Important notice: In order to accommodate a growing number of stations in the Integrated Surface Data (ISD), a new methodology for the assignment of station identifiers is being implemented by approximately January 2013. Station identifiers which currently appear as an 11-digit numerical field in positions 5 – 15 of each ISD record in the archive format described in this document will soon include stations that contain an alphabetic character (A–Z) for the leading digit (position 5). These assignments will not affect existing stations unless it becomes necessary to reassign new identifiers to them. This is occasionally necessary due to station moves or various other reasons. It will affect most new stations coming into existence after this implementation occurs. At some point in the future, NCEI will be moving toward a longer station identifier for ISD. This will extend the current record layout of the data files and influence all existing station identifiers which will be reassigned. NCEI will provide further information on these pending changes as the details are established. You may also keep abreast of these or other changes by referring to the most recent edition of the ISD documentation.

1. **Data Set ID:**
   
   DS3505

2. **Data Set Name:**
   
   INTEGRATED SURFACE DATA (ISD)

3. **Data Set Aliases:**
   
   N/A

4. **Access Method and Sort for Archived Data:**

   The data files are derived from surface observational data, and are stored in ASCII character format. Data field definitions for elements transmitted are provided after this preface, providing definition of data fields, position number for mandatory data fields, field lengths for variable data fields, minimum/maximum values of transmitted data, and values for missing data fields. Data are accessible via NCEI’s Climate Data Online system (cdo.NCEI.noaa.gov), FTP (ftp://ftp.NCEI.noaa.gov/pub/data/noaa/), GIS services (gis.NCEI.noaa.gov), and by calling NCEI for off-line servicing (see section 12 below).

**Data Sequence** – Data will be sequenced using the following data item order:

1. FIXED-WEATHER-STATION identifier
2. GEOPHYSICAL-POINT-OBSERVATION date
3. GEOPHYSICAL-POINT-OBSERVATION time
4. GEOPHYSICAL-POINT-OBSERVATION latitude coordinates
5. GEOPHYSICAL-POINT-OBSERVATION longitude coordinates
6. GEOPHYSICAL-POINT-OBSERVATION type surface report code
7. GEOPHYSICAL-REPORT-TYPE code

Record Structure - Each record is of variable length and is comprised of a control and mandatory data section and may also contain additional, remarks, and element quality data sections.

Maximum record size: 2,844 characters

Maximum block length: 8,192 characters for data provided on tape

Control Data Section - The beginning of each record provides information about the report including date, time, and station location information. Data fields will be in positions identified in the applicable data definition. Control data section is fixed length and is 60 characters long.

Mandatory Data Section - The mandatory data section contains meteorological information on the basic elements such as winds, visibility, and temperature. These are the most commonly reported parameters and are available most of the time. The mandatory data section is fixed length and is 45 characters long.

Additional Data Section - Variable length data are provided after the mandatory data. These additional data contain information of significance and/or which are received with varying degrees of frequency. Identifiers are used to note when data are present in the record. If all data fields in a group are missing, the entire group is usually not reported. If no groups are reported the section will be omitted. The additional data section is variable in length with a minimum of 0 characters and a maximum of 637 (634 characters plus a 3 character section identifier) characters.

Note: Specific information (where applicable) pertaining to each variable group of data elements is provided in the data item definition.

Remarks Data - The numeric and character (plain language) remarks are provided if they exist. The data will vary in length and are identified in the applicable data definition. The remarks section has a maximum length of 515 (512 characters plus a 3 character section identifier) characters.

Element Quality Data Section - The element quality data section contains information on data that have been determined erroneous or suspect during quality control procedures. Also, some of the original data source codes and flags are stored here. This section is variable in length and contains 16 characters for each erroneous or suspect parameter. The section has a minimum length of 0 characters and a maximum length of 1587 (1584 plus a 3 character section identifier) characters.

