CHAPTER 13

Amend. No. 12

Apr. 1992

RECORDING THE SYNOPTIC OBSERVATION ON FORM 63–2322

13.1 GENERAL. The surface weather record, Form 63–2322, is provided for the recording of surface weather observations both in the Hourly and Synoptic Codes. General instructions regarding the purpose, completion, retention and disposal of this form have already been given in Chapter 8 of this manual.

13.1.1 The record of synoptic observations and the Summary for the Climatological Day derived from these observations shall be maintained on Form 63–2322 in Sections I, II, III and IV in accordance with the following detailed instructions.

13.2 Headings. A new sheet (Form 63–2322) shall be used for the record of each day's weather beginning at 0601 UTC. The headings for each new sheet shall include:

(a) Station name as listed in METSTAT, followed by the three–character identifier in brackets.

(b) The province, encoded as follows: British Columbia–BC, Alberta–ALTA, Saskatchewan–SASK, Manitoba–MAN, Ontario,–ONT, Quebec–QUE, New Brunswick–NB, Nova Scotia–NS, Prince Edward Island–PEI, Newfoundland–NFLD, Yukon Territory–YT, and Northwest Territories–NWT. (Compatible with the AES computerized Station Information System (SIS))

(c) A 4–figure group for the hour, two figures for the date (UTC in both cases), and the first three letters of the month, indicating the beginning of the period for which observations are recorded on that sheet.

(d) A 4–figure group for the hour, two figures for the date (UTC in both cases), and the first three letters of the month, indicating the end of the period for which observations are recorded on that sheet.

13.2.1 When the entire 24 h observing period can be recorded on one sheet, the 4–figure hour groups shall be 0601 and 0600 respectively.

13.2.2 When two or more sheets are required for a 24–hour period the following procedures apply:

(a) The 4–figure hour groups for each additional sheet shall be determined by adding one minute to the time of the last observation on the previous sheet to obtain the beginning of the period.

(b) The 4–figure hour group for the end of the period of observations shall be the time of the last observation as recorded in Column 29.

(c) Refer also to para 8.2.2.2.

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13.3 SECTION I – OBSERVED DATA AND COMPUTATIONS. Stations which make Synoptic observations shall complete the entire section (Columns 1– 14 and lines 15 – 22) as part of the Synoptic observation. Stations which make Hourly Observations only, at any of the times of the main and intermediate synoptic hours, shall complete this section in part, omitting entries in columns 6, 8 and 13, except where needed for local or regional requirements.

13.3.1 Column 1 – Notes. Notes on unusual weather, (para. 3.12), local conditions affected by the weather etc., shall be entered in Column 1. This column shall also be used for the recording of any occurrences or events of meteorological significance, for example, the time of beginning and ending of drifting snow, that cannot be recorded elsewhere on the form. Water temperature shall be entered in Column 1.

Column 1 – Instrument Defects and Changes. Enter details of changes in thermometers and other instruments, the time at which instruments became or remained unserviceable, etc. For example: motor psychrometer unserviceable at 1800Z; wind equipment remained unserviceable due to freezing rain. Similar entries are required on Form 63–2325: Refer to sample, para. 8.1.2.

13.3.2. Columns 2–3–4 – Duration of Weather and/or Obstruction to Vision.

13.3.2.1 Column 2. In Column 2 record each occurrence (as specified in para. 13.3.2.4 to 13.3.2.7) of any of the weather phenomena listed in para. 10.2.10 (execpt RE and VC codes). The weather phenomena shall be designated by the appropriate symbols with separate entries to indicate different intensities. The symbols and possible variations in intensity are also shown in para. 10.2.10. These entries should be recorded in chronological order with respect to the time of beginning of the phenomenon.

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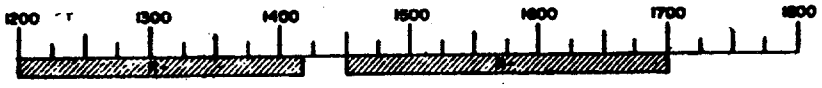
13.3.2.2 Columns 3–4. In columns 3 and 4 record the time (UTC) of beginning and ending for each entry in Column 2. If due to the nature of the observing program the time(s) is(are) not known, enter "M" for missing.

