CGMS-XXVII
WMO WP-14
Prepared by WMO
Agenda item: H.5

YEAR 2000 PROBLEM

(Submitted by WMO)

Summary and purpose of document

To inform CGMS Members of the development of a WMO Y2K Monitoring and Contingency Plan

ACTION PROPOSED

CGMS Members to note the suggestion to monitor the performance of their satellite and processing systems and report problems to their designated WMO Y2K Situation Centre (paragraph 2.3)

DISCUSSION

INTERNATIONAL WMO Y2K MONITORING AND CONTINGENCY PLAN

1 INTRODUCTION

This International WMO Y2K Monitoring and Contingency Plan recommends actions that should be undertaken by all WMO Members in the few days immediately before and after 1 January 2000. Members operating Regional Telecommunication Hubs (RTHs) are expected to play an especially important role. NMCs in Bracknell, Melbourne, Moscow, Offenbach, Tokyo and Washington have agreed to play leading roles.

1.1 As the critical date of 1 January 2000 approaches Members are making progress in securing their mission-critical operations against possible failures at the millennium change. Nonetheless there is still considerable potential for outages in these systems for a number of reasons which are only partly controlled by the NMHSs. Therefore, Executive Council at its fifty-first session, directed the Commission for Basic Systems (CBS) to consider:

- development and implementation of international monitoring activities to promptly detect outages and to assess their impact;
- definition of actions that could be undertaken to minimise the impact of any problems that occur.

In response to this request, this plan was developed by experts attending the Ad hoc meeting on the Year 2000 Problem (Reading, 12-15 July 1999).

1.2 Two levels of monitoring will meet all of the critical requirements for information on the status of the World Weather Watch system over the transition to the year 2000.

(a) RTH-level telecommunications monitoring to determine the operability of each of the 32 RTHs and connections to each of the NMHSs that they serve

(b) Data monitoring by WMO lead centres to determine if significant outages of critical data occur

Procedures to carry out this monitoring are described in section 2 of this plan.

1.3 Detailed, timely and accurate information on the current operational status of the World Weather Watch is of little use without coordinated actions to respond to problems that may be detected. A contingency plan for dealing with likely problems has therefore been developed and is described in section 3.

1.4 The thirteenth WMO Congress requested CBS to develop a mechanism to respond to problems that may be detected and directed CBS to consider the possible establishment of one or more Year 2000 Situation Centres. The centres would act as a clearing-house for up-to-date status information and would coordinate response actions. The centres would consolidate reports from monitoring centres, establish the most likely reasons for outages, disseminate information on outages, and contact centres needed to implement remedial actions. Each of the three WMO World Meteorological Centres and the two World Area Forecast Centres have agreed to act as a Y2K Situation Centre and their roles and responsibilities are described in section 4.

2 MONITORING

2.1 RTH Monitoring

Beginning at 06 UTC on 31 December 1999 and every six hours thereafter, each RTH should send a message to its designated Y2K Situation Centre reporting on the current status of the operation of the telecommunication links to its client NMCs. The report should be sent in the form of an addressed message over the GTS and as an Internet e-mail message.

2.1.1 Considering the critical role that RTHs play in the operation of the World Weather Watch it is recommended that all RTHs ensure staff are available or can be contacted from no later than 06 UTC 31 December 1999 until at least 00 UTC on 2 January 2000.

2.1.2 The 32 RTHs provide the best resource to monitor the operation of the GTS. Each RTH should monitor the exchange of information with all National Meteorological Centres (NMC) under its area of responsibility (as defined in WMO Publication Number 386, the Manual on the GTS, Volume II - Regional Aspects). Beginning at 06 UTC on 31 December 1999 each RTH should report on the current status of this exchange. The report should contain a line for each of the NMCs under its responsibility according to the following format:

CCCCccccS Text where

CCCC = the identifier of the sending RTH

cccc = the identifier of the NMC under its responsibility

S = 0 (zero) if link is not carrying data and 1 (one) if it is carrying data

Text = remarks briefly describing any other problems reported by the NMC

2.1.3 The reports should be sent in the form of an addressed message over the GTS and as an Internet e-mail message to the Y2K Situation Centre designated as the focal point for that RTH (see Table 4.1). The message sent over the GTS will be carried by the existing message switching mechanism according to its abbreviated heading of “BMAA01 CCCC YYGGgg”. The CCCC defines the destination centre.

2.1.4 This report should be sent once every six hours but, in any case, at least once every twelve hours. The reporting should continue to be sent until each RTH is advised to discontinue the monitoring by its designated WMO Y2K Situation Centre.

2.1.5 To ensure that the actual impact of any outages can be assessed a unique routing path for each addressed message between the RTH and its Y2K Situation Centre should be established beforehand.

2.1.6 A preliminary test of this reporting procedure should be carried out to ensure the system functions as envisioned. Therefore, **a test message should be sent from each RTH to its designated Y2K Situation Centre at 06 UTC on 2 December 1999** to:

(a) confirm that addressed messages from each RTH do indeed reach the WMO Y2K Situation Centres (check the MSS switching directories);

(b) gain experience in the formatting of these reports;

(c) estimate human resources necessary to compose and send the messages.

2.1.7 A follow-up test to evaluate any corrections or adjustments deemed to be necessary after the first test will be carried out one week later at 06 UTC on 9 December.

