Appendix D

NBOGUS format

The NBOGUS file is used to insert entire bogus station reports (surface and upper-air) and/or delete entire station reports. It is accessed by RAWINS as FORTRAN unit 13.

If certain specific stations are to be deleted from the dataset, and no bogus reports are to be included in the dataset, then the NSELIM information alone is included in the NBOGUS file. If bogus reports are to be included in the dataset, but no specific stations are to be deleted, than the bogus information alone is included in the NBOGUS file. If specific stations are to be deleted, and bogus reports are to be included, than the NBOGUS file holds both types of information. The three cases will be discussed below.

NSELIM option only

The NSELIM option is activated by setting the RAWINS Local Master Input File option NSELIM to .TRUE. for each time period for which specific stations are to be deleted. The format of NSELIM records in the `nbogus` file for deleting station reports is as follows:

```
      READ (13,40)ISELIM(N),ISU(N)
 40   FORMAT(A6,I6)
```

where:

ISELIM: Five digit station identifier

ISU: Report type: 1 = upper-air station; 2 = surface station; 777 means the end of the NSELIM list for that time period.

Some typical examples of the NSELIM records are given below (titles and dashed lines are for clarity only):

```
ISELIM   ISU
---------------------------------------------------------------------------
72270      2
72220      1
77777    777
72235      1
72365      1
77777    777
---------------------------------------------------------------------------
```

In this example, one upper-air station and one surface station are deleted for the first time period for which NSELIM = .TRUE., and two upper-air stations are deleted for the second time period for which NSELIM = .TRUE.

Bogus reports only

The option to include bogus reports into the dataset for a particular time period is activated by setting the RAWINS Local Master Input File option NBOGUS to .TRUE. for each time period for which bogus reports are included in the `nbogus` file. Each bogus report consists of a header record followed by one or more data records. The format of the file is slightly different for upper-air and surface reports.

Upper air

An upper-air bogus report generally consists of:

1. A header for mandatory-level data.
2. One or more records holding mandatory-level bogus data (ordered by decreasing pressure, starting at 1000 mb)
3. A header for significant-level data.
4. One or more records holding significant-level bogus data (ordered by decreasing pressure, starting at the surface).

If only mandatory-level data are included, items 3 and 4 may be omitted. Similarly, if only significant-level data are included, items 1 and 2 may be omitted.

The upper-air header record format is:

```
      READ(13,10) NDATE, IBOGUS, IMAN, KLV, YLAT, YLON
 10   FORMAT(30X, I8, 1X, A5, 2I3, 2F7.1)
```

where

NDATE =	Eight digit date/time identifier, in the format YYMMDDHH. NDATE = 999 indicates the end of bogus upper-air reports.
IBOGUS =	Five digit station identifier.
IMAN =	Integer flag flag indicating type of level: 1 = mandatory levels; -1 = significant levels
KLV =	Number of levels of data in the data records to follow.
YLAT =	Latitude of the bogus station.
YLON =	Longitude of the bogus station.

An example of a typical header record follows (again, titles and dashed lines are for clarity only):

```
                              MDATE IBOGUS IMAN KLV YLAT  YLON
--------------------------------------------------------------------------
                             87051512 46685  1 10   25.0  121.4
--------------------------------------------------------------------------
```

The upper-air data records have the following format:

```
 130   FORMAT(10X,6F10.1)
```

An example of an entire bogus station report (header record followed by the data record, for both mandatory and significant levels) is given below(titles and dashed lines are for clarity only):

```
             PRES       HT         TEMP      DEP       DIR        SPD
--------------------------------------------------------------------------
                             87051512 46685  1 10   25.0  121.4    9.3
            1000.0     104.0       23.8       3.1      95.0       2.0
             850.0    1513.0       16.3       0.9     216.0       6.0
             700.0    3143.0        8.2       5.9     233.0      10.0
             500.0    5844.0       -7.3      10.3     267.0      14.0
             400.0    7543.0      -19.6      10.0     262.0      16.0
             300.0    9623.0      -33.1      12.8     256.0      13.0
             250.0   10873.0      -44.5   99999.9     283.0      18.0
             200.0   12329.0      -53.7   99999.9     294.0      22.0
             150.0   14152.0      -62.3   99999.9     276.0      23.0
             100.0   16583.0      -73.9   99999.9     246.0       8.0
                             87051512 46685 -1 07   25.0  121.4    9.3
            1011.8      11.0       24.0       2.9     100.0       2.0
             955.8     500.0       22.2       3.2     133.0       2.0
             907.4     950.0       19.6       2.6     229.0       4.0
             900.0    1021.0       19.3       1.7     222.0       5.0
             807.4    1950.0       14.0       0.8     238.0       7.0
             800.0    2028.0       13.5       0.7     238.0       8.0
             600.0    4401.0        1.6       6.9     236.0      11.0
                             999
-------------------------------------------------------------------------
```