13.3.2.3 When recording the beginning and ending of thunder, intermittent precipitation or showery precipitation or obstruction to vision, the record in these columns need not show, (unless there is a local need) intervals of less than 15 minutes between occurrences of thunder, precipitation or obstructions to vision. When 15 minutes have elapsed since the last occurrence of thunder, showery or intermittent precipitation or obstructions to vision, the phenomenon is considered to have ended 15 minutes ago, and the appropriate entry shall be made in Column 4. The following examples illustrate:

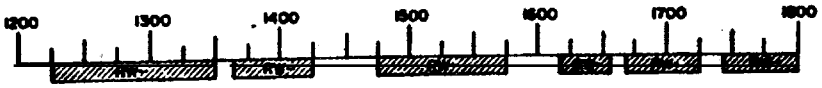
(a)



(UTC)	Duration of Weather and/or Obstruction to Vision				(UTC)
Type 2	Bgn 3	End 4	Type 2	Bgn 3	End 4
R-	1200	1410			
R-	1450	1700			

The above example illustrates 2 periods of rain and the necessary entries in Columns 2, 3 and 4.

(b)



(UTC)	Duration of Weather and/or Obstruction to Vision				(UTC)
Type 2	Bgn 3	End 4	Type 2	Bgn 3	End 4
RW-	1215	1415			
RW-	1445	1545			
RW-	1610	1635			
RW	1640	1715			
RW-	1725	1800			

The above example illustrates 3 periods of rain showers and the necessary entries in Columns 2, 3 and 4.

(c)

(UTC)	Duration of Weather and/or Obstruction to Vision				(UTC)
Type 2	Bgn 3	End 4	Type 2	Bgn 3	End 4
T	1210	1225			
T	1245	1330			
T	1401	1430			

The above example illustrates 3 periods of thunder and the necessary entries in columns 2, 3 and 4.

Note: A period of precipitation, thunder, etc., refers to the interval between the beginning and ending of the phenomenon, disregarding intervals of less than fifteen minutes between occurrences. However entries in columns 2, 3 and 4 are also required to show the duration of each intensity as illustrated in Example (b).

13.3.2.4 Each occurrence of haze, smoke, blowing snow, blowing sand, blowing dust , dust haze, sandstorm or duststorm alone or in combination with other phenomena shall be recorded in these columns if observed with a prevailing visibility of 6 miles or less.

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13.3.2.5 Each occurrence of fog or ice fog, alone or in combination with other phenomena shall be recorded in these columns if observed with a prevailing visibility of 1/2 mile or less.

13.3.2.6 Each occurrence of volcanic ash, alone or in combination with other phenomena shall be recorded in these columns if observed regardless of the prevailing visibility.

13.3.2.7 Each occurrence of drifting dust, drifting sand, or drifting snow alone or in combination with other phenomena shall be recorded in these columns if observed regardless of the prevailing visibility.

13.3.2.8 If additional space is required for entries in Columns 2, 3 and 4 use Column 1.

13.3.2.9 Examples of typical entries are also shown in paras. 13.8 and 13.8.1. Note the examples which illustrate precipitation going on at the end of the day and continuing into the next day.

13.3.3. Hour (UTC). No entries are required in this column. The times shown and the 24–hr. value indicator are guides for subsequent entries.

13.3.4 Column 5 – Corrected Maximum. Record the corrected reading of the maximum thermometer in degrees and tenths Celsius in the space indicated, Ex. 1.4, 0.4 etc. At the bottom of Column 5, enter the maximum temperature in degrees and tenths for the preceeding 24 hours.

13.3.4.1 At stations which operate during part of the day, seven days a week but do not take an observation at 0600Z, the thermograph chart shall be used to obtain the maximum temperature to the nearest degree for the period between the previous reading of the maximum thermometer and 0600Z. Apply the appropriate correction, para. 5.9.2 (c) (ii), and record this 0600Z corrected value in degrees and tenths followed by the letter "E". Example: 25.0E, –4.0E etc.

Note: It is only at 0600Z that an entry is required for a time when no observation was made.

13.3.4.1.1 When the 0600Z maximum temperature is obtained from the thermograph chart, the thermograph chart must also be used in conjunction with the maximum thermometer to obtain the next maximum temperature. For example:

(a) At 1200Z, the maximum thermometer reads 9.4 and it is obvious from the thermograph chart that this maximum temperature occurred between 0600Z and 1200Z. Record 9.4 as the maximum temperature at 1200Z.

(b) At 1200Z the maximum thermometer reads 9.4 and it is obvious from the thermograph chart that this maximum temperature occurred before 0600Z. From the thermograph chart obtain the highest temperature since 0600Z. Apply the appropriate correction, para 5.9.2 (c) (ii), and record the corrected reading in degrees and tenths, followed by the letter "E" as the 1200Z maximum temperature.

13.3.4.2 If during a given period a dry–bulb thermometer registers a higher temperature than that indicated by the maximum thermometer for the same period, record the maximum thermometer reading in brackets, and in the same space and immediately above record the dry–bulb temperature. In this case the dry–bulb temperature shall be considered for coding purposes and in determining the 24–hour maximum temperature. Further details shall be recorded under Notes, Column 1. See example in para. 13.8.