Missing Values - Missing values for any non-signed item are filled (i.e., 999). Missing values for any signed item are positive filled (i.e., +99999).

Longitude and Latitude Coordinates - Longitudes will be reported with negative values representing longitudes west of 0 degrees, and latitudes will
be negative south of the equator. Although the data field allows for values to a thousandth of a degree, the values are often only computed to the hundredth of a degree with a 0 entered in the thousandth position.

5. **Access Method and Sort for Supplied Data**: See #4 above.

6. **Element Names and Definitions**: See documentation below.
Control Data Section

POS: 1-4

TOTAL-VARIABLE-CHARACTERS (this includes remarks, additional data, and element quality section)
The number of characters in the variable data section. The total record length = 105 + the value stored in this field.
DOM: A general domain comprised of the characters in the ASCII character set.
MIN: 0000  MAX: 9999

POS: 5-10

FIXED-WEATHER-STATION USAF MASTER STATION CATALOG identifier
The identifier that represents a FIXED-WEATHER-STATION.
DOM: A general domain comprised of the characters in the ASCII character set.
COMMENT: This field includes all surface reporting stations, including ships, buoys, etc.

POS: 11-15

FIXED-WEATHER-STATION NCEI WBAN identifier
The identifier that represents a FIXED-WEATHER-STATION.
MIN: 00000        MAX: 99999
DOM: A general domain comprised of the numeric characters (0-9).
COMMENT: This field includes all surface reporting stations, including ships, buoys, etc.

NOTE:
1) For data files obtained via FTP or from NCEI's archive, the filename convention uses the USAF identifier and the WBAN identifier in the filename—eg, 723150-03812-year (such as 2006).
2) As additional data sources are integrated into ISD, the 2 station number fields will be used as an 11-digit ID field, with the first 2 digits representing the WMO block number (if applicable).

POS: 16-23

GEOPHYSICAL-POINT-OBSERVATION date
The date of a GEOPHYSICAL-POINT-OBSERVATION.
MIN: 00000101     MAX: 99991231
DOM: A general domain comprised of integer values 0-9 in the format YYYYMMDD.
 YYYY can be any positive integer value; MM is restricted to values 01-12; and DD is restricted to values 01-31.

POS: 24-27

GEOPHYSICAL-POINT-OBSERVATION time
The time of a GEOPHYSICAL-POINT-OBSERVATION based on Coordinated Universal Time Code (UTC).
MIN: 0000         MAX: 2359
DOM: A general domain comprised of integer values 0-9 in the format HHMM.
 HH is restricted to values 00-23; MM is restricted to values 00-59.

POS: 28-28

GEOPHYSICAL-POINT-OBSERVATION data source flag
The flag of a GEOPHYSICAL-POINT-OBSERVATION showing the source or combination of sources used in creating the observation.
MIN: 1     MAX: Z
DOM: A general domain comprised of values 1-9 and A-N.
 1 = USAF SURFACE HOURLY observation, candidate for merge with NCEI SURFACE HOURLY (not yet merged, element cross-checks)
 2 = NCEI SURFACE HOURLY observation, candidate for merge with USAF SURFACE HOURLY (not yet merged, failed element cross-checks)
 3 = USAF SURFACE HOURLY/NCEI SURFACE HOURLY merged observation
 4 = USAF SURFACE HOURLY observation
 5 = NCEI SURFACE HOURLY observation
 6 = ASOS/AWOS observation from NCEI
 7 = ASOS/AWOS observation merged with USAF SURFACE HOURLY observation
 8 = MAPSO observation (NCEI)
A = USAF SURFACE HOURLY/NCEI HOURLY PRECIPITATION merged observation, candidate for merge with NCEI SURFACE HOURLY (not yet merged, failed element cross-checks)
B = NCEI SURFACE HOURLY/NCEI HOURLY PRECIPITATION merged observation, candidate for merge with USAF SURFACE HOURLY (not yet merged, failed element cross-checks)
C = USAF SURFACE HOURLY/NCEI SURFACE HOURLY/NCEI HOURLY PRECIPITATION merged observation
D = USAF SURFACE HOURLY/NCEI HOURLY PRECIPITATION merged observation
E = NCEI SURFACE HOURLY/NCEI HOURLY PRECIPITATION merged observation
F = Form OMR/1001 – Weather Bureau city office (keyed data)
G = SAO surface airways observation, pre-1949 (keyed data)
H = SAO surface airways observation, 1965-1981 format/period (keyed data)
I = Climate Reference Network observation
J = Cooperative Network observation
K = Radiation Network observation
L = Data from Climate Data Modernization Program (CDMP) data source
M = Data from National Renewable Energy Laboratory (NREL) data source
N = NCAR / NCEI cooperative effort (various national datasets)
O = Summary observation created by NCEI using hourly observations that may not share the same data source flag.
9 = Missing

