4.4		1452	1455	1502	2.5										
	1854	1856	1903	3.7		1655	1700	1704	2.8		1529	1532	1539	1.6										
	1914	1917	1920	3.8		1925	1928	1932	5.2		1701	1701	1709	1.2										
	2007	2016	2130	14		2140	2143	2145	4.7		1804	1807	1810	1.1										
	08/24	0055	0103	0123		310	08/30	2331	2334		2349	7.3	09/05	0012	0012	0016	1.2							
0537		0546	0632	18	0234	0241		0247	8.5	0225	0229	0236		1.6										
1112		1128	1141	15	0252	0309		0320	7.4	0547	0551	0606		2.0										
1242		1301	1308	5.4	0427	0431		0436	3.4	0806	0810	0814		1.6										
1511		1512	1515	4.6	0447	0455		0458	5.7	1130	1134	1139		1.2										
1738		1743	1748	2.9	0501	0505		0511	3.9	1237	1240	1305		5.1										
1839		1839	1842	6.0	0735	0741		0748	2.6	1631	1645	1733		5.2										
2103		2108	2114	3.1	1059	1100		1108	4.3	2042	2043	2117A		8.6										
08/25		0315	0321	0330	3.1	1226		1328	1349	150	09/06	1216		1225	1236	2.0								
		1059	1118	1152	3.6	1427		1431	1436	8.4		1623		1628	1631	9.2								
		1604	1605	1616	1.4	1518		1527	1529	2.4		1636		1644	1650	5.3								
		1756	1759	1804	1.1	1534		1539	1542	2.8		09/07		0113	0152	0158	4.6							
		1851	1855	1910	11	08/31		0002	0005	0007				3.2	0439	0450	0456	1.6						
		2340	2345	2409	19			0110	0114	0116				2.6	1051	1057	1104	1.7						
	08/26	0043	0107	0121	18	0336	0347	0410	6.7	1458		1502	1506	1.3										
0535B		0538	0549	2.9	0509	0527	0600	1.8	1619	1625	1634	1.6												
0942		0944	1016	4.0	1330	1330	1335	3.0	1735	1747	1754	5.4												
1254		1301	1316	2.5	1418	1422	1425	4.7	09/08	0143	0144	0148	15											
1623		1623	1646	7.6	1529	1529	1533	3.8		1419	1453	1504	4.0											
1840		1842	1847	3.4	1614	1615	1619	8.8	09/09	0227	0239	0257	3.6											
1939		2000	2034	7.8	1924	1928	1930	3.4		1628	1632	1704A	2.1											
2134		2135	2138	3.8	1955	1955	2003A	9.1	1742	1752	1828	21												
08/27		0515	0519	0523	1.8	2251	2257	2303	2.0	2126	2131	2135	2.1											
		0818	0821	0823	1.0	2002/09/01	0221	0224	0226	2.8	09/10	0911	0916	0920	1.6									
	1004	1007	1011	1.4	0930											0933	0935	6.7	1021	1023	1030	3.6		
	1018	1022	1025	1.5	1215											1216U	1258A	3.1	1157	1200	1202	1.7		
	1225	1229	1232	9.0	1637											1642	1647	3.3	1336	1336	1341	2.1		
	2030	2033	2039	1.2	2013											2028	2043	3.1	1433	1436	1438	1.6		
	08/28	0115	0119	0123	2.0											09/02	0006	0008	0010	2.0	1452	1453	1514	29
		0250	0253	0255	2.0												0244	0248	0250	2.3	1547	1606	1615	2.5
		0311	0315	0325	2.0												0713	0717	0719	1.9	1712	1718	1731	5.6
		0638	0647	0653	1.7												0905	0911	0933	1.9	1737	1737	1743	6.5
0705		0708	0712	1.3	0955												1014	1024	2.0	1936	1939	1942	1.8	
1059		1100	1105	5.7	1203	1203	1212	1.6	1948	1955	2006	3.7												
1141		1148	1156	2.4	1949	2036	2046	1.2	2046B	2050U	2109A	3.6												
1424		1427	1432	1.6	2112	2115	2119	1.0	2154	2204	2208	9.1												
1440		1448	1453	2.9	09/03	0021	0054	0101	10	2252	2258	2301	3.4											
1645		1658	1709	13		0203	0228	0246	2.3	09/11	0137	0143	0148	2.2										
1743		1749	1756	4.4		0251	0259	0308	2.6		0507	0511	0516	2.1										
1806		1812	1819	6.6		0741	0745	0748	2.6		0552	0552	0558	1.5										
1847		1848	1855	46		1002	1005	1008	1.5		0728	0734	0903A	22										
2138		2145	2149	11		1123	1125	1143	1.4		1038	1051	1056	4.5										
				1244		1247	1250	1.5	1502		1503	1507	1.3											
				1756		1807	1820	1.3	1746		1749	1752	1.9											
								2300	2300		2304	1.2												