2.2 Other GTS Monitoring

2.2.1 There are a variety of mechanisms used to distribute meteorological data and products such as MDD. RETIM, Fax-E, HF radio, etc. There are existing contingency plans for maintaining most of these dissemination services which, in most cases, are considered to be adequate for the Y2K transition. If an NMHS should experience an interruption in any of these services it should report the problem to its responsible RTH according to normal procedures. The RTH should then report the problem to its designated Y2K Situation Centre along with other monitoring information as described in section 2.1 above.

2.3 Data Monitoring

2.3.1 The satellite operators should monitor the performance of their satellites and processing systems and report any problems to their designated WMO Y2K Situation Centre (see Table 2.1).

Table 2.1

Satellite Operator	WMO Y2K Situation Centre
China	Melbourne
EUMETSAT	Bracknell
India	Bracknell
JMA	Melbourne
NESDIS	Washington
Russian Federation	Moscow

2.3.2 ECMWF will report any significant problems with TEMP data to the WMO Y2K Situation Centres twice daily for the few days surrounding 1 January 2000. It will also endeavour to produce problem reports of other data important to Numerical Weather Prediction (NWP) such as TEMP, TEMP SHIP, SYNOP, DRIBU, TAF, METAR, AIREP/AMDAR and satellite data and products. Furthermore, ECMWF has agreed to consider adding additional monitoring information (such as time series plots of number of reports received) to their public Web site along with the 6 hourly information (updated once per day) that they presently make available. The ECMWF Web site can be reach at http://www.ecmwf.int

3 INTERNATIONAL CONTINGENCY ACTIVITIES

3.1 Responsibilities of NMHSs

If an NMHS experiences a loss of data received from an international source or if an NMHS can not meet its international obligations the NMHS should contact its responsible RTH following standard operational procedures.

3.1.1 If an NMHS experiences a loss of data received from an international source the NMHS should contact its responsible RTH following standard operational procedures. These procedures should be tested sometime before 15 December 1999 to ensure contact information is up to date. Likewise, if an NMHS can not meet its international obligations it should contact its responsible RTH following normal procedures. The RTH should then notify its designated Y2K Situation Centre of any significant problems. The designation of these Situation Centres and relevant contact information are described in section 4.

3.2 Backup sources for essential data

As a backup for possible communication outages the NMCs Melbourne, Offenbach, Tokyo and Washington will make observational data received at their centres available via FTP in the few weeks surrounding 1 January 2000.

3.2.1 Given the possibility of interruption of services provided by the GTS it is essential that NMHSs are able to receive critical data even if they can not receive this data from their primary RTH. Backup or alternate routing arrangements have already been agreed between some adjacent centres and these arrangements could be activated by bilateral agreement should outages occur. However, it is unlikely that additional arrangements can be developed and tested before 1 January 2000. This is particularly true for circuits between large centres since very substantial changes would have to be made to the routing tables of several intermediate RTHs to re-route this traffic and an attempt to route significant volumes of data over alternate circuits would, in many cases, quickly overwhelm any spare capacity available on those circuits.

3.2.2 Rather than attempt to re-route data over the GTS, selected centres will post critical data on the Internet and make it available to all WMO Members via FTP. The NMCs Melbourne, Offenbach, Tokyo and Washington will endeavour to make all SYNOP, SHIP, DRIBU, TEMP, TEMP SHIP, PILOT, AIREP/AMDAR, METAR and TAF as well as Profiler and ACARS BUFR messages received at their centres available through this mechanism. **These centres will make test data available beginning 15 November**. **Operational data will be available from 15 December continuing at least until 15 January 2000.** Data should conform to the following format and file conventions. If a centre uses different conventions then details on its implementation are reproduced in an annex to this plan.

Format: As described in the Guide on use of TCP/IP on the GTS and reproduced in Annex A with amendments as indicated in *italics*.

File name: CCCCYYGGTTRnnn where

CCCC = the identifier of the centre which created and posted the file

YY = day of the messages contained in the file

GG = hour of the messages contained in the file (i.e. 00, 06, 12, 18)

TT = identifier of the data contained in the file as given in Table 3.1

R = WMO Region (1 to 6 and 7 for Antarctica)

nnn = file cycle number (a number starting with 001 and incremented whenever the file is replaced by an updated version)

Table 3.1

Message types	TTs included
TEMP, TEMP SHIP, PILOT	US, UK, UL, UE, UP, UG, UH, UQ
SYNOP, SHIP, DRIBU	SI, SM, SN, SS
AIREP, AMDAR	UA, UD
METAR, TAF, SIGMET	SA, FT, WX
Profiler and ACARS BUFR messages	IU

3.2.3 Information necessary to contact these four FTP centres is provided in Table 3.2 below.

Table 3. 2

Melbourne	**Offenbach**
Tel: (613) 9662 2650 Backup Tel: (613) 9669 4053 Fax: (613) 9662 1223 E-mail: y2k@bom.gov.au FTP server address: ftp://ftp.bom.gov.au/register/gts/wmo2000omm/ User-ID: anonymous Password: user's e-mail address File naming convention: Paragraph 3.2.2 File format: See Annex A	Tel: Backup Tel: Fax: E-mail: FTP server address: User-ID: Password: File naming convention: Paragraph 3.2.2 File format: See Annex A
Tokyo	**Washington**
Tel: Backup Tel: Fax: E-mail: FTP server address: User-ID: Password: File naming convention: Paragraph 3.2.2 File format: See Annex B	Tel: Backup Tel: Fax: E-mail: FTP server address: ftp://140.90.6.103 User-ID: anonymous Password: user's e-mail address Also: http://www.nws.noaa.gov/oso/ftpgate.shtml File naming convention: See Annex C File format: See Annex A

3.2.4 Although dial-up access to some of these FTP sites might be possible it is considered as a technically complex alternative that would require consultation, agreement and testing well in advance of 1 January 2000. It is judged to be marginally feasible and any NMHS wishing to explore this option should contact one of the FTP centres to discuss the matter on a bilateral basis.