where

PRES =	Bogus pressure (mb). 99999.0 = not available.
HT =	Bogus height (m). 99999.0 = not available.
TEMP =	Bogus temperature (°C). 99999.0 = not available.
DEP =	Bogus dewpoint depression (°C). 99999.0 = not available.
DIR =	Bogus wind direction (degrees). 99999.0 = not available.
SPD =	Bogus wind speed (m s^{-1}). 99999.0 = not available.

If the mandatory-level data for a bogus upper-air report start above the 1000 mb pressure level (*e.g.*, starting at 850 or 700 mb), then the data at mandatory levels below the starting level must be filled in with 99999.9

For significant levels, the pressure value at the surface must be given as sea-level pressure, not surface pressure.

Set MDATE = 999 to denote the end of upper-air bogus data for a particular time period. If no bogus upper-air data for a particular time period are included, but bogus surface data are included for that time period, the MDATE = 999 record must still be included.

Surface

The NBOGUS read format for surface station header records is:

```
      READ(13,10) NDATE, IBOGUS, YLAT, YLON
 10   FORMAT(30X,I8,1X,A5,6X,2F7.1)
```

An example of a surface station header record is given below:

```
                              NDATE   IBOGUS          YLAT   YLON
-------------------------------------------------------------------------
                             84032900 72426           30.0   -98.0
-------------------------------------------------------------------------
```

where:

NDATE =	Eight digit date/time identifier, in the format YYMMDDHH. DATE = 888 indicates the end of bogus surface reports for a particular time period.
IBOGUS =	Five digit station identifier.
YLAT =	Latitude of the bogus station.
YLON =	Longitude of the bogus station.

The NBOGUS read format for surface station data records is:

```
30 FORMAT(10X,F10.1,10X,4F10.1)
```

A sample bogus surface-station report (a header record followed by a data record) is given below.

```
            PRES                      TEMP        DEP       DIR       SPD
--------------------------------------------------------------------------
                              84032900 72426          30.0  -98.0
           1005.0                     24.3        3.0      90.0       2.0
--------------------------------------------------------------------------
```

where:

PRES =	Bogus sea-level pressure (mb). 99999.0 = not available.
TEMP =	Bogus surface temperature (°C). 99999.0 = not available.
DEP =	Bogus surface dewpoint depression (°C). 99999.0 = not available
DIR =	Bogus surface wind direction (degrees). 99999.0 = not available.
SPD =	Bogus surface wind speed (m s^{-1}). 99999.0 = not available.

The end of bogus surface data for a particular time period is denoted by DATE = 888. If no bogus surface data for a particular time period are included in the `nbogus` file, but bogus upper-air data are included for that time period, the NDATE = 888 record must still be included.

Combination of NBOGUS and NSELIM options

RAWINS reads a single file (`nbogus`) for the upper-air bogus reports, surface bogus reports, station numbers to skip. The information are combined in the `nbogus` file as follows:

1. The NSELIM records for the time period (if option NSELIM is .TRUE. for that particular time period). The end of the NSELIM records for a time period is denoted by ISU = 777.
2. The bogus upper-air reports for the time period (if option NBOGUS is .TRUE. for that particular time period). The end of the bogus upper-air reports for a time period is denoted by DATE = 999.
3. The bogus surface reports for the time period (if option NBOGUS is .TRUE. for that particular time period). The end of the bogus surface reports for a particular time period is denoted by DATE = 888.