DATE	UNIVERSAL TIME				DATE	UNIVERSAL TIME				DATE	UNIVERSAL TIME			
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	0626	0630	0633	1.4		0509	0518	0524	15		0310	0313	0315	1.6
	0709	0713	0733	2.8		0830	0832	0838	1.9		0415	0425	0428	2.1
	0751	0755	0758	1.1		0924B	0925U	0952A	18		0530	0532	0537	5.3
	1149	1152	1212	2.5		1117	1117	1125	2.1		0543	0545	0548	5.1
	1338	1338	1342	1.0		1323	1331	1344	2.1		0637	0641	0652	3.2
	2059	2104	2146	3.1		2326	2334	2348	2.5		0658	0701	0703	2.6
	2336	2337	2346	1.4		09/21	0317	0320	0334		3.0	0804	0807	0818
09/13	0657	0717	0740	2.8	0335		0338	0341	2.4	0836	0844	0853	1.7	
	09/14	0157	0203	0207	1.1		0755	0759	0811	1.5	0918	0919	0927	2.2
0437		0440	0443	1.7	1455		1459	1503	1.1	1036	1040	1042	1.3	
0556		0600	0612	1.2	1700	1701	1705	2.6	1056	1103	1111	2.0		
1101		1106	1109	1.8	2045	2101	2106A	2.6	1140	1142	1147	2.2		
1445		1452	1505	4.1	2300	2307	2313	1.7	1659	1720	1738	2.3		
1730		1816	1915	4.5	09/22	0550	0552	0603	2.4	1854	1901	1907	2.2	
2125		2136	2148	2.4		0924	0927	0935	1.7	2002/10/01	0501	0505	0515	1.4
2310		2313	2317	1.2	1917	1921	1928	1.0	0523		0527	0531	1.0	
09/15	0411	0417	0419	1.7	09/23	0437	0440	0435	1.6		1532	1539	1546	1.3
	0441	0450	0458	3.9		1114	1119	1122	1.2		10/02	1209B	1217	1237
	0749	0752	0815A	3.7	09/24	1558	1559	1602	3.1	1538B		1632U	1643A	1.1
	0922	0923	0930	1.3		1958	2003	2008	1.7	1815	1821	1827	1.5	
	1255	1259	1303	1.2	2027	2032	2037	1.3	1834	1839	1845	2.0		
	1356	1400	1404	1.3	09/25	1558	1605	1615	2.0	1912	1915	1938	4.2	
	1534	1538	1545	3.1		1721	1728	1737	2.2	2112	2118	2124	2.0	
	1734	1736	1756	10	1811	1815	1819	1.3	2141	2146	2214	1.6		
1900	1904	1909	1.2	09/26	0028	0035	0038	1.3	2227	2241	2254	5.5		
2034	2039	2042	2.9		0155	0208	0215	2.9	10/03	0159	0221	0301	21	
2334B	2336U	2346A	1.7	0324	0328	0332	2.9	0331		0335	0338	1.4		
09/16	0130	0146	0221	2.4	0352	0400	0405	4.0	1007	1014	1035	1.4		
	0309	0310	0328	13	0421	0422	0426	1.8	1238B	1243U	1340	2.5		
	0340	0346	0446	5.0	0515	0519	0522	1.3	1530	—	1540	3.6		
	0852	0900	0910	1.6	0654	0655	0717	1.3	10/04	0041	0045	0107	10	
	1025	1026	1035	1.4	0816	0818	0820	1.1		0151	0155	0157	7.0	
	1156	1157	1200	1.2	1005	1007	1010	1.3	0420	0425	0446	4.1		
	1549	1555	1609	4.6	1334	1337	1344	1.7	0457	0501	0503	5.3		
	2000	2003	2038	5.0	1900	1922	1948	1.6	0536B	0537U	0606	40		
2156	2200	2202	2.7	2037	2037	2043	1.1	0845	0847	0855	2.0			
09/17	0201	0202	0229	5.2	09/27	0118	0148	0237	5.0	0910B	0911	0915	8.0	
	0412	0421	0437	1.2		0319	0327	0406	9.9	1026	1031	1045	6.2	
	0550	0551	0605	2.0	0757	0816U	0844A	4.8	1037B	1112U	1140	35		
	0626	0649	0919	8.6	1329B	1333U	1354	18	1200	1203	1207	3.2		
	0916	0920	0941	8.8	1645	1701	1709	3.2	1245	1250	1313	12		
	1038	1041	1104A	4.3	1859	1904	1909	3.4	1552	1554	1613	9.0		
	1739B	1739U	1744	2.8	1945B	1945U	1954A	14	1708	1709	1726	12		
	1923	1924	1928	2.5	09/28	0040	0112	0135	3.4	1911	1913	1922	5.7	
2125	2151	2200	4.0	0436		0440	0444	1.0	2003	2005	2021	4.8		
2357	2401	2419	2.8	0523	0525	0527	1.0	2052	2100	2104	4.5			
09/18	0113	0114	0123	3.8	0714	0718	0740	1.2	2235	2243	2308	27		
	0209	0219	0253	4.8	0728	0731	0734	1.1	2335	2335	2350	6.2		
	1018	1021	1045	3.1	1035	1055	1121	3.4	10/05	0237	0237	0244	2.8	
	1540	1606	1701	2.2	1919	1930	1934	2.0		0519	0522	0528	4.2	
	1717	1722	1733	3.9	2128	2131	2133	1.5	0730B	0732U	0736A	3.4		
	2109	2111	2128	1.7	09/29	0155	0201	0209	1.3	0753B	0753U	0756A	2.0	
	2148	2153	2200	1.0		0634	0638	0713	26	0853	0858	0904	2.5	
	09/19	0514	0517	0607	4.7	0844	0851	0945	7.8	1039	1046	1048	12	
0810		0815	0830	3.7	1446	1449	1509	9.3	1131	1132	1144	1.3		
1342		1345	1347	1.0	1917	1921	1928	1.0	1149	1155	1202	1.7		
1359		1400	1404	1.0	2130	2139	2143	1.1	2047	2105	2127	59		
1430		1432	1443	3.3	2202	2219	2223	1.5	2247	2252	2256	6.2		
					2251	2255	2303	2.1	2331	2337	2342	1.7		
					2320	2327	2332	5.3						

UNIVERSAL TIME					UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/10/06	0117	0122	0124	2.6	2002/10/17	0358	0400	0422	2.6	2002/10/21	1130	1204	1215	2.9
	0208	0212	0214	1.8		1123	1127	1132	1.4	cont.	1158	1222	1239	3.7
	0223	0226	0228	1.1		1143	1144	1221	2.3		1510	1510	1514	1.7
	0450	0452	0500	24		1158	1207	1226	3.5		2004	2008	2017	2.0
	1005	1010	1022	2.2		1400	1404	1410	1.5		2103	2105	2128	6.6
	1153B	1153U	1205A	10		1436	1440	1447	2.0		2342	2353	2406	4.7
10/07	1553	1555	1608	1.4		1540	1543	1546	1.2	10/22	0412	0413	0427	2.4
	1636	1657	1729	3.1		1855	1858	1913	3.0		0505	0519	0532	1.8
	2137	2156	2216	1.8		2218	2219U	2227	2.2		1532	1533	1700	10
10/08	0711	0714	0733	1.6	10/18	0002	0008	0012	3.1		2209	2228	2239	1.3
	0743	0746	0756	1.1		0059	0107	0112	2.5	10/23	0047	0116	0145	6.6
	0921	0925	0928	1.3		0237	0238	0242	2.5		0101	0101	0104	3.5
	1501	1502	1512	1.2		0528	0534	0542	2.0		1538	1616	1716	3.2
	1639	1651	1700	1.4		0657	0703	0734	1.2	10/24	0814	0817	0834	1.0
	1806	1811	1818	1.8		0932	0936	0942	2.7		1804	1810	1825	7.4
	1834	1837	1840	1.0		1002	1007	1010	3.0		2159	2203	2206	1.7
	2325	2326	2342	1.6		1015	1027	1031	2.4		2210	2213	2215	1.2
10/09	0643	0644	0649	1.0		1124	1128	1137	1.6	10/25	0608	0611	0613	1.0
	1327	1338	1349	1.1		1208	1211	1216	2.3		1320	1321	1335	1.1
10/10	1409	1412	1415	1.1		1317	1317	1325	1.6		1620	1643	1703	1.6
	1441	1451	1501	1.6		1343	1347	1353	1.7		1726	1737	1907	15
	2205	2214	2226	1.6		1523	1525	1543	2.1	10/26	0319	0327	0330	2.8
	2324	2325	2331	2.5		1933	1936	1941	4.1		1828	1838	1850	2.3
10/11	0153	0154	0202	1.2		2000	2000	2044	2.9	10/27	0353	0353	0400	1.6
	0435	0439	0447	1.1		2300	2306	2312	1.6		0652	0656	0658	1.3
	0832	0833	0844	2.4	10/19	0113	0118	0151	7.2		0820	0826	0832	1.2
	0934	0936	0939	1.7		0214	0220	0223	2.9		0908B	0912	0944A	1.3
	1015	1020	1026	2.0		0409	0425	0432	2.3		0956	1001	1040	1.6
	1112	1124	1138	1.9		1009	1013	1018	1.7		1726	1729	1737	1.6
	1421	1421	1426	1.3		1028	1055	1103	2.7		1746	1757	1822	1.9
	1705	1716U	2105A	3.7		1344	1349	1355	1.7		2030	2038	2108A	2.9
	2337	2337	2345	1.7		1756	1822	1846	1.5		2153	2204	2215	4.3
10/12	1917	1922	1931	2.6		1827	1827	1835	5.0	10/28	0025B	0027U	0040	1.6
10/13	1402	1403	1409	1.1		1907	2009	2121	5.9		0909	0931	0934	2.1
	1750	1759	1813A	4.7		2114	2116	2124	5.0		1024	1028	1038	1.4
	2147	2151	2155	1.0		2307B	2307U	2339	7.9		1203	1204	1229	17
	2342	2410	2508	22	10/20	0037	0044	0117	18		1338	1416	1435	1.1
10/14	0246	0248	0315	5.8		0209	0222	0252	7.5		1414	1415	1424	2.5
	0931	0935	0958	4.7		0333	0337	0423	15		1600	1604	1625	1.2
	1419	1423	1426	1.3		0501	0514	0537	12		1629	1639	1656	1.0
	1958	2002	2026	4.9		0527	0529	0541	6.9		1828	1829	1834	2.8
	2319	2328	2338	3.5		0612	0614	0622	3.6		1853	1901	1909	5.0
10/15	0516	0516	0520	2.2		0900	0902	0910	2.0		1944	1947	1952	2.3
	0639	0642	0646	1.6		0911	0913	0929	2.4		2139	2143	2147	1.7
	0913	0917	0921	1.6		1025	1037	1044	2.8		2335	2339	2342	1.1
	1325	1326	1337	2.0		1357	1359	1416	5.9	10/29	0133	0137	0146	1.1
	1350	1353	1356	1.7		1411	1415	1442	6.6		0309	0312	0333	11
	1411	1417	1444	10		1422	1424	1503	18		0418	0423	0432	4.6
	1713	1714	1721	1.0		1803	1804	1807	2.6		0549	0552	0555	2.9
	2226	2234	2238	1.1		1914	1922	1926	3.1		1232	1233	1237	1.4
10/16	0313	0314	0322	7.1		2126	2137	2148	6.3		1344	1346	1358	2.2
	0422	0427	0433	2.9	10/21	0000	0023	0040	2.9		1420	1421	1432	2.2
	1149	1149	1153	1.8		0056	0056	0104	3.3		1448	1448	1456	1.6
	1231	1239	1251	1.8		0418	0419	0424	3.6		1537	1537	1546	8.7
	1445	1446	1451	1.2		0457	0603	0614	3.1		1629	1631	1644	9.7
	1551	1627	1658	6.5		0835	0836	0846	2.3		1913	1920	1927	1.9
	1931	1933	1934	1.0							1930	1934	1954	2.5
											2147	2151	2157	1.8
											2303	2311	2313	5.4
											2323	2328	2332	3.3