3.3 Backup sources for products

3.3.1 Emergency procedures for backup provision of essential meteorological services are described in the Manual on the Global Data Processing System. In general, these procedures specify that through prior agreement a neighbouring NMHS may assume responsibility for critical forecasts or warnings upon request from the affected NMHS.

Similarly backup generation of products from the World Area Forecast Centres has been agreed.

3.3.2 Specific backup arrangements for the dissemination of global products from World Meteorological or World Area Forecast Centres have not been planned and are not considered to be practical. However, NMHSs are reminded that products from the World Area Forecast Centres are already available via the Internet and can be found as follows:

> Most if not all of the same products that are transmitted on the WAFS channels, i.e. GRIB, T-4 (FAX), and alphanumeric (METAR, TAF, and SIGMETS) are available from the FTP server at the Washington RTH. The METAR, TAF, SIGMETS, T-4 products can be found for download also from the web pages using either http or ftp. They can be found via http://www.nws.noaa.gov or http://weather.noaa.gov. They can also be retrieved via FTP at ftp://140.90.6.103
>
> METARs, TAFs, SIGMETs, VAAC advisories and SATPIX can be retrieved via the Web at http://www.awc-kc.noaa.gov/

3.3.3 Products from the Emergency Managers Weather Information Network (EMWIN) are also available via FTP to 140.90.6.240 using username emwin and password in emwin. At that point you should see a number of .ZIP files (e.g., SAHOURLY.ZIP which has the hourly METAR observations). You have to download the .ZIP files and then unzip them with an application such as WINZIP which is a shareware program that can be found on the web.

3.3.4 Any NMHS that finds it necessary to utilise products retrieved from these sources should carefully check the validity times for these products.

4 WMO Y2K SITUATION CENTRES

Each of the three WMO World Meteorological Centres and the two World Area Forecast Centres has agreed to act as a Y2K Situation Centre.

4.1 WMCs Washington, Melbourne and Moscow as well as WAFC Bracknell have agreed to act as Y2K Situation Centres responsible for the areas as described in Table 4.1. Specifically, each Situation Centre will be responsible for the RTHs as listed in Table 4.2.

Table 4. 1

Washington	Region III and Region IV
Bracknell	Region I and part of Region VI
Melbourne	Region V, Antarctica and part of Region II
Moscow	Parts of Regions II and VI

Table 4.2

Bracknell responsible for:	Melbourne responsible for:	Moscow responsible for:	Washington responsible for:
Algiers, Algeria	Beijing, China	Khabarovsk, Russian Fed.	Buenos Aires, Argentina
Brazzaville, Congo	New Delhi, India	Novosibirsk, Russian Fed.	Brasilia, Brazil
Cairo, Egypt	Tehran, Iran	Tashkent, Uzbekistan	Maracay, Venezuela
Nairobi, Kenya	Tokyo, Japan	Moscow, Russian Fed.	Washington, USA
Niamey, Niger	Jeddah, Saudi Arabia		
Dakar, Senegal	Bangkok, Thailand		
Pretoria, South Africa	Wellington, New Zealand		
Lusaka, Zambia	Melbourne, Australia		
Vienna, Austria			
Sofia, Bulgaria			
Prague, Czech Republic			
Toulouse, France			
Offenbach, Germany			
Rome, Italy			
Norrköping, Sweden			
Bracknell, UK			

4.2 The WMO Y2K Situation Centres will act as a clearing-house for up-to-date status information and will coordinate response actions. The centres will collect, consolidate and collate reports from monitoring centres, establish the most likely reasons for outages, and make information on the current status of World Weather Watch Systems available. The information should be made available via the World Wide Web. If possible, additional mechanisms such as fax on demand should be provided as an alternative to the Internet.

4.3 The contact information for the Y2K Situation Centres is provided in Table 4.3.

Table 4. 3

Bracknell	**Melbourne**
Tel: Backup Tel: Fax: Fax on demand: E-mail: HTTP server:	Tel: (613) 9662 2650 Backup Tel: (613) 9669 4053 Fax: (613) 9662 1223 Fax on demand: (613) 9662 1222 E-mail: y2k@bom.gov.au HTTP server: http://wmo.bom.gov.au/y2ksc/
Moscow	**Washington**
Tel: Backup Tel: Fax: Fax on demand: E-mail: HTTP server:	Tel: Backup Tel: Fax: Fax on demand: E-mail: HTTP server:

4.4 Information on a global scale should be duplicated at all of the centres and each centre may also choose to provide more detailed information for NMHSs within its area of responsibility. The centres will be responsible for actions before, during and after the change to year 2000 as described below.