13.3.4.3 When the maximum thermometer is unserviceable for the entire period under consideration, and consecutive hourly dry–bulb temperatures are available, record the highest dry–bulb reading as the maximum temperature. Enclose this value in brackets and explain under Instrument Defects and Changes, Column 1.

Note: When a serviceable maximum thermometer is available for only a portion of the period, its reading shall be entered in Column 5 and considered in conjunction with the appropriate dry–bulb readings, to determine the maximum temperature.

13.3.4.4. At stations collocated with an automatic station the maximum temperature may, if necessary, be obtained from the input message, or from either the hourly or synoptic messages generated by the automatic station. Maximum temperatures derived from automatic stations shall be recorded in degrees and tenths. Example: 23.8, 21.0. A note shall be entered in column 1 to indicate that the maximum temperature is derived from the automatic station.

13.3.5 Column 6 – $T_xT_xT_x$ – Maximum Temperature in Degrees and Tenths Celsius. The small figure inserted in the upper left hand corner of each space indicates the period preceding the time of observation for which a maximum temperature is required, except at 1200Z the entry in Column 6 shall be the 24–hour maximum for the 24–hour period ending 6 hours ago. If, however, the 0600Z observation was not taken, record at 1200Z the maximum for the previous 24 hours.

13.3.5.1 The entry in Column 6 shall be selected, without rounding, from the appropriate entries in Column 5.

13.3.6 Column 7 – Corrected Minimum. Record the corrected reading of the minimum thermometer in degrees and tenths Celsius. Example: 1.4, 0.4 etc. At the bottom of Column 7 enter the minimum temperature in degrees and tenths for the preceeding 24 hours.

13.3.6.1 At stations which operate during part of the day, seven days a week, but do not take an observation at 0600Z the thermograph chart shall be used to obtain the minimum temperature, to the nearest degree, for the period between the previous reading of the minimum thermometer and 0600Z. Apply the appropriate correction, para 5.9.2 (c) (ii), and record this 0600Z corrected value in degrees and tenths followed by the letter "E". Example: 15.0E, –2.0E, etc.

Note: It is only at 0600Z that an entry is required for a time when no observation was made.

13.3.6.1.1 When the 0600Z minimum temperature is obtained from the thermograph chart, the thermograph chart must also be used in conjunction with the minimum thermometer to obtain the next minimum temperature. For example:

(a) At 1200Z, the minimum thermometer reads 9.4 and it is obvious from the thermograph chart that the minimum temperature occur red between 0600Z and 1200Z. Record 9.4 as the minimum temperature at 1200Z.

(b) At 1200Z, the minimum thermometer reads 9.4 and it is obvious from the thermograph chart that this minimum temperature occurred before 0600Z. From the thermograph chart obtain the lowest temperature since 0600Z. Apply the appropriate correction, para. 5.9.2 (c) (ii), and record the corrected value in degrees and tenths followed by the letter "E", as the 1200Z minimum temperature.

13.3.6.2 If during a given period a dry–bulb thermometer registers a lower temperature than that indicated by the minimum thermometer for the same period, record the minimum thermometer reading in brackets and in the same space and immediately above, record the dry–bulb temperature. In this case the dry–bulb temperature shall be considered for coding purposes and in determining the 24–hour minimum temperature. Further details shall be recorded under Notes, Column 1. See example in para. 13.8.

13.3.6.3 When the minimum thermometer is unserviceable for the entire period under consideration and consecutive hourly dry–bulb readings are available, record the lowest dry–bulb reading as the minimum temperature. Enclose this value in brackets and explain under Instrument Defects and Changes, Column 1.

Note: When a serviceable minimum thermometer is available for only a portion of the period, its reading shall be entered and considered in conjunction with the appropriate dry–bulb readings, to determine the minimum temperature.

13.3.6.4 At stations collocated with an automatic station the minimum temperature may, if necessary, be obtained from the input message, or from either the hourly or synoptic messages generated by the automatic station. Minimum temperatures derived from automatic stations shall be recorded in degrees and tenths. Example: –27.4, –23.0. A note shall be entered in column 1 to indicate that the minimum temperature is derived from the automatic station.

13.3.7 Column 8 – $T_nT_nT_n$ – Minimum Temperature in Degrees and Tenths Celsius. The small figure inserted in the upper left–hand corner of each space indicates the period preceding the time of observation for which a minimum temperature is required. The entry in Column 8 shall be selected, without rounding, from the appropriate entries in Column 7.

Note: At 1200 and 1800 UTC, it is necessary to check the entries recorded in Column 7 of Form 63–2322 for the previous day, e.g., at 1200Z the 6–hour minimum recorded at 0600Z of the previous day shall also be considered when determining the entry in Column 8.