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2002/10/30	0059	0118	0136	3.7	2002/11/06	0509	0528	0559	7.2	2002/11/13	0341	0511	0552	3.2
	0249	0251	0319	3.6		1159	1207	1214	1.9		1002	1006	1013	1.9
	0334	0341	0345	1.9		1434	1438	1452	2.7		1438	1442	1511	3.0
	0406	0406	0410	6.0		1444	1446	1456	2.6		1728	1730	1827	1.9
	0456	0504	0509	3.9		1642	1643	1648	3.7		2303	2417	2452	10
	0633	0633	0636	1.9		1832	1835	1846	1.6	11/14	1017	1021	1024	2.6
	0640	0643	0646	2.2		1944	1944	1952	2.2		1029	1034	1039	2.1
	0940	0943	0945	1.6		2018	2018	2023	2.4		1107	1111	1115	5.5
	1627	1638	1654	5.5		2031	2034	2036	1.1		1341	1345	1404	8.1
	1714	1718	1720	5.2		2107	2110	2115	1.2		1520	1522	1524	1.8
	1734	1735	1738	5.4		2140	2140	2144	4.5		1713	1716	1721	2.2
	1919	1925	1929	2.8		2311	2320	2341	7.3		2007	2009	2011	4.7
	2014	2017	2020	2.1	11/07	0626	0633	0654	2.5		2221	2226	2230	10
	2120	2121	2125	3.4		0903	0904	0908	2.8		2315	2316	2321	1.9
10/31	0211	0217	0221	5.7	11/08	0502	0504	0518	1.3	11/15	0106	0124	0134	24
	0430	0433	0437	2.1		0820	0848	0933	2.1		0226	0229	0240	5.8
	0918	0926	0939	11		1001	1009	1015	2.7		0545	0548	0552	8.9
	1025	1033	1052A	9.5		1059	1059	1109	1.9		0828	0833	0914	3.3
	1440	1444	1450	1.7		1222	1223	1231	5.8		1133B	1155	1211	6.2
	1617	1627	1637	3.9		1351	1355	1358	2.0		1345	1347	1357	3.2
	1647	1652	1655	120		1802	1818	1903	7.4		1438	1441	1443	1.9
	1802	1833	1846	8.0		2216	2220	2224	1.3		2255	2306	2321	6.4
	2319	2327	2352	2.6	11/09	0422	0426	0430	1.6	11/16	0623	0624	0632	1.5
						0944	0954	1003	4.7		0634	0635	0644	1.9
						1148	1148	1218	6.3		1007	1012	1039	1.8
2002/11/01	0123	0132	0140	3.5		1309	1322	1428	46		1100B	1102U	1113A	5.4
	0212	0215	0217	2.6		1522	1526	1530	4.1		1358	1359	1415	8.6
	0806	0821	0825	1.7		1742	1744	1748	7.9	11/17	0104	0105	0122	2.2
	1031	1039	1043	7.1		2312	2319	2324	5.8		0251	0258	0305	1.7
	1614	1620	1640	1.8	11/10	0117	0133	0141	5.5		0504	0543	0552	5.0
11/02	0528	0607	0704	3.9		0307	0314	0358	24		0928	0957	1005	4.2
	0811	0813	0816	2.3		0528	0533	0541	2.3		1116	1119	1122	1.8
	1355	1355	1359	1.4		0835	0928	1016	5.9		1229	1234	1239	7.0
	2208	2219	2250	4.5		1103	1107	1112	5.5		1435	1452	1516	20
11/03	0554	0605	0641	6.3		1136	1138	1149	5.1		2134	2136	2143	7.9
	0951	0957	1005	2.4		1143	1217	1242	5.4	11/18	0024	0025	0029	4.5
	1400	1401	1438	13		1149	1152	1155	3.9		0204	0206	0222	74
	1734	1801	1817	1.7		1335	1346	1404	4.5		0707	0710	0715	2.2
	1914	1922	1930	1.2		1459	1504	1531	3.4		1005	1101	1131	2.4
11/04	0200	0204	0206	1.7		1556	1605	1613	2.6		1200	1204	1208	1.9
	0324	0330	0346	3.7		1640	1655	1702	3.3		1304	1308	1312	1.4
	1125B	1127U	1136	3.7		1756	1804	1817	1.9		1616	1616	1621	2.2
	1811B	1822U	1906	4.4		1844	1856	1908	2.1		1656	1657	1702	6.3
	1939	2024	2046	2.1		1949	1958	2006	1.6		2130	2213	2231	2.1
	2154	2158	2203	2.1		2026	2033	2043	1.5	11/19	0728	0737	0753	4.9
	2233	2243	2249	5.4		2118	2129	2205	2.3		1205	1208	1210	1.8
	2347	2352	2358	2.1		2339	2351	2411	3.2		1205	1214	1216	2.5
11/05	0330	0331	0425	1.2	11/11	0117	0123	0140	4.9		1950	1951	1957	1.7
	0449	0456	0457	1.0		0729	0731	0807	29	11/20	0141	0146	0206	1.7
	0552	0554	0557	1.2		1236	1250	1353	7.1		0302	0312	0316	1.4
	0945	0947	0949A	1.6		1437	1519	1739	18		0442	0450	0457	1.1
	1300	1301	1305	7.5		1437	1439	1457	6.5		1110B	1122U	1141A	1.3
	1609	1610	1620	6.4		2241	2325	2443	7.4		1522B	1522U	1529	1.0
	1636	1638	1704	1.4	11/12	0028	0030	0051	4.8		1625	1633	1636	3.8
	1818	1822	1835	2.7		0352	0403	0419	3.5		1800	1806	1819	14
	2043	2044	2054	2.8		0746	0752	0800	5.3		1927	1929	1934	1.6
	2103	2109	2136	3.4		1756	1818	1839	9.9		2356	2356	2359	5.2
	2152	2153	2219	9.5		1844	1855	1934	29					