Note: Latitude, longitude, elevation, and call letters for some locations with data from multiple sources (see data source flag above) will sometimes vary within a data file due to differences in the metadata from the originating source. This does not indicate that the station locations differ; only that the metadata have not yet been fully reflected in the data records.

POS: 29-34
GEOPHYSICAL-POINT-OBSERVATION latitude coordinate
The latitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where Southern Hemisphere is negative.
MIN: -90000 MAX: +90000
UNITS: Angular Degrees
SCALING FACTOR: 1000
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+99999 = Missing

POS: 35-41
GEOPHYSICAL-POINT-OBSERVATION longitude coordinate
The longitude coordinate of a GEOPHYSICAL-POINT-OBSERVATION where values west from 000000 to 179999 are signed negative.
MIN: -179999 MAX: +180000 UNITS: Angular Degrees
SCALING FACTOR: 1000
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+99999 = Missing

POS: 42-46
GEOPHYSICAL-REPORT-TYPE code
The code that denotes the type of geophysical surface observation.
DOM: A specific domain comprised of the characters in the ASCII character set.
AERO = Aerological report
AUST = Dataset from Australia
AUTO = Report from an automatic station
BOGUS = Bogus report
BRAZ = Dataset from Brazil
COOPD = US Cooperative Network summary of day report
COOPS = US Cooperative Network soil temperature report
CRB = Climate Reference Book data from CDMP
CRN05 = Climate Reference Network report, with 5-minute reporting interval
CRN15 = Climate Reference Network report, with 15-minute reporting interval
FM-12 = SYNOP Report of surface observation form a fixed land station
FM-13 = SHIP Report of surface observation from a sea station
FM-14 = SYNOP MOBIL Report of surface observation from a mobile land station
FM-15 = METAR Aviation routine weather report
FM-16 = SPECI Aviation selected special weather report
FM-18 = BUOY Report of a buoy observation
GREEN = Dataset from Greenland
MESOH – Hydrological observations from MESONET operated civilian or government agency
MESOS – MESONET operated civilian or government agency
MESOW – Snow observations from MESONET operated civilian or government agency
MEXIC = Dataset from Mexico
NSRDB = National Solar Radiation Data Base
PCP15 = US 15-minute precipitation network report
PCP60 = US 60-minute precipitation network report
S-S-A = Synoptic, airways, and auto merged report
SA-AU = Airways and auto merged report
SAO = Airways report (includes record specials)
SAOSP = Airways special report (excluding record specials)
SHEF = Standard Hydrologic Exchange Format
SMARS = Supplementary airways station report
SOD = Summary of day report from U.S. ASOS or AWOS station
SOM = Summary of month report from U.S. ASOS or AWOS station
SURF = Surface Radiation Network report
SY-AE = Synoptic and aero merged report
SY-AU = Synoptic and auto merged report
SY-MT = Synoptic and METAR merged report
SY-SA = Synoptic and airways merged report
WBO = Weather Bureau Office
WNO = Washington Naval Observatory
99999 = Missing

POS: 47-51
GEOPHYSICAL-POINT-OBSERVATION elevation dimension
The elevation of a GEOPHYSICAL-POINT-OBSERVATION relative to Mean Sea Level (MSL).
MIN: -0400 MAX: +8850 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9), a minus sign (-), and a plus sign (+).
+9999 = Missing

POS: 52-56
FIXED-WEATHER-STATION call letter identifier
The identifier that represents the call letters assigned to a FIXED-WEATHER-STATION.
DOM: A general domain comprised of the characters in the ASCII character set.
99999 = Missing.