Before 15 December 1999

(a) Each centre should contact all of the RTHs under its area of responsibility no later than 1 December 1999 to ensure the information they have to contact these RTHs is accurate and up-to-date.

(b) Each centre should coordinate with the other Y2K Situation Centres to agree upon the mechanism and schedule for regular consultation between the centres during the transition to the year 2000. Plans for backup facilities to be used in the event of failure of the primary mechanism should be agreed no later than 1 December 1999.

(c) Each centre should coordinate with the other Y2K Situation Centres to agree upon a standard presentation format to be used to display status information.

From 06 UTC on 31 December 1999 until at least 00 UTC on 2 January 2000

(a) Ensure that staff are available on site around the clock.

(b) Collect, collate, and display information gathered from the RTH monitoring described in section 2.1 above.

(c) Consult regularly (at least every 6 hours) with the other Y2K Situation Centres to coordinate activities and exchange information on the status of the WWW systems.

(d) Provide access to status information until at least 00 UTC 6 January.

After the Y2K transition

Provide a report to the Secretariat by 15 March summarising the results of the Y2K transition and describing problems that remain unresolved at that time.

5 WMO SECRETARIAT AND OTHER ORGANIZATIONS

5.1 Although not assigned operational responsibilities the Secretariat can help to minimise the impact of the Y2K transition. Among its routine responsibilities to coordinate interactions between WMO Members the Secretariat should carry out the following tasks. The Secretariat will:

(a) Issue a circular letter to all Members no later than 15 October 1999 providing them with a copy of this plan.

(b) Publish a summary of this Y2K Monitoring and Contingency Plan in the WWW Operational Newsletter no later than 15 November 1999, including information on the roles and contact information for the Y2K Situation Centres.

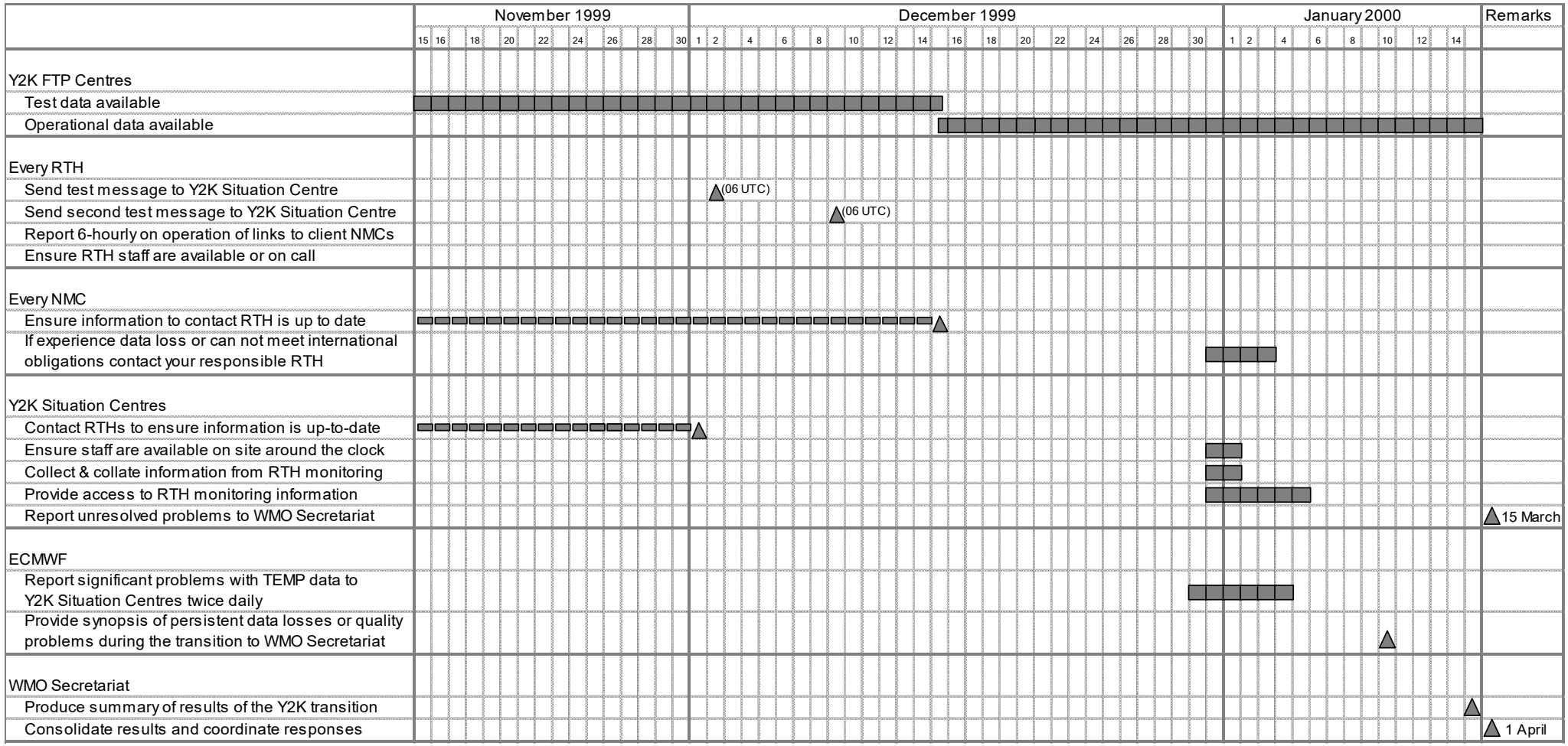
(c) Inform the satellite operators and other international organisations with an interest in the operation of the World Weather Watch such as EUMETSAT, IAEA, IATA, ICAO, IMO and IOC on the steps that are being taken to ensure

its continued operation and how they could contact the Y2K Situation Centres to view status information.