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DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR	DATE	BEG.	MAX.	END.	STR
2002/11/21	0305	0310	0316	2.1	2002/11/29	0429	0443	0455	2.9	2002/12/15	1125	1136	1144	3.1
	0639	0642U	0735A	4.0	11/30	2208	2212	2216	1.1	cont.	1546	1553	1608	4.3
	0809	0809	0821	2.4							1801	1804	1807	5.9
	1102	1105	1111	6.6	2002/12/01	0355	0356	0406	1.7		2007	2011	2016	2.5
	1338	1341	1344	1.2		0528	0541	0554	1.3		2109	2118	2131	2.6
	1644	1646	1655	3.8		1229B	1238	1254	1.0		2231	2236	2240	3.1
	1902	1902	1907	1.8		1310	1347	1405	1.1	12/16	0142	0145	0150	2.3
	1953	1954	2004	3.8		1525B	1533	1539	5.5		0215	0226	0242	4.3
	2025	2033	2042	2.2	12/02	0155	0157	0219	2.4		0421	0425	0429	2.1
11/22	0217	0217	0222	1.0		1927B	1929U	1958	9.5		0624B	0637	0653	2.9
	1540	1540	1546	3.4		2041B	2041U	2104A	1.8		0704	0725	0823	4.1
	2228	2233	2259	3.9	12/03	0814	0817	0842	8.3		0926	0926	0956	4.8
11/23	0108	0112	0114	1.3		1259	1306	1313	1.2		1111B	1119U	1137A	25
	0119	0125	0138	2.1	12/04	2240	2253	2257A	25		1906	1910	1919	2.9
	0755	0804	0806	4.6	12/05	0439	0450	0502	1.1		1933	1934	1950	3.5
	0840	0842	0846	1.9		2201	2206	2212	1.0		2026	2030	2038	2.7
	1051	1051	1058	1.6	12/06	0854	0855	0903	2.1		2102	2109	2119	7.9
	1310	1313	1315	1.0		1035	1046	1059	1.7		2248	2251	2326	19
	1353	1407	1424	1.6	12/07	0955	1000	1005	2.1		2330	2338	2407	13
	1739	1745	1749	1.0		1846	1851	1856	1.0	12/17	0056	0100	0113	6.0
	1801	1810	1813	2.7	12/08	0357	0401	0404	1.0		0158	0203	0226	1.8
	2101	2106	2112	1.4		0824	0825	0838	2.5		0247	0250	0259	2.8
11/24	0208	0213	0217	1.0		2321	2331	2335	2.5		0454	0505	0530	5.3
	0219	0223	0226	3.7	12/09	0627	0632	0636	1.5		0552	0554	0621	3.5
	0228	0231	0235	2.8		1212	1217	1302	1.1		0635	0636	0646	2.2
	0338	0347	0359	1.8		1708	1713	1736	1.9		0755	0819	0859	4.1
	0445	0449	0453	1.2		1955	2000	2006	2.4		1001	1007	1020A	5.9
	0815	0819	0822	4.8		2134	2137	2141	4.1		1817	1821	1824	3.1
	1728B	1728U	1832	1.8	12/10	0126	0130	0139	5.5		1926	1927	1938	6.4
	2035B	2035U	2035A	6.4		0354	0356	0405	2.9		2257	2339	2415	16
11/25	1038	1042	1045	1.3		1057	1102	1108	2.1	12/18	0224	0224	0230	3.5
	1623	1710	1800	1.3		1219	1226	1231	11		0231	0232	0241	6.9
	2025	2033	2044	1.2		1715	1722	1727	2.1		0538	0538	0544	1.6
	2230	2233	2235	1.0		1934B	1934U	2015A	2.6		0635	0639	0713	24
	2342	2357	2412	1.7	12/11	0600	0607	0614	2.1		1141	1147	1151	7.1
11/26	1210	1211	1216	1.0		1402	1410	1419	7.1		1437	1441	1450	1.8
	1826	1835	1839	3.6		1655	1706	1715	1.9		1727	1731	1740	2.7
	2305	2306	2313	2.6		1941	1955	2002	2.3		1932	1937	1941	1.4
11/27	0113	0119	0140	2.4	12/13	0106	0106	0135	3.0		2023	2028	2032	1.9
	0243	0246	0307	6.7		0436	0442	0447	1.5		2125	2128	2133	1.6
	0902	0905	0907	1.4		0834	0835	0842	3.4		2209	2212	2214	2.0
	0933	0943	0951	2.3		0920	0936	0944	1.9		2355	2358	2405	1.2
	1637	1643	1653	3.8		1013	1021	1030	2.4	12/19	0032	0035	0046	2.7
	2127	2127	2130	3.5		1325	1332	1338	8.0		0128	0144	0146	1.6
	2220	2224	2231	2.9		1527	1532	1537	1.6		0308	0308	0313	1.7
	2258	2302	2316	1.9		1710	1725	1738	6.8		0437	0446	0456	1.3
11/28	0036	0042	0048	2.4		2247	2255	2300	1.7		0515	0602	0622	3.7
	0106	0106	0113	3.7	12/14	0428	0435	0440	1.9		0649	0652	0657	2.1
	0258	0258	0301	2.4		0640	0648	0652	1.1		0730	0730	0740	2.9
	0434	0437	0439	1.0		0816	0838	0858	3.9		0815	0821	0823	2.3
	0520	0543	0604	2.5		1158	1201	1203	2.0		0935	0940	0946	2.3
	0806	0821	0831	4.3		1444	1458	1504	2.9		1115	1118	1122	1.4
	1005	1022	1033	3.4		2032	2034	2058	2.1		1301	1310	1330	2.2
	1134B	1134U	1217A	8.4	12/15	0028	0029	0033	2.1		2005	2007	2017	2.3
	1246	1256	1303	1.7		0406	0410	0413	2.5		2138	2143	2303	27
	1358	1408	1428	3.5		0425	0425	0432	1.8	12/20	0034	0036	0057	4.5
	1525	1526	1529	2.0		0626	0626	0638	2.0		0144	0145	0147	1.4
	1656	1701	1706	1.8		0802	0803	0808	2.0		0539	0541	0554	1.6
	1943	1946	1949	1.4		1020	1021	1027A	2.8		0759	0801	0818	1.9
	2151	2224	2244	3.1										

CONTINUED.

CONTINUED.

DATE	UNIVERSAL TIME			STR
	BEG.	MAX.	END.	
2002/12/20	0823	0824	0834	8.5
cont.	1125	1128	1130	2.7
	1247	1253	1257	4.2
	1316	1319	1326	68
	1857	1904	1906	3.5
	2014	2014	2024A	7.2
	2304	2308	2311	1.7
	2319	2321	2326	2.0
12/21	0002	0002	0004	1.7
	0249	0250	0253	2.4
	0342	0342	0354	2.9
	0438	0441	0445	2.2
	0440	0453	0505	4.6
	0950	0951	0958	1.6
	1905	1905	1917	1.0
	2144	2147	2151	1.2
12/22	0232	0246	0323	11
	0732	0736	0740	2.3
	1403	1408	1416	2.2
	1535	1539	1541	1.5
	2141	2149	2154	1.9
12/23	0715	0719	0722	3.8
	1158	1202	1209	1.1
	1230	1234	1241	1.3
	1520B	1520U	1530	1.6
	2105	2115	2125	1.7
12/24	0524	0527	0534	5.8
	1326B	1326U	1336	1.6
	1446B	1446U	1539	5.8
	1811	1821	1833	2.7
	2316	2336	2339	2.7
12/25	0540	0546	0552	4.8
	1153	1207	1214	3.5
	1749	1809	1829	2.9
	2129	2137	2143	1.7
	2244	2248	2251	1.1
12/26	0159	0201	0212	1.4
	0823	0835	0851	1.9
12/28	2304	2314	2323	1.4

X-RAY FLARE ANALYSIS, 2001 - 2002.

The following is an analysis of solar x-ray flares showing monthly values of ‘mean daily output’ (MDO), ‘mean x-ray strength’ (MXS), and ‘mean daily mean’ (MDM), all expressed in microWatts / square metre.

All data are based on US NOAA satellite data.

d = number of days of data.

n = number of events.