13.3.8 Column 9 – Snowfall. Enter the amount, (refer 3.7.6 and 3.7.7) in centimetres and tenths (nearest 0.2 cm) in the space indicated. When there is less than a measurable amount, that is, less than 0.2 cm, record this as a "trace" by entering "TR". Enter "0" for none.

13.3.8.1 At the bottom of Column 9 enter the total amount of snowfall for the previous 24 hours. *Enter "TR" for a trace, enter "0" for none.

13.3.8.2 Stations which operate during part of the day, seven days a week, but do not take the 0600Z observation, shall estimate the amount of snowfall for the period between the time of the previous snowfall measurement and 0600Z. Under these circumstances the value entered for 0600Z, if greater than a trace, shall be followed by the letter "E".

Note: It is only at 0600Z that an entry is required for a time when no observation was made.

13.3.8.2.1 When the snowfall for 0600Z was determined by estimation (refer 13.3.8.2) the snowfall amount for the next observation shall be the measured amount MINUS the amount assigned to the 0600Z observation.

13.3.9 Column 10 – Snowfall (Water Equivalent). Enter the amount, in millimetres and tenths, in the space indicated. When there is less than a measurable amount, that is, less than 0.2 mm, record this as a "trace" by entering "TR". Enter "0" for none. At the 0600Z observation compute the total amount of snowfall water equivalent for the preceding 24–hour period and enter this value at the bottom of Column 10. *Enter "TR" for a trace. Enter "0" for none.

*Note: The addition of two or more "TR" amounts yields only a "TR".

Note: At stations equipped with a snow gauge, the snow gauge measurement is the "measured" water equivalent. At stations not equipped with a snow gauge the water equivalent is "estimated", i.e., snowfall divided by ten.

13.3.10 Column 11 – Rainfall. Enter the amount in millimetres and tenths in the space indicated, Examples: 12.0, 0.4 etc. When there is less than a measurable amount, that is, less than 0.2 mm record this as a "trace" by entering "TR". Enter "0" for none.

13.3.10.1 When the observer is certain that the water measured in the rain gauge has resulted from the formation of dew alone, the word "dew" shall be written in brackets before the amount, e.g., (dew) 0.2.

13.3.10.2 At the bottom of Column 11, enter the total amount of rainfall (less dew) for the preceding 24–hour period. *Enter "TR" for a trace. Enter "0" for none.

13.3.10.3 Stations which operate during part of the day, seven days a week, but do not take the 0600Z observation shall determine from the recording rain gauge (or from the recording rain gauge of a collocated automatic station), or by estimation if necessary, the amount of rainfall for the period between the time of the previous standard gauge measurement and 0600Z. Under these conditions, the value entered at 0600Z, if greater than a trace, shall be followed by the letter "E".

Note: It is only at 0600Z that an entry is required for a time when no observation was made.

13.3.10.3.1 When the rainfall for 0600Z was determined from a recorder chart, collocated automatic station, or by estimation, the rainfall amount for the next observation shall be the measured amount from the standard gauge MINUS THE AMOUNT ASSIGNED TO THE 0600Z OBSERVATION.

13.3.11 Colunm 12 – Total Precipitation. Enter the amount in millimetres and tenths in the space indicated. Examples: 8.2, 0.4 etc. This value is the sum of the Water Equivalent and Rainfall as entered in Columns 10 and 11. When there is less than a measurable amount (less than 0.2 mm) record this as a "trace" by entering "TR". Enter "0" for none. At the bottom of Column 12 enter the total amount of precipitation for the preceding 24 hours. *Enter "TR" for a trace. Enter "0" for none.

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13.3.11.1 When dew occurs alone its amount shall not be included in the total precipitation recorded in Column 12.

*Note: The addition of two or more "TR" amounts yields only a "TR".

13.3.11.2 The total amount of precipitation for the preceding 24 hours shall agree with the sum of the 24–hour snowfall water equivalent and the 24–hour rainfall as entered at the bottom of Columns 10 and 11.

13.3.12 Column 13 – Total 24–Hour Precipitation. At 0600, 1200, 1800 and 0000Z, enter the total amount of precipitation which has been measured during the preceding 24–hour period. Enter "TR" for a trace and "0" for none. The amount shall be obtained from the appropriate entries in Column 12. For coding these data in Synoptic Reports see para. 12.4.9.

13.3.13 Column 14 – Depth of Snow on Ground. Enter the total depth of snow on the ground in whole centimetres. Enter "TR" for a trace (less than 0.5 cm) and enter "0" for none.