(d) Produce an interim summary of the results of the Y2K transition by 15 January 2000

5.2 ECMWF has agreed to analyse significant losses or quality problems of data during the Y2K transition and will endeavour to provide a synopsis of persistent problems within the first several days of January 2000. This will include all data important to NWP. The synopsis might include, for example, evidence that radiosondes from a particular manufacturer have not been available since the transition to the year 2000. Other centres might also discover similar trends. The Secretariat will consolidate this information, make it available on its Web server, and coordinate possible responses with the CBS Y2K expert team as necessary.

Timeline of Monitoring and Contingency Activities



Annex A
Format of Data on FTP Servers

(Excerpt from Chapter 4 of the Guide on Use of TCP/IP on the GTS)

Accumulating messages into files

One of the problems with using FTP to send traditional GTS messages is the overhead if each message is included in a separate file. To overcome this problem, multiple messages in the standard GTS message envelope should be placed in the same file according to the rules set out below. This method of accumulating multiple messages applies only to messages for which Abbreviated Heading Lines (AHLs) have been assigned.

Centres have the option of including or deleting the Starting Line and End of Message strings and indicating which option they are using via the format identifier (refer points 2 and 4 below).

1. Each message should be preceded by an 8 octet message length field (8 ASCII characters). The length includes the Starting Line (if present), AHL, text and End of Message (if present).

2. Each message should start with either:

   (i) the currently defined Starting Line and AHL as shown in figure 4.2, option 1; or

   (ii) the AHL as shown in figure 4.2, option 2.

3. Messages should be accumulated in files thus:

   (i) length indicator, message 1 (8 characters);

   (ii) format identifier (2 characters);

   (iii) message 1

   (iv) length indicator, message 2 (8 characters);

   (v) format identifier (2 characters);

   (vi) message 2

   (vii) and so on, until the last message; and then

   (viii) a 'dummy' message of zero length shall be inserted after the last real message, to assist with end of file detection in certain MSS systems;

4. Format identifier (2 ASCII characters) has the following values:-

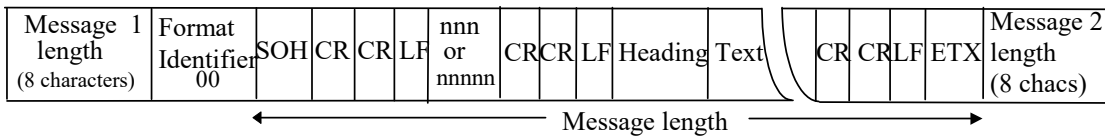
   (i) 00 if Starting Line and End of Message strings present;

   (ii) 01 if Starting Line and End of Message strings absent.

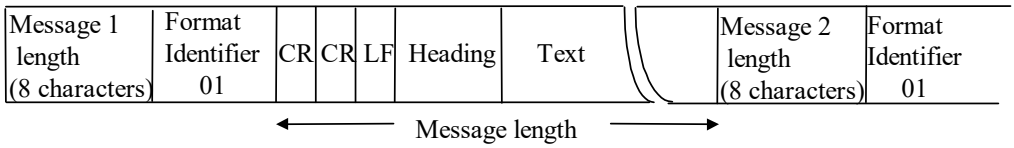
5. The server centre should combine messages in the file for no more than *30 minutes for Y2K backup procedures* to minimise transmission delays.

6. The server centre should limit the number of messages in a file to a maximum of 100.

7. The format applies regardless of the number of messages, i.e. it applies even if there is only one message in the file.



Option 1. Starting Line and End of Message present
Message length : Length from SOH to ETX (e.g. 00001826 = 1826bytes)



Option 2. Starting Line and End of Message absent
Message length : Length from first CR to end of Text (e.g. 00001826 = 1826bytes)

Figure 4.2 Structure of a typical message in a file

Annex B

Japan FTP File Format Standard and Access Procedures

FTP File format

Files available via FTP from JMA for Y2K backup are stored in a format very similar to the format described in Annex A. However, although the organization of the file is the same it is stored on the server after compression by the Unix "TAR" command, the so-called Unix standard archive.

"Tar" files can be easily archived or retrieved by not only Unix and Linux but also Windows applications such as "WinZIP", "WinPack" and ArjFolder which can be downloaded from http://www.winzip.com/, http://www.peaksys.demon.co.uk/, and http://home.worldnet.fr/mounierr/ respectively.

Procedures for access

a) Data file (Observational data)

Observational data are stored as an archived UNIX file using the 'tar' command. Bulletins for the same time, same region and same type are included in one file. The time, region and type of data are identified by WMO headings of bulletins in the file. The format for each bulletin is the same as used on the GTS. Please note that each bulletin does not include a starting line (SOH nnn) and end of message signal (ETX). The structure of the tar archive file is as follows:

Tar	Bulletin 1		Tar	Bulletin 2		...
Control Word	WMO Heading	Data	Control Word	WMO Heading	Data	

...