	DATE	MDO	MXS	MDM	d	n
2001	January	19.9323	3.3582	3.3294	31	184
	February	5.7786	2.6097	1.9944	28	62
	March	49.4613	7.1650	5.2348	31	214
	April	210.1867	32.5031	30.0067	30	194
	May	19.5903	4.1313	3.5379	31	147
	June	39.0267	5.2268	4.6003	30	224
	July	6.6484	2.8233	2.0953	31	73
	August	57.4161	5.9528	4.6629	31	299
	September	80.9167	9.1951	8.9119	30	264
	October	71.2226	8.3317	7.5783	31	265
	November	78.6800	7.7137	7.3852	30	306
	December	97.7903	14.7160	14.1268	31	206
	Means	61.3973	9.1920	7.7822	365	2438
2002	January	38.8194	5.8990	6.2285	31	204
	February	37.2821	5.0430	4.7604	28	207
	March	25.3387	4.3398	4.7932	31	181
	April	42.6167	5.4404	5.6144	30	235
	May	33.7613	4.6310	4.2628	31	226
	June	6.7533	2.5646	1.9844	30	79
	July	96.3355	11.4862	12.0660	31	260
	August	85.8323	8.0387	8.0513	31	331
	September	25.5800	3.5693	3.6182	30	215
	October	38.0194	4.8905	4.2919	31	241
	November	32.0333	4.5762	4.4138	30	210
	December	21.1161	4.2506	3.5171	31	154
	Means	40.4638	5.8078	5.3199	365	2543

SMOOTHED NOAA X-RAY FLARE MONTHLY VALUES — 1994 - 2002.

Data based upon NOAA monthly mean values of MEAN DAILY OUTPUT.

Unit used in observed values is 1 microWatt per square metre.

Smoothing methods used are the Waldmeier and the Barnes-13 methods.

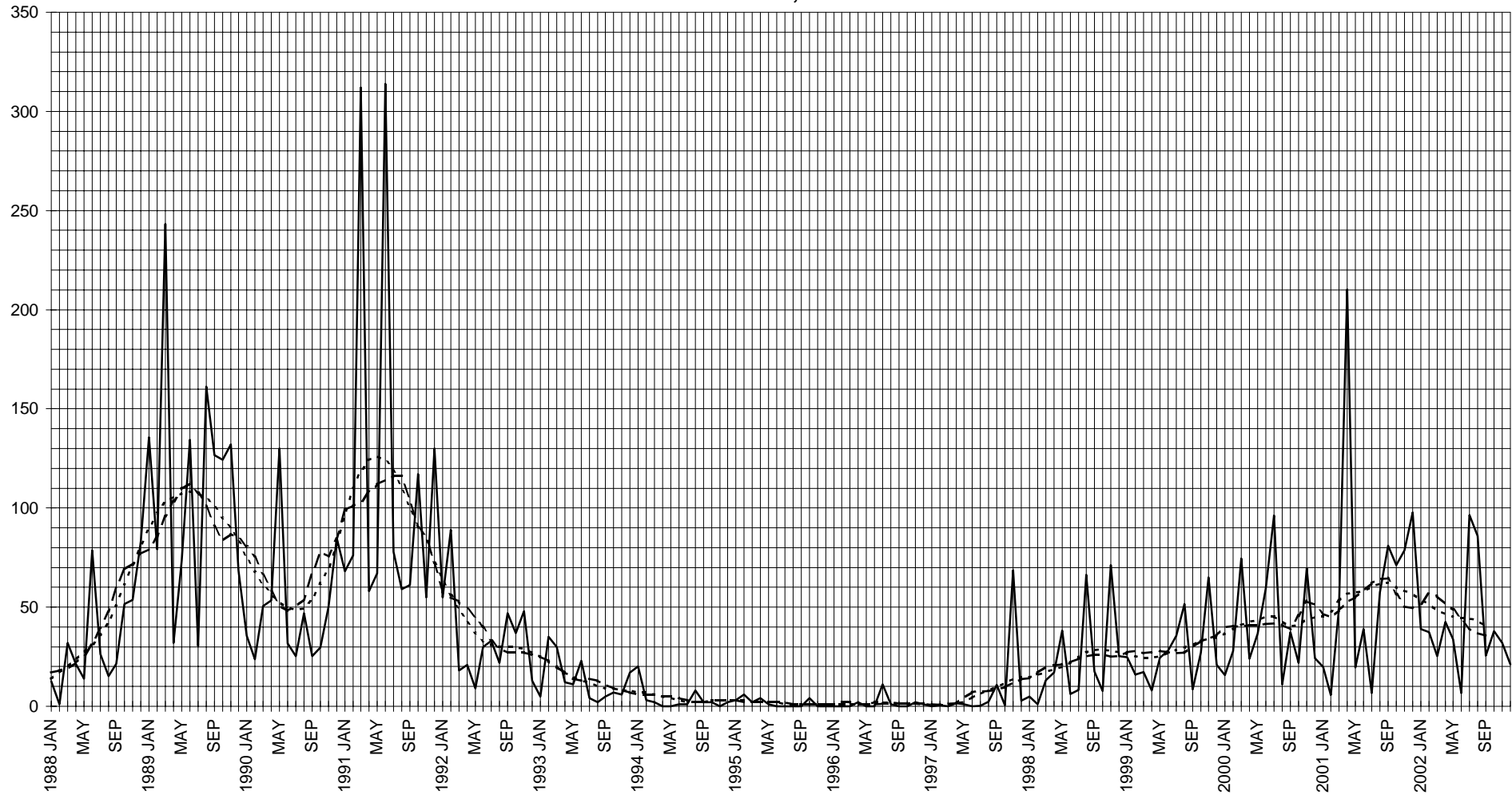
MONTH	Observed	S ^W	S ^{B13}	MONTH	Observed	S ^W	S ^{B13}	MONTH	Observed	S ^W	S ^{B13}
1994 Jan	20.0742	5.62	7.31	1997 Jan	0.0000	1.04	0.82	2000 Jan	15.7710	39.76	36.51
Feb	3.4821	5.72	6.52	Feb	0.6250	0.67	0.67	Feb	27.7931	40.60	38.94
Mar	2.3968	5.81	5.58	Mar	0.0806	1.20	0.87	Mar	74.4806	40.12	41.09
Apr	0.4333	5.47	4.62	Apr	1.5167	1.67	1.17	Apr	23.9533	41.11	42.59
May	0.0516	5.04	3.76	May	0.9032	4.44	2.43	May	36.5710	41.09	43.63
Jun	1.2467	4.19	3.00	Jun	0.0367	7.28	4.44	Jun	59.5500	41.43	45.02
Jul	1.0323	2.88	2.43	Jul	0.2548	7.58	6.23	Jul	96.2226	41.74	45.14
Aug	7.6323	2.28	2.33	Aug	2.2839	7.80	8.05	Aug	11.1194	41.00	43.03
Sep	1.6600	2.37	2.45	Sep	10.8833	8.36	9.90	Sep	37.4533	39.04	40.18
Oct	2.3194	2.52	2.57	Oct	0.4516	9.55	11.90	Oct	21.9677	45.76	41.06
Nov	0.4500	2.71	2.71	Nov	68.5467	11.75	13.78	Nov	69.7133	52.81	43.83
Dec	2.1677	2.70	2.78	Dec	2.9000	13.57	14.64	Dec	24.2516	51.25	44.82
1995 Jan	3.2074	2.63	2.77	1998 Jan	4.8613	14.16	14.68	2001 Jan	19.9323	46.66	45.48
Feb	6.0214	2.28	2.62	Feb	1.0286	17.15	15.65	Feb	5.7786	44.86	48.04
Mar	2.0867	1.91	2.36	Mar	13.1774	20.09	17.31	Mar	49.4613	48.60	53.01
Apr	4.2033	1.93	2.16	Apr	17.0967	20.66	18.61	Apr	210.1867	52.46	56.81
May	0.9968	2.02	1.93	May	38.1516	21.07	19.94	May	19.5903	54.89	57.52
Jun	0.0900	1.93	1.65	Jun	6.2567	22.12	22.03	Jun	39.0267	58.32	58.13
Jul	0.3129	1.70	1.36	Jul	8.2097	23.89	24.87	Jul	6.6484	62.17	60.12
Aug	0.1065	1.32	1.11	Aug	66.2581	25.35	27.24	Aug	57.4161	64.27	61.99
Sep	0.1400	0.99	0.95	Sep	17.4233	26.15	28.30	Sep	80.9167	64.58	62.46
Oct	4.4581	0.79	0.85	Oct	7.6194	25.95	28.51	Oct	71.2226	56.59	60.14
Nov	0.4000	0.66	0.76	Nov	71.2567	25.00	28.20	Nov	78.6800	50.20	58.38
Dec	0.0000	0.63	0.68	Dec	25.3548	25.33	27.35	Dec	97.7903	49.45	56.74
1996 Jan	0.0742	1.07	0.77	1999 Jan	24.8742	27.38	26.30	2002 Jan	38.8194	51.84	53.91
Feb	0.0000	1.52	0.99	Feb	15.9857	27.90	25.18	Feb	37.2821	56.76	51.56
Mar	0.0517	1.54	1.17	Mar	17.4032	26.92	24.49	Mar	25.3387	55.64	48.84
Apr	1.5567	1.35	1.30	Apr	8.0067	27.37	24.61	Apr	42.6167	51.95	46.54
May	0.3935	1.24	1.48	May	24.4419	27.92	25.36	May	33.7613	48.62	45.09
Jun	0.0400	1.36	1.75	Jun	28.0400	27.46	26.82	Jun	6.7533	43.49	44.32
Jul	10.8226	1.39	1.90	Jul	35.5097	26.90	28.44	Jul	96.3355	39.26	44.37
Aug	0.5778	1.41	1.83	Aug	51.5871	27.01	29.56	Aug	85.8323	36.98	43.33
Sep	0.0000	1.44	1.64	Sep	8.5333	29.88	30.98	Sep	25.5800	35.62	40.46
Oct	0.0000	1.44	1.46	Oct	27.1839	32.93	32.79	Oct	38.0194	—	—
Nov	2.4467	1.46	1.29	Nov	64.8733	34.09	33.94	Nov	32.0333	—	—
Dec	0.7581	1.48	1.10	Dec	20.9065	35.91	34.65	Dec	21.1161	—	—