13.3.14 Time (UTC). Lines 15 to 22 shall be completed whenever an observation is made at 0900, 1200, 1500, 1800, 2100, 0000, 0300 or 0600 UTC. (Space has been left in these time blocks for observers to fill in the temperature of 12 hours ago, T_{-12}, and the current temperature, T_0. The small numbers beneath the 0900, 1200, etc., serve as reminders of the times to which temperatures of 12 hours ago apply. For example, the temperature of 12 hours ago which should be used at 0900 UTC is the temperature from the previous hour 21.)

13.3.15 Line 15 – Sum. Enter the sum of the dry–bulb temperature of 12 hours previously and the current dry–bulb temperature.

Note: When the temperature of 12 hours ago cannot be obtained from a dry–bulb reading, a collocated automatic station, or a thermograph, it shall be estimated (para. 4.3.3.2).

13.3.16 Line 16 – Mean. Divide the Sum by 2 to obtain a temperature mean and record this value. This mean shall be used for computing the Reduction to Sea Level (21) using the tables supplied for this purpose.

13.3.17 Line 17 – Attached Thermometer. Enter the reading of the mercury barometer's attached thermometer. Leave blank if using an electronic or AWOS barometer.

13.3.18 Line 18 – Barometer as Read. Enter the barometer as read (nearest tenth hPa) e.g., 968.9.

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13.3.19 Line 19 – Total Correction. From the table for the reduction of the barometer reading to Station Pressure, determine the total correction and enter this value using the appropriate sign, e.g., +1.2, –0.7 etc.

13.3.20 Line 20 – Station Pressure. Compute the station pressure from the Barometer as Read and the Total Correction. Record the Station Pressure (nearest tenth hPa).

13.3.21 Line 21 – Reduction to Sea Level. Enter the reduction to sea level value as determined from the sea–level reduction table. Refer para. 4.3.2.

13.3.22 Line 22 – Sea Level Pressure. Add the Reduction to Sea Level to the Station Pressure to obtain the sea–level pressure. Record the sea–level pressure (nearest tenth hPa), e.g., 1018.9.

13.4 SECTION II (HOURLY OBSERVATIONS)

13.4.1 The instructions for entries in Section II are contained in chapter 10, these instructions shall be followed for the syno hour observation at stations which transmit Synoptic Observations but do not transmit Hourly Observations.

13.4.1.1 Stations which transmit Hourly Observations at any of the synoptic times shall complete this section in accordance with the instructions in Chapter 10.

13.5 SECTION III – CODED SYNOPTIC REPORTS

13.5.1 In Section III of Form 63–2322 spaces are provided for the recording of 4 coded Synoptic reports.

13.5.2 In the first column headed YY, enter, using 2 figures, the dates in Coordinated Universal Time, applicable to the 1200Z and 0000Z observations.

13.5.3 To assist in the preparation and recording of the synoptic message, Section III contains preprinted values as follows:

(a) Coordinated Universal Times 12, 18, 00, and 06, to indicate the appropriate line on which each Synoptic message should be recorded.

(b) Each of the vertical columns of section 1 is headed by the symbolic form of one of the groups in the Synoptic message. Each coded group of the message, up to and including the 8–group of section 1, should be recorded below its symbolic form.

(c) Figures are shown immediately below the symbolic form of the groups in section 1 to indicate the lines or columns on Form 63–2322 where observed data, required in coding the message, may be located.

(d) The first figure of most groups is preprinted where the initial figure is used to identify groups of sections 1, 3, and 5.

(e) Appropriate entries shall be overwritten on the screened areas of symbolic language in section 3 and 5. In the event that data are recorded for the supplementary wind group, 00fff, it will be necessary to record data for both Nddff and 00fff in the same block.

13.5.4 The letter X shall be used in Section III of Form 63–2322 to indicate that information on a certain meteorological element was missing when the report was made. However, to facilitate communications, on the copy of the coded synoptic message prepared for the communicator (i.e., on Form 61–9406), the letter X shall be replaced by the solidus, /. Care should be taken that the solidus, /, is legible.

13.5.5 Transmission of Synoptic reports on meteorological communications circuits shall be in conformity with the time schedule specified in chapter 9. The filing times of Synoptic reports shall be laid down by the Officer–in–Charge at each station to provide sufficient time to meet scheduled transmission times.

13.6 SECTION IV – SUMMARY FOR THE CLIMATOLOGICAL DAY ENDING AT 0600 UTC. The climatological day which is summarized in Section IV is the 24–hour period ending at 0600Z. At stations which operate during part of the day, seven days a week, but do not take the 0600Z observation, the temperature and precipitation data, which apply to the period between the time at which these parameters were previously measured and 0600Z, shall be determined from recording instruments and/or by estimation. Refer to paragraphs 13.3.4.1, 13.3.4.4, 13.3.6.1, 13.3.6.4, 13.3.8.2, 13.3.10.3. The following stations are not required to complete this portion of the record:

(a) Stations which operate on fewer than seven days a week

(b) Stations which operate during part of the day seven days a week but do not take the 0600Z observation, and have neither a thermograph nor are collocated with an automatic station.