Tar	Bulletin n	
Control Word	WMO Heading	Data

b) Obtaining files

Please note that for DOS or Wndows 3.1 users the system will truncate file names to 8 characters.

Windows users can use Windows FTP software such as WinFTP. Other users can obtain files using the Unix 'get' or 'mget' commands. The following example shows how to obtain SYNOP/SHIP in Region V at 00UTC on the 7th using 'get'.

```
ftp> get RJTD0700SM5001.tar          user command (underlined)
command successful.                  following messages from the Server
data connection for RJTD0700SM5001.tar
Transfer complete.
105 Kbytes received in n.nnn seconds (m.mmm Kbytes/s)
```

Beside the above case, other Unix functions are available. Users using Unix commands can obtain files efficiently with the additional functions described below.

- Example to obtain multiple files by name:

```
ftp> mget RJTD0700SM5001.tar  RJTD0700SM2001.tar
```

- Example to obtain mulitple files using the "?" 'Wild card' to retrieve all SM files in all regions

```
ftp> get RJTD0700SM????.tar
```

- Obtaining a file with compression

  The 'ftp demon' of the Server can provide mulitple files with compression. This function makes best use of transmission capacity between the Client and the Server. The following example shows how to obtain a file with compression using the 'gzip' command.

```
ftp> get RJTD0700SM5001.tar.gz
```

  Besides the above case, another compression command 'commpress (filename.Z)' is available.

Annex C

USA FTP File Name Standard

1. Directory and File Naming Standards for FTP Servers

File names consist of information elements that identify the content of the file. Each information element consists of an **element ID** - made up of two letters followed by a period - and element information. Each directory and file name consists of several information elements connected by an underscore. Dashes (-) are reserved for indicating that the information element is a spatial or temporal interval. The individual elements used are defined below:

server location	==> {SL|sl}.ccnnnsss
documents	==> {DO|do}=dddd
tables	==> {TB|tb}=tttt
reference date	==> {RD|rd}=yyyymmdd
reference time	==> {RT|rt}=hhnnss
data date	==> {DD|dd}=yyyymmdd
data time	==> {DT|dt}=hhnnss
data date period	==> {DP|dp}=yyyy$_1$mm$_1$dd$_1$-
data time period	==> {TP|tp}=hh$_1$nn$_1$-hh$_2$nn$_2$
generating process	==> {GP|gp}=ppppp
area of data	==> {AR|ar}=aaaaaaaa
data format	==> {DF|df}=ffff
data status	==> {ST|st}=stat
type of model	==> {MT|mt}=mmmmm
run of model	==> {MR|mr}=rrr
cycle of run	==> {CY|cy}=hh
level of data	==> {LV|lv}=sddddd
layer of data	==> {LY|ly}=sddddd$_1$-sddddd$_2$
grid	==> {GR|gr}=gggggggg
parameter	==> {PA|pa}=pppppppp
data category	==> {DC|dc}=ccccc
data subcategory	==> {DS|ds}=sssss
customer	==> {CU|cu} llllll
sequence number	==> {CY|cy}.xx(xx)

In the above, the notation {a|b} indicates a choice may be made to use either “a” or “b”. Upper case is used when the information element is used in a directory name and lower case when the information element is used in a file name. The specific description of these information elements is given in Appendix 1.

As a *first* example, the US National Centers for Environmental Prediction (NCEP) might choose to assemble the above information elements into following directory and file naming configuration for observational data:

/(server location)/(reference date)/(reference time)/(generating process)/(data time period)/
(area of data)_(data format)_(data category)_(data subcategory)

Symbolically, this would appear as:

/SL.ccnnnsss/RD.yyyymmdd/RT.hhnnss/GP.ppppp/TP.hh$_1$nn$_1$-hh$_2$nn$_2$/
ar.aaaaaaaa_df.ff_dc.ccccc_ds.sssss

A file of radiosonde observations from fixed land sites for the period from 3 hours prior to 2 hours 59 minutes after a reference date/time of 8 December, 1997/1200 UTC stored in BUFR on the NCEP DDBs server would then appear as:

/SL.us007003/RD.19971208/RT.120000/GP.obvns/TP.0300-0259/ar.allglobe_df.bu_dc.vsndn_ds.raobf

As a *second* example, the US National Weather Service (NWS) might choose to assemble the above elements into following directory and file naming configuration for a specific observational data type:

/(server location)/(area of data)/(data format)/(data category)/(customer sequence number)

Symbolically, this would appear as:

/SL.ccnnnsss/AR.aaaaaaaa/DF.ff/DC.ccccc/cu.llllll_cy.xx(xx)

Please note that for DOS or Wndows 3.1 users the system will truncate file names to 8 characters.