OBSERVED and SMOOTHED NOAA X-RAY FLARE MEAN DAILY OUTPUT VALUES (IN MICROWATTS PER SQUARE METRE)

1988-2002

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE PAGE D19





Section E

2800 MHz (107 mm) SOLAR FLUX.

Daily readings on the wavelength of 107 mm are obtained at Penticton BC, Canada, at approximately 2000 UT (local apparent mid-day) .

These figures are on an approximate scale of 60 to 500; the actual lowest observed value is 63.0 on 1954/06/27, adjusted to 65.1. The highest observed value being 457.0 was obtained on 1947/04/07, being adjusted to 457.9 .

The lowest adjusted value is 61.8 on 1953/02/24, observed as 63.1 . The highest adjusted value is the 1947/04/07 value of 457.9 .

The most recent maximum observed value is 293.8 in March 2001 (adjusted to 292.9)*, and the most recent minimum observed value is 64.9 in July 1996 (adjusted to 67.0). The most recent minimum adjusted value is 65.7 in February 1996 (observed as 67.5).

The values for 2002 are on pages E2 and E3 of this report. The first of these two tables contains the observed values, some of which are corrected for the occasional burst. The second table contains values adjusted to the distance of 1 AU (149 597 870 km).

* Some values were much higher than this, but were not corrected for bursts in progress.

As Penticton gets three readings a day, at 1700, 2000 and 2300 UT (in summer, March to October, inclusive), and 1800, 2000 and 2200 UT (in winter, November to February, inclusive), two monthly means will be stated from 2001 onwards, on pages E2 and E3.

The top values are the means of the 2000 UT readings only, stated for continuity sake; the bottom values (on the shaded lines) are the thrice-daily means of the month concerned.

$$\begin{aligned} 1 \text{ Flux Unit} &= 100 \text{ yoctoWatts/m}^2/\text{Hz.} \\ &= 1 \times 10^{-22} \text{ Watt/m}^2/\text{Hz.} \end{aligned}$$

THE TERM 'JANSKY' IS NOT USED IN THIS PUBLICATION DUE TO THE TERM'S ORIGINAL USE AS $1 \text{ W/m}^2/\text{Hz}$.

All flux data, courtesy of the Herzberg Institute of Astrophysics, National Research Council, Canada.

DAILY 2800 MHz SOLAR RADIO FLUX OBSERVED INDICES 2002.

All data obtained by the Dominion Radio Astrophysical Observatory, Penticton, British Columbia, Canada.

All observations carried out at local apparent mid-day, approximately 2000 UT.

Unit used is $1 \times 10^{-22} \text{ W/m}^2/\text{Hz}$.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	232.2	245.6	187.7	207.0	162.4	178.8	147.4	192.6	180.5	139.8	162.2	149.6	01
02	231.1	240.6	191.0	206.0	169.0	174.9	148.5	180.3	173.8	135.8	164.6	146.1	02
03	220.3	232.9	182.7	209.4	179.1	170.4	*172.5	167.8	171.4	145.9	169.2	145.9	03
04	218.2	234.6	174.9	216.2	189.5	169.8	146.3	150.9	171.3	157.5	177.4	148.7	04
05	212.2	220.6	172.2	217.4	180.0	159.0	138.8	141.9	175.2	155.1	183.1	148.7	05
06	196.6	202.5	177.8	206.3	190.8	154.5	133.5	144.6	178.1	161.7	184.5	148.2	06
07	188.6	191.7	179.7	207.9	186.8	158.3	136.9	136.2	182.8	163.8	189.8	151.1	07
08	199.2	191.5	176.8	206.2	186.6	155.2	130.9	134.6	191.6	165.4	189.0	154.4	08
09	228.5	199.4	207.7	205.0	190.0	157.1	136.3	140.1	206.0	167.2	190.6	156.3	09
10	224.6	216.5	179.3	194.3	191.0	151.6	128.8	148.4	220.5	171.9	191.4	161.4	10
11	228.9	201.7	182.3	197.4	188.0	147.8	136.4	172.3	216.1	179.4	184.7	152.3	11
12	233.3	208.3	178.4	211.9	183.3	141.7	133.2	183.9	212.4	180.4	178.2	153.1	12
13	240.7	203.5	184.3	226.0	172.0	133.4	134.9	191.8	206.1	179.2	182.4	166.9	13
14	229.0	196.1	180.7	210.3	160.7	131.4	143.8	208.1	206.9	181.2	184.1	185.9	14
15	218.3	195.0	175.9	203.3	159.2	135.3	*323.6	210.3	187.8	176.8	197.5	203.0	15
16	216.1	193.5	184.6	195.7	158.4	136.7	171.5	213.8	182.6	182.5	199.2	202.9	16
17	211.8	196.6	184.4	193.5	157.1	142.9	180.0	226.7	194.0	178.9	184.7	212.5	17
18	210.5	192.8	178.1	188.2	163.0	142.9	180.7	241.0	176.8	172.6	178.9	196.9	18
19	213.7	189.4	174.8	179.7	170.9	145.8	182.3	237.0	165.3	179.5	168.2	192.9	19
20	222.2	193.4	187.8	177.3	171.3	145.1	184.8	227.5	164.4	180.3	159.1	196.6	20
21	224.5	201.1	174.1	173.4	185.9	139.6	182.8	219.9	158.6	182.5	150.9	183.9	21
22	228.7	191.9	171.6	169.9	181.1	142.0	189.7	220.1	160.0	169.4	149.1	172.0	22
23	226.5	188.2	170.4	175.3	180.3	142.8	198.3	224.5	153.8	163.6	147.5	158.9	23
24	230.8	192.8	175.3	176.9	189.1	150.3	208.4	195.6	157.9	160.3	146.2	147.3	24
25	234.8	210.6	170.0	167.3	182.6	144.7	217.7	178.6	153.4	172.9	136.8	131.9	25
26	256.5	207.5	165.7	162.6	183.1	143.8	241.5	168.6	149.9	158.0	142.3	127.4	26
27	248.0	198.6	169.1	156.9	186.7	138.6	230.8	161.4	151.6	157.1	142.6	116.5	27
28	259.8	204.2	176.2	147.1	186.4	137.3	238.8	163.2	148.6	158.3	139.7	116.9	28
29	261.0	—	181.3	153.0	184.8	142.7	234.0	169.3	138.1	161.6	141.3	114.8	29
30	256.3	—	188.7	153.4	180.1	146.5	227.2	—	139.7	167.7	146.2	113.8	30
31	242.6	—	204.4	—	181.9	—	208.5	180.3	—	170.2	—	115.1	31