13.6.1 Column 44 – Day. Using a two–figure group, enter the first date which appears in the heading of Form 63–2322; i.e., the date (UTC) of the beginning of the 24–hour period for which a "Summary" is being prepared.

13.6.2 Column 45 – Maximum Temperature. The 24–hour maximum (from Column 5) shall be entered here in degrees and tenths Celsius.

13.6.3 Column 46 – Minimum Temperature. The 24–hour minimum (from Column 7) shall be entered here in degrees and tenths Celsius.

13.6.4 Columns 47 and 48 – Relative Humidity. When 24 Hourly Observations are taken per day AND each observation contains the relative humidity (recorded in Column 24), enter in these columns the maximum and minimum relative humidity. Otherwise enter "M".

13.6.5 Columns 49 to 52 – Six–Hour Total Amount. Enter the 6–hour amount of precipitation as recorded in Column 12 for each of the times indicated. Enter "0" if no precipitation has occurred. Enter "TR" for trace.

13.6.5.1 Enter "M" in each column for which a six–hour total amount has not been determined. For example: If the total amount of precipitation recorded in Column 12 at 0000Z is for a period greater than six hours, enter "M" in Column 51; also enter "M" in Columns 50 or 49 for each of the previous missing six–hour amounts.

13.6.6 Colum 53 – Twenty–four Hour Amount – Rainfall. Enter the amount of rainfall in millimetres and tenths as recorded at the bottom of Column 11. Enter "TR" for a trace. Enter "0" if no rainfall has occurred.

Note: The water equivalent of hail and freezing precipitation is included in this amount.

13.6.7 Column 54 – Twenty–four Hour Amount – Snowfall. Enter the amount of snowfall in centimetres and tenths as recorded at the bottom of Column 9. Enter "TR" for a trace. Enter "0" if no snowfall has occurred.

13.6.8 Column 55 – Twenty–four Hour Amount – Total Precipitation. Enter the total amount of precipitation in millimetres and tenths as recorded at the bottom of Column 12. Enter "TR" for a trace. Enter "0" if no precipitation has occurred.

13.6.9 Column 56 – Depth of Snow on the Ground. Enter the depth of snow on the ground in whole centimetres as recorded at the 1200Z observation (Column 14). Enter "TR" for a trace (less than 0.5 cm). When there is no snow or ice on the ground a "0" entry shall be made in Column 56 at all seasons of the year.

13.6.9.1 When the 1200Z observation is not taken, enter the depth of snow on the ground measured at the next main Synoptic observation e.g., at 1800Z or 0000Z etc.

13.6.10 Columns 57 to 65 – Day With. Occurrences of thunderstorms, precipitation, obstructions to vision, and strong winds shall be recorded in these columns. The occurrence of a phenomenon shall be indicated by entering "1" in the appropriate column. The non–occurrence of a phenomenon shall be indicated by entering "0" in the appropriate column.

13.6.11 Columns 57 to 63 – Thunderstorms, Freezing Rain or Freezing Drizzle, Hail, Fog and Obstructions to Vision. The information recorded under Duration of Weather and Obstructions to Vision (Columns 2 to 4) shall be used to determine entries in Columns 57 to 63.

Note: At stations which operate during part of the day, seven days per week, the entry in these columns shall be either "0" or "1", para. 13.6.10, based on the best information available to the observer.

13.6.11.1 An "M" shall be entered in these columns only if it is impossible for the observer to tell whether there has been an occurrence or non–occurrence.

13.6.11.2 Any amount, even a trace, of freezing rain, freezing drizzle, or hail requires a "1" entry in Column 58 or 59.

13.6.12 Columns 64–65–66–67–68 – General Instructions.

13.6.12.1 The reference and priority for values recorded in columns 64 and 65 are as follows:

(a) Mean wind speeds for a period of two minutes or more derived from a wind Recorder Chart.

(b) Two–minute mean wind speeds, as recorded on Form 63–2322 when the observing program includes 24 Hourly Observations per day and the station is NOT equipped with a recording wind instrument.

(c) Mean wind speed obtained from a collocated automatic station.

13.6.12.2 The reference and priority for values recorded in columns 66–67 and 68 are as follows:

(a) The greatest peak speed, derived from a wind recorder chart which has gust information.

(b) The greatest speed, gust or mean, obtained from the record of 24 Hourly Observations (Specials and Checks included), provided the wind data were obtained from dial or digital type wind equipment with gust information.

(c) The greatest peak speed obtained from a collocated automatic station.