Appendix 1: Description of Directory and File Name Information Elements with element IDs

MANDATORY FIELD

server location ==> {SL|sl}.ccnnnsss

where

{SL|sl} ==> Indicator for information element “server location”

cc ==> country [FIPS standard 10-4]

nnn ==> center [WMO standard 306 Part II]

sss ==> sub-center [center defined]

OPTIONAL FIELDS (Selected IDs and their order as determined by Center)

documents ==> {DO|do}.dddd

where

{DO|do} ==> Indicator for information element "documents"

dddd = tcom ==> telecommunications documents

dddd = code ==> data representation (code) form documents

dddd = prod ==> production documents

dddd = drft ==> draft documents

tables ==> {TB|tb}.tttt

where

{TB|tb} ==> Indicator for information element "tables"

tttt = stns ==> observing station information

tttt = bufr ==> BUFR tables

tttt = crex ==> CREX tables

tttt = grib ==> GRIB tables

reference date ==> {RD|rd}.yyyymmdd

where

{RD|rd} ==> Indicator for information element "reference date"

yyyy ==> 4-digit Year

mm ==> month

dd ==> day

reference time ==> {RTD|rt}.hhnnss

where

{RT|rt} ==> Indicator for information element "reference time"

hh ==> hour

nn ==> minute

ss ==> second

data date ==> {DD|dd}.yyyymmdd

where

{DD|dd} ==> Indicator for information element "Data Date"

yyyy ==> 4-digit Year

mm ==> month

dd ==> day

data time ==> {DT|dt}.hhnnss

where

{DT|dt} ==> Indicator for information element "Data Time"

hh ==> hour

nn ==> minute

ss ==> second

data date period ==> {DP|dp}.$yy_1mm_1dd_1$-$yy_2mm_2dd_2$

where

{DP|dp} ==> Indicator for information element "data date period"

yy1 ==> number of years (0-99) before reference date/time data date period begins

mm1 ==> number of months (00-12) before reference date/time data date period begins

dd1 ==> number of days (00-31) before reference date/time data date period begins

yyyy2 ==> number of years (0-99) after reference date/time data date period ends

mm2 ==> number of months (00-12) after reference date/time data date period ends

dd2 ==> number of days (00-31) after reference date/time data date period ends

data time period ==> {TP|tp}.hh_1nn_1-hh_2nn_2

where

{TP|tp} ==> Indicator for information element "data time period"

hh1 ==> number of hours (00-99) before reference date/time data time period begins

nn1 ==> number of minutes (00-99) before reference date/time data time period begins

hh2 ==> number of hours (00-99) after reference date/time data time period ends

nn2 ==> number of minutes (00-99) after reference date/time data time period ends

generating process ==> {GP|gp}.ppppp

where

{GP|gp} ==> Indicator for information element "generating process"

ppppp = obsvns ==> observations

ppppp = agrids ==> analysis grids

ppppp = agrphs ==> analysis graphics

ppppp = fgrids ==> forecast grids

ppppp = fgrphs ==> forecast graphics

ppppp = warngs ==> warnings

ppppp = discs ==> discussions

area of data ==> {AR|ar}.aaaaaaaa

where

{AR|ar} ==> Indicator for information element "area of data"

aaaaaaaa ==> is a string of eight characters. International coordination of a group of frequently-used areas would be useful.

data format ==> {DF|df}.ff

where

{DF|df} ==> Indicator for information element "data format"

ff = an ==> WMO character

ff = bl ==> bulletins of raw observations as exchanged on the GTS

ff = bu ==> WMO BUFR

ff = cr ==> WMO CREX

ff = c5 ==> CCITT International Alphabet #5

ff = f1 ==> CCITT T4-1D facsimile

ff = f2 ==> CCITT T4-2D facsimile

ff = gi ==> GIF

ff = gr ==> WMO GRIB (binary)

ff = gt ==> mixed information as exchanged on the GTS

ff = jp ==> JPEG

type of model ==> {MT|mt}.mmmmm

where

{MT|mt} ==> Indicator for information element "type of model"

mmmmm ==> string of five characters indicating the type of model used (table maintained by originating centre)

run of model ==> {MR|mr}.rrr

where

{MR|mr} ==> Indicator for information element "run of model"

rrr ==> string of three characters indicating the model run (table maintained by originating centre)

cycle of run ==> {CY|cy}.hh

where

{CY|cy} ==> Indicator for information element "cycle of run"

hh ==> cycle time in hours

level of data ==> {LV|lv}.sddddd

where

{LV|lv} ==> Indicator for information element "level of data"

s = p ==> pressure

s = h ==> height

s = t ==> potential temperature

s = s ==> sigma

ddddd ==> value of surface. Multiple levels are indicated by setting ddddd = 99999.

layer of data ==> {LY|ly}.$s_1$ddddd$_1$-$s_2$ddddd$_2$

where

{LY|ly} ==> Indicator for information element "layer of data"

s1s2 = p ==> pressure

s1s2 = h ==> height

s1s2= t ==> potential temperature

s1s2 = s ==> sigma

ddddd1 ==> value of lower surface of layer of type s_1.

ddddd2 ==> value of upper surface of layer of type s_2. (multiple layers are indicated by setting ddddd$_1$ = ddddd$_2$ = 99999)

grid ==> {GR|gr}.gggggggg

where

{GR|gr} ==> Indicator for information element "grid"

gggggggg ==> is a string of eight characters indicating the grid used (table maintained by originating centre). Multiple grids are indicated by setting gggggggg = allgrids. International coordination of a group of frequently-used grids would be useful.

parameter ==> {PA|pa}.pppppppp

where

{PA|pa} ==> Indicator for information element "parameter"

pppppppp ==> is a string of eight characters indicating the parameter (table maintained by originating centre). Multiple parameters are indicated by setting pppppppp = allparms. International

coordination of a group of frequently-used parameters would be useful.