MEA	227.3	205.0	180.3	189.8	178.4	148.7	179.6	184.4	175.8	167.0	168.7	157.2	MEAN
THRICE-DAILY	227.6	205.2	180.7	190.2	179.5	149.4	176.7	183.6	176.3	167.9	169.4	157.5	THRICE-DAILY

2002 Annual Mean : 180.1

* = burst in progress.

DAILY 2800 MHz SOLAR RADIO FLUX INDICES - 2002 — **ADJUSTED TO 1 AU.**
 All data obtained by the Dominion Radio Astrophysical Observatory, Penticton, British Columbia, Canada.

All observations carried out at local apparent mid-day, approximately 2000 UT.
 Unit used is $1 \times 10^{-22} \text{ W/m}^2/\text{Hz}$.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	224.5	238.5	184.3	206.7	164.9	183.9	152.3	198.3	183.8	140.1	159.7	145.5	01
02	223.5	233.7	187.6	205.9	171.7	180.0	153.5	185.7	176.9	136.0	162.1	142.0	02
03	213.0	226.3	179.6	209.4	182.0	175.4	*178.3	172.7	174.4	146.1	166.5	141.8	03
04	211.0	228.1	172.0	216.3	192.7	174.7	151.3	155.3	174.2	157.6	174.4	144.5	04
05	205.2	214.5	169.4	217.6	183.2	163.7	143.5	146.0	178.1	155.1	180.0	144.4	05
06	190.1	196.9	175.0	206.7	194.3	159.1	138.0	148.8	180.9	161.6	181.2	143.9	06
07	182.4	186.6	177.0	208.4	190.3	163.1	141.5	140.1	185.6	163.5	186.4	146.6	07
08	192.6	186.4	174.2	206.8	190.2	159.9	135.3	138.3	194.4	165.1	185.5	149.8	08
09	220.9	194.1	204.8	205.8	193.7	161.9	140.9	144.0	209.0	166.8	187.0	151.6	09
10	217.3	210.9	176.9	195.1	194.8	156.2	133.1	152.4	223.5	171.4	187.7	156.5	10
11	221.4	196.6	180.0	198.3	191.8	152.4	141.0	176.9	219.0	178.7	181.0	147.7	11
12	225.7	203.1	176.2	213.0	187.1	146.2	137.7	188.8	215.1	179.7	174.6	148.4	12
13	232.9	198.5	182.1	227.3	175.6	137.6	139.4	196.8	208.6	178.3	178.6	161.8	13
14	221.6	191.3	178.6	211.6	164.2	135.6	148.6	213.5	209.2	180.2	180.2	180.1	14
15	211.2	190.3	174.0	204.7	162.7	139.7	*334.3	215.7	189.9	175.7	193.2	196.6	15
16	209.1	188.9	182.7	197.2	162.0	141.0	177.2	219.1	184.5	181.4	194.8	196.5	16
17	205.0	192.0	182.7	195.0	160.7	147.5	185.9	232.3	195.9	177.7	180.5	205.8	17
18	203.8	188.4	176.5	189.8	166.8	147.5	186.6	246.9	178.4	171.3	174.8	190.6	18
19	206.9	185.1	173.3	181.4	175.0	150.5	188.3	242.6	166.7	178.1	164.3	186.7	19
20	215.2	189.1	186.3	179.0	175.4	149.8	190.7	232.8	165.8	178.7	155.3	190.3	20
21	217.5	196.7	172.8	175.1	190.4	144.2	188.7	225.0	159.8	180.8	147.2	177.9	21
22	221.5	187.9	170.4	171.7	185.6	146.6	195.8	225.1	161.1	167.7	145.5	166.4	22
23	219.4	184.2	169.4	177.2	184.8	147.5	204.6	229.5	154.8	161.9	143.8	153.7	23
24	223.6	188.9	174.3	178.9	193.9	155.3	215.0	199.8	158.9	158.5	142.5	142.5	24
25	227.6	206.4	169.1	169.3	187.4	149.5	224.5	182.4	154.2	170.9	133.2	127.6	25
26	248.7	203.5	164.9	164.7	188.0	148.6	249.1	172.2	150.6	156.1	138.5	123.2	26
27	240.5	194.9	168.4	159.0	191.6	143.2	238.0	164.7	152.2	155.2	138.8	112.7	27
28	252.0	200.4	175.6	149.2	191.4	141.9	246.2	166.4	149.1	156.3	136.0	113.1	28
29	253.2	—	180.8	155.2	189.8	147.5	241.1	172.6	138.6	159.4	137.5	111.0	29
30	248.8	—	188.2	155.6	185.1	151.4	234.1	—	140.1	165.3	142.1	110.1	30
31	235.5	—	204.0	—	187.0	—	214.8	183.7	—	167.7	—	111.3	31

MEAN	220.1	200.1	178.4	191.1	182.4	153.4	185.5	188.9	177.8	165.9	165.1	152.3	MEAN
THRICE-DAILY	220.4	200.3	178.9	191.4	183.5	154.1	182.4	188.2	178.3	166.8	165.7	152.6	THRICE-DAILY

2002 Annual Mean : 180.0

* = burst in progress.

SMOOTHED NRCC *ONCE-DAILY* 2800MHz SOLAR FLUX MONTHLY VALUES.

Data based upon NRCC (ONCE-DAILY) monthly mean values ADJUSTED TO THE DISTANCE OF 1 AU.
Unit used in observed values is 1×10^{-22} Watt/m²/Hz.

Smoothing methods used are the Waldmeier and the Barnes-13 methods.