13.6.12.3 At stations which do not take hourly observations and are not equipped with serviceable recording wind equipment, and are not collocated with an automatic station, M shall be entered in each of the Columns 64, 65, 66, 67 and 68.

13.6.12.4 If a station has no serviceable wind speed detector for any period during the "climatological day", M shall be entered in each of the columns 66, 67, 68 for that day. A "1" entry is required in columns 64 and/or 65 if winds of 28 or more knots and/or 34 or more knots occurred during the period in which the wind equipment was serviceable.

13.6.12.5 If the greatest speed, (peak) occurred more than once in a day or in an hour, the entries in columns 66, 67 and 68 shall refer to the earliest occurrence.

13.6.13 Columns 64–65–66–67–68 – Detailed instructions as appropriate for various observing programs are listed as follows:

13.6.13.1 PROGRAM A

Program	Column/s	Procedure
24 Hourly Observations		(1) Determine from the Recorder Chart the greatest mean wind speed for a period of two minutes or more.
+		
Recording wind equipment which records gust information	64	(2) Enter 1 to indicate an occurrence of 34 knots or more; 0 for non–occurrence.
	65	(3) Enter 1 to indicate an occurrence of 34 knots or more; 0 for non–occurrence. Example: Mean speed 35 knots: Enter 1in each of columns 64 and 65.
i.e.,		
		(4) Determine the greatest (peak) windspeed, from the Recorder Chart
	66–67–68	(5) If the greatest speed is 16 knots or less, leave these columns blank.
U2A Recorder		(6) If the greatest speed is 17 knots or more:
or		
other analog Recorder	66	Enter 2 figures to indicate the direction of the greatest wind to thenearest ten degrees. If the recorder chart does not indicate the direction of the greatest wind speed, enter M.
	67	Enter the greatest speed in knots.
	68	Enter 2 figures to indicate the time of the greatest wind speed in hours UTC, e.g.:* If the greatest speed occurred at 0600 UTC enter 06. If the greatest speed occurred at 1500 UTC enter 15. If the greatest speed occurred at 1505 UTC enter 16. If the greatest speed occurred at 1620 UTC enter 17.

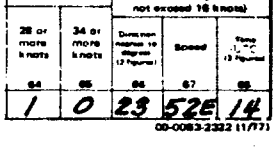
e.g.: greatest mean speed 35 knots; greatest (peak) speed NW 60 knots at1405 UTC

MEAN WIND OF		PEAK WIND SPEED GUST OR MEAN (leave blank if speed does not exceed 16 knots)		
28 or more knots	34 or more knots	Direction nearest10 degrees (2 figures)	Speed	Time (UTC) (2 figures)
64	65	66	67	68
1	1	32	60	15

*Note: When an entry is made in Column 68 record also in Column 1 the time of the greatest wind speed to the nearest minute, as determined from the recorder chart.

13.6.13.2. PROGRAM B

Program	Column/s	Procedure
24 Hourly Observations		(1) Determine from all observations, including specials and checks recorded on Form 63–2322, the greatest mean two–minute wind speed.
+	64	(2) Enter 1 to indicate an occurrence of 28 knots or more; 0 for non–occurrence.
Dial or digital type wind gust information (but no Serviceable Recorder)	65	(3) Enter 1 to indicate an occurrence of 34 knots or more; 0 for non–occurrence.
i.e., U2A (dial only), 78D		Example: Greatest mean two–minute speed 35 knots: Enter 1 in each of columns 64 and 65.
or		(4) Determine from all observations, including specials and checks recorded on Form 63–2322, the greatest wind speed, gust or mean.
collocated automatic station	66–67–68	(5) If the greatest speed is 16 knots or less leave these columns blank.
		(6) If the greatest speed is 17 knots or more:
	66	Enter 2 figures to indicate the direction of the greatest wind to the nearest ten degrees. If the direction of the greatest wind was estimated enter M.
	67	Enter the greatest speed in knots followed by the letter E.
	68	Enter 2 figures to indicate the time of the greatest wind speed in hours UTC, e.g., If the greatest speed occurred at 0600 UTC enter 06. If the greatest speed occurred at 1500 UTC enter 15. If the greatest speed occurred at 1505 UTC enter 16. If the greatest speed occurred at 1620 UTC enter 17.



MEAN WIND OF		PEAK WIND SPEED GUST OR MEAN (Leave blank if speed does not exceed 16 knots)		
28 or more knots	34 or more knots	Direction nearest to tens (2 figures)	Speed	Time (4 figures)
64	65	66	67	68
1	0	29	52E	14

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e.g., Greatest mean speed 29 knots; Greatest (peak) speed SW 52 knots at 1320 UTC.