data category ==> {DC|dc}.ccccc

where

{DC|dc} ==> Indicator for information element "data category"

ccccc = sflnd ==> Surface data - land

ccccc = sfmar ==> Surface data - sea

ccccc = vsndn ==> Vertical sounding - other than satellite

ccccc = vsnds ==> Vertical sounding - satellite

ccccc = sluan ==> Single level upper-air data - other than satellite

ccccc = sluas ==> Single-level upper-air data - satellite

ccccc = sfsat ==> Surface data - satellite

ccccc = altyp ==> All types of data category

data subcategory ==> {DS|ds}.sssss

where

{DS|ds} ==> Indicator for information element "Data Subcategory"

when ccccc = sflnd,

sssss = synop ==> Synoptic - manual and automatic

sssss = avnma ==> Aviation - manual

sssss = amosx ==> Aviation - AMOS

sssss = ramos ==> Aviation - RAMOS

sssss = autob ==> Aviation - AUTOB

sssss = asosx ==> Aviation - ASOS

sssss = metar ==> Aviation - METAR

sssss = awosx ==> Aviation - AWOS

sssss = coavn ==> Synoptic - converted aviation

sssss = autox ==> Aviation - AUTO(0-9)

sssss = coops ==> Cooperative - SHEF

sssss = sclim ==> Aviation - Supplementary Climat Data Report

sssss = allsc ==> All sub-categories

when ccccc = sfmar,

sssss = ships ==> Ship - manual and automatic

sssss = dbuoy ==> Drifting buoy

sssss = mbuoy ==> Moored buoy

sssss = lcman ==> Land-based CMAN station

sssss = oilrg ==> Oil rig or platform

sssss = slpbg ==> Sea level pressure bogus

sssss = wavob ==> WAVEOB

sssss = allsc ==> All sub-categories

when ccccc = vsndn,

sssss = raobf ==> Rawinsonde - fixed land

sssss = raobm ==> Rawinsonde - mobile land

sssss = raobs ==> Rawinsonde - ship

sssss = dropw ==> Dropwinsonde

sssss = pibal ==> Pibal

sssss = prflr ==> Profiler

sssss = nxrdw ==> NEXRAD winds

sssss = allsc ==> All sub-categories

when ccccc = vsnds,

sssss = geost ==> Geostationary

sssss = mstbg ==> Moisture bogus

sssss = tovsx ==> Polar orbiting - TOVS

sssss = synsy ==> Sun synchronous

sssss = allsc ==> All sub-categories

when ccccc = sluan

sssss = airep ==> AIREP

sssss = pirep ==> PIREP

sssss = asdar ==> ASDAR

sssss = acars ==> ACARS

sssss = recco ==> RECCO - flight level

sssss = allsc ==> All sub-categories

when ccccc = sluas

sssss = infus ==> Winds derived from cloud motion observed in infrared channels by the USA

sssss = visus ==> Winds derived from cloud motion observed in visible channels by the USA

sssss = h20us ==> Winds derived from motion observed in water vapour channels by the USA

sssss = comus ==> Winds derived from motion observed in a combination of spectral channels by the USA

sssss = infin ==> Winds derived from cloud motion observed in infrared channels by India

sssss = visin ==> Winds derived from cloud motion observed in visible channels by India

sssss = h20in ==> Winds derived from motion observed in water vapor channels by India

sssss = comin ==> Winds derived from motion observed in a combination of spectral channels by India

sssss = infja ==> Winds derived from cloud motion observed in infrared channels by Japan

sssss = visja ==> Winds derived from cloud motion observed in visible channels by Japan

sssss = h2oja ==> Winds derived from motion observed in water vapor channels by Japan

sssss = comja ==> Winds derived from motion observed in a combination of spectral channels by Japan

sssss = infeu ==> Winds derived from cloud motion observed in infrared channels by EUMETSAT

sssss = viseu ==> Winds derived from cloud motion observed in visible channels by EUMETSAT

sssss = h2oeu ==> Winds derived from motion observed in water vapor channels by EUMETSAT

sssss = comeu ==> Winds derived from motion observed in a combination of spectral channels by EUMETSAT

sssss = allsc ==> All sub-categories

when ccccc = sfsat,

sssss = ssmit ==> SSM/I - Brightness Temperatures

sssss = ssmip ==> SSM/I - Derived Products

sssss = ersar ==> ERS/SAR

sssss = erswn ==> ERS/scatterometer Winds

sssss = ersal ==> ERS/Radar altimeter Data

sssss = sstnv ==> DOD/Navy sea surface temperatures

sssss = sstns ==> DOC/NESDIS sea surface temperatures

sssss = allsc ==> All sub-categories

when ccccc = altyp,

sssss = (not used)

sequence number ==> {CY|cy}.xx(xx)

where

{CY|cy} ==> Indicator for cycle sequence numbers

xx(xx) = 01(01) thru 99(99)
==> sequence number, length of two or four digits determined when number of subdirectories or files are established by center writing the files

customer ==> {CU|cu}.lllll

where

{CU|cu} ==> Indicator of customer the file is established for

lllll = kwbc ==> RTH Washington

lllll = fnoc ==> Fleet Numerical Oceanographic Center

lllll = knhc ==> National Hurricane Center

lllll = mitre ==> Company name

lllll = faa ==> Federal Aviation Administration

lllll = genrl ==> general purpose files (implies file content is not restricted for any intended customer)