MONTH	Adjusted	S ^W	S ^{B13}	MONTH	Adjusted	S ^W	S ^{B13}	MONTH	Adjusted	S ^W	S ^{B13}
1994 Jan	111.3	92.6	94.8	1997 Jan	71.6	73.4	73.3	2000 Jan	153.9	175.7	174.1
Feb	97.2	91.0	92.8	Feb	72.0	73.6	73.5	Feb	169.9	177.1	177.5
Mar	89.5	89.9	90.5	Mar	72.8	75.1	74.3	Mar	206.1	178.7	180.9
Apr	79.7	89.1	88.2	Apr	75.0	76.8	75.5	Apr	185.5	180.8	183.3
May	81.7	87.9	86.1	May	76.3	78.3	76.9	May	188.7	180.5	184.1
Jun	79.7	86.5	84.3	Jun	74.0	80.0	78.6	Jun	185.5	180.2	184.4
Jul	83.2	84.4	82.7	Jul	73.4	81.7	80.8	Jul	211.4	180.7	183.8
Aug	78.0	82.5	81.7	Aug	81.0	83.3	83.3	Aug	167.2	179.9	181.5
Sep	79.9	81.7	81.4	Sep	97.2	85.5	85.9	Sep	183.8	177.5	178.1
Oct	87.1	81.4	81.5	Oct	84.3	88.4	88.7	Oct	166.6	176.8	175.4
Nov	79.1	81.2	81.4	Nov	97.4	91.2	91.4	Nov	177.5	175.8	173.2
Dec	81.5	80.9	81.3	Dec	95.7	94.1	94.2	Dec	168.2	174.0	171.1
1995 Jan	80.0	80.5	81.1	1998 Jan	90.4	97.5	97.0	2001 Jan	161.3	170.6	168.8
Feb	83.5	80.2	80.7	Feb	91.1	101.8	100.3	Feb	143.1	167.4	167.3
Mar	84.2	79.8	80.2	Mar	108.0	105.9	104.1	Mar	176.1	169.6	168.1
Apr	78.2	79.1	79.3	Apr	109.0	109.0	108.0	Apr	198.1	173.4	170.2
May	77.1	78.4	78.5	May	109.0	112.0	111.9	May	152.0	176.5	172.6
Jun	78.1	77.7	77.7	Jun	111.8	115.7	116.1	Jun	179.2	180.9	176.4
Jul	76.3	76.9	76.7	Jul	117.7	119.7	120.6	Jul	135.6	186.4	182.0
Aug	75.7	76.0	75.8	Aug	138.0	123.7	124.9	Aug	167.1	191.3	188.9
Sep	72.8	74.8	74.8	Sep	139.8	126.4	128.1	Sep	236.3	193.7	195.3
Oct	77.5	73.9	73.9	Oct	116.6	127.5	130.1	Oct	206.6	193.5	199.6
Nov	72.6	73.3	73.2	Nov	137.1	129.6	132.0	Nov	211.1	194.5	203.0
Dec	70.3	72.8	72.5	Dec	144.5	134.0	134.3	Dec	241.4	194.7	204.3
1996 Jan	72.1	72.4	71.9	1999 Jan	138.1	138.8	136.7	2002 Jan	220.1	195.7	203.2
Feb	69.8	72.2	71.6	Feb	138.6	142.6	139.1	Feb	200.1	198.7	200.4
Mar	70.0	72.1	71.4	Mar	124.9	144.0	141.5	Mar	178.4	197.2	195.6
Apr	69.9	71.6	71.3	Apr	118.0	145.9	144.7	Apr	191.1	193.0	190.5
May	71.7	71.4	71.4	May	151.0	150.0	149.2	May	182.4	189.4	185.8
Jun	71.8	71.8	71.7	Jun	175.2	152.9	153.6	Jun	153.4	183.8	181.1
Jul	73.5	72.0	72.0	Jul	171.0	154.4	157.1	Jul	185.5	176.7	176.9
Aug	74.2	72.0	72.2	Aug	175.0	156.3	159.8	Aug	188.9	170.1	172.9
Sep	70.1	72.3	72.4	Sep	137.2	161.0	162.8	Sep	177.8	164.9	168.4
Oct	68.7	72.6	72.6	Oct	163.7	167.2	166.4	Oct	165.9	—	—
Nov	76.9	73.0	72.9	Nov	187.4	171.6	169.4	Nov	165.1	—	—
Dec	75.3	73.3	73.2	Dec	164.5	173.6	171.5	Dec	152.3	—	—

SMOOTHED NRCC *THRICE-DAILY* 2800MHz SOLAR FLUX MONTHLY VALUES.

Data based upon NRCC (THRICE-DAILY) monthly mean values ADJUSTED TO THE DISTANCE OF 1 AU.
Unit used in observed values is 1×10^{-22} Watt/m²/Hz.

Smoothing methods used are the Waldmeier and the Barnes-13 methods.

MONTH	Adjusted	S ^W	S ^{B13}	MONTH	Adjusted	S ^W	S ^{B13}	MONTH	Adjusted	S ^W	S ^{B13}
1994 Jan	—	—	—	1997 Jan	71.2	73.3	73.1	2000 Jan	153.9	176.5	174.6
Feb	—	—	—	Feb	71.9	73.5	73.4	Feb	168.6	177.9	178.2
Mar	—	—	—	Mar	72.8	74.9	74.2	Mar	206.8	179.5	181.7
Apr	—	—	—	Apr	75.1	76.7	75.4	Apr	185.5	181.6	184.3
May	—	—	—	May	76.4	78.2	76.8	May	195.4	181.2	185.3
Jun	—	—	—	Jun	74.2	79.9	78.6	Jun	186.1	180.9	185.5
Jul	—	—	—	Jul	73.5	81.5	80.8	Jul	212.2	181.4	184.9
Aug	—	—	—	Aug	81.0	83.1	83.2	Aug	167.6	180.7	182.4
Sep	—	—	—	Sep	96.9	85.4	85.8	Sep	184.6	178.4	178.9
Oct	—	—	—	Oct	84.5	88.3	88.5	Oct	167.1	177.5	176.0
Nov	—	—	—	Nov	97.3	91.1	91.2	Nov	176.6	175.9	173.4
Dec	—	—	—	Dec	93.9	94.0	93.9	Dec	168.3	173.8	171.0
1995 Jan	—	—	—	1998 Jan	89.9	97.4	96.8	2001 Jan	162.2	170.4	168.6
Feb	—	—	—	Feb	91.0	101.9	100.2	Feb	143.2	167.3	167.0
Mar	—	—	—	Mar	108.5	106.2	104.2	Mar	176.6	169.6	167.8
Apr	—	—	—	Apr	109.0	109.4	108.3	Apr	193.7	173.5	169.9
May	—	—	—	May	109.5	112.4	112.3	May	150.8	176.7	172.5
Jun	—	—	—	Jun	112.1	116.1	116.7	Jun	179.6	180.8	176.4
Jul	—	—	—	Jul	117.6	120.3	121.3	Jul	136.0	185.9	182.0
Aug	—	—	—	Aug	143.3	124.2	125.6	Aug	170.9	190.7	188.9
Sep	—	—	—	Sep	139.5	126.9	128.7	Sep	236.5	193.2	195.2
Oct	—	—	—	Oct	116.8	127.9	130.6	Oct	209.1	193.2	199.4
Nov	—	—	—	Nov	136.9	130.0	132.4	Nov	209.9	194.5	202.7
Dec	—	—	—	Dec	145.3	134.4	134.6	Dec	233.6	194.8	203.9
1996 Jan	—	—	—	1999 Jan	137.2	139.2	136.8	2002 Jan	220.4	195.7	202.7
Feb	69.8	—	—	Feb	138.3	142.8	139.1	Feb	200.3	198.3	199.9
Mar	70.0	—	—	Mar	124.9	144.0	141.4	Mar	178.9	196.6	195.1
Apr	69.9	—	—	Apr	117.9	145.9	144.7	Apr	191.4	192.4	190.1
May	71.6	—	—	May	151.6	150.0	149.2	May	183.5	188.8	185.5
Jun	71.9	—	—	Jun	174.7	152.9	153.6	Jun	154.1	183.6	181.0
Jul	73.8	—	—	Jul	170.1	154.4	157.2	Jul	182.4	176.8	176.9
Aug	74.3	71.9	72.2	Aug	176.3	156.4	160.0	Aug	188.2	170.2	172.9
Sep	70.3	72.1	72.3	Sep	137.2	161.1	162.9	Sep	178.3	164.9	168.4
Oct	68.8	72.5	72.5	Oct	164.2	167.3	166.5	Oct	166.8	—	—
Nov	77.3	72.9	72.8	Nov	187.7	172.0	169.6	Nov	165.7	—	—
Dec	73.3	73.2	72.9	Dec	164.9	174.3	171.8	Dec	152.6	—	—

ADJUSTED and SMOOTHED NRCC 2800 MHz SOLAR FLUX (IN 10^{-22} W/SQ. METRE/HZ) 1988-2002

SOLID = ADJUSTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE PAGE E4 (IN THIS PREVIOUS REPORTS)