13.6.13.3 PROGRAM C

Program	Column/s	Procedure
24 Hourly Observations + Recording wind equipment without recorded gust information i.e., MSC 45B	64 65 66–67–68	(1) Determine from all observations, including specials and checks recorded on Form 63–2322 and from the Recorder Chart the greatest mean wind speed for a period of two minutes or more. (2) Enter 1 to indicate an occurrence of 28 knots or more; 0 for non–occurrence. (3) Enter 1 to indicate an occurrence of 34 knots or more; 0 for non–occurrence. Example: Mean two–minute speed 35 knots: Enter 1 in each of columns 64 and 65. (4) Enter M in each column. e.g., Greatest mean speed 29 knots.

MEAN WIND OF		PEAK WIND SPEED GUST OR MEAN (leave blank if speed does not exceed 16 knots)		
28 or more knots	34 or more knots	Direction nearest 10 degrees (2 figures)	Speed	Time (UTC) (2 figures)
64	65	66	67	68
1	0	M	M	M

00-0063-2322 (1/77)

13.6.13.4 PROGRAM D

Program	Column/s	Procedure
Fewer than 24 Hourly Observations + Dial or digital type wind equipment with gust information but no recorder, i.e., U2A (Dial only) or 78D	64–65 66–67–68	(1) Enter M in each column. (2) Enter M in each column.

MEAN WIND OF		PEAK WIND SPEED GUST OR MEAN (leave blank if speed does not exceed 16 knots)		
28 or more knots	34 or more knots	Direction nearest 10 degrees (2 figures)	Speed	Time (UTC) (2 figures)
64	65	66	67	68
M	M	M	M	M

00-0063-2322 (1/77)

13.6.13.5 PROGRAM E

Program	Column/s	Procedure
Less than 24		(1) Determine (para. 13.6.12.1) the greatest mean wind speed for a period of two minutes or more.
Hourly Observations	64	(2) Enter 1 to indicate an occurrence of 28 knots or more; 0 for non–occurrence.
+	65	(3) Enter 1 to indicate an occurrence of 34 knots or more; 0 for non–occurrence. Example: Mean speed 35 knots: Enter 1 in each of columns 64 and 65.
Recording wind equipment with recorded gust information		(4) Determine the greatest (peak) wind speed (para. 13.6.12.2).
(i.e., U2A Recorder or other analog Recorder) or collocated automatic station	66–67–68	(5) If the greatest speed is 16 knots or less, leave these columns blank.
		(6) If the greatest speed is 17 knots or more:
	66	Enter 2 figures to indicate the direction of the greatest wind to the nearest ten degrees. If the recorder chart does not indicate the direction of the greatest wind speed, enter M.
	67	Enter the greatest speed in knots.
	68	Enter 2 figures to indicate the time of the greatest wind speed in hours UTC, e.g.,* If the greatest speed occurred at 0600 UTC enter 06. If the greatest speed occurred at 1500 UTC enter 15. If the greatest speed occurred at 1505 UTC enter 16. If the greatest speed occurred at 1620 UTC enter 17. e.g., Greatest mean hourly speed 36 knots. Greatest (peak) speed SW49 knots at 0315 UTC.

MEAN WIND OF		PEAK WIND SPEED GUST OR MEAN (leave blank if speed does not exceed 16 knots)		
28 or more knots	34 or more knots	Direction nearest 10 degrees (2 figures)	Speed	Time (UTC) (2 figures)
64	65	66	67	68
1	1	23	49	04

*Note: When an entry is made in Column 68 record also in Column 1 the time of the greatest wind speed to the nearest minute, if determined from a recorder chart.

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13.6.13.6 PROGRAM F

Program	Column/s	Procedure
Less than 24 Hourly Observations	Chart the greatest mean speed 64	(1) Determine from the Recorder for a period of 10 minutes or more.
		(2) Enter 1 to indicate an occurrence of 28 knots or more; 0 for non–occurrence.
+	65	(3) Enter 1 to indicate an occurrence of 34 knots or more; 0 for non–occurrence.
Recording wind equipment but no recorded gust information i.e., MSC 45B	66–67–68	Enter M in each column.

e.g.: Greatest mean speed 29 knots.

MEAN WIND OF		PEAK WIND SPEED GUST OR MEAN (leave blank if speed does not exceed 16 knots)		
28 or more knots	34 or more knots	Direction nearest 10 degrees (2 figures)	Speed	Time UTC (2 figures)
64	65	66	67	68
1	0	M	M	M

00-0063-2322 (1/77)

13.7 Column 69 – Checked By. The Officer–in–Charge or a designated member of his staff shall check, preferably on a daily basis, the accuracy and legibility of all data recorded on Form 63–2322. Upon completion of this check the reviewing officer shall record their name and their signature in column 69. (Column 69 is found in the extreme upper left corner of the form).