POS: 57-60
METEOROLOGICAL-POINT-OBSERVATION quality control process name
The name of the quality control process applied to a weather observation.
DOM: A general domain comprised of the ASCII character set.
V01 = No A or M Quality Control applied
V02 = Automated Quality Control
V03 = subjected to Quality Control
Mandatory Data Section

Bold type below indicates that the element may include data originating from NCEI’s NCEI SURFACE HOURLY/ASOS/AWOS or from AFCCC’s USAF SURFACE HOURLY. Otherwise, data originated from USAF SURFACE HOURLY.

Note: For the quality code fields with each data element, the following may appear in data which were processed through NCEI’s Interactive QC system (manual interaction), for selected parameters:

- A – Data value flagged as suspect, but accepted as good value.
- U – Data value replaced with edited value.
- P – Data value not originally flagged as suspect, but replaced by validator.
- I – Data value not originally in data, but inserted by validator.
- M – Manual change made to value based on information provided by NWS or FAA.
- C – Temperature and dew point received from Automated Weather Observing Systems (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.
- R – Data value replaced with value computed by NCEI software.

POS: 61-63

WIND-OBSERVATION direction angle

The angle, measured in a clockwise direction, between true north and the direction from which the wind is blowing.

MIN: 001          MAX: 360         UNITS: Angular Degrees

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing. If type code (below) = V, then 999 indicates variable wind direction.

POS: 64-64

WIND-OBSERVATION direction quality code

The code that denotes a quality status of a reported WIND-OBSERVATION direction angle.

DOM: A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Errorneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Errorneous, data originate from an NCEI data source
- 9 = Passed gross limits check if element is present

POS: 65-66

WIND-OBSERVATION type code

The code that denotes the character of the WIND-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

- A = Abridged Beaufort
- B = Beaufort
- C = Calm
- H = 5-Minute Average Speed
- N = Normal
- R = 60-Minute Average Speed
- Q = Squall
- T = 180-Minute Average Speed
- V = Variable
- 9 = Missing

NOTE: If a value of 9 appears with a wind speed of 0000, this indicates calm winds.

POS: 66-69

WIND-OBSERVATION speed rate

The rate of horizontal travel of air past a fixed point.

MIN: 0000          MAX: 0900         UNITS: meters per second

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.
WIND-OBSERVATION speed quality code
The code that denotes a quality status of a reported WIND-OBSERVATION speed rate.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

SKY-CONDITION-OBSERVATION ceiling height dimension
The height above ground level (AGL) of the lowest cloud or obscuring phenomena layer aloft with 5/8 or more summation total sky cover, which may be predominantly opaque, or the vertical visibility into a surface-based obstruction. Unlimited = 22000.
MIN: 00000 MAX: 22000 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

SKY-CONDITION-OBSERVATION ceiling quality code
The code that denotes a quality status of a reported ceiling height dimension.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

SKY-CONDITION-OBSERVATION ceiling determination code
The code that denotes the method used to determine the ceiling.
DOM: A specific domain comprised of the characters in the ASCII character set.
A = Aircraft
B = Balloon
C = Statistically derived
D = Persistent cirriform ceiling (pre-1950 data)
E = Estimated
M = Measured
P = Precipitation ceiling (pre-1950 data)
R = Radar
S = ASOS augmented
U = Unknown ceiling (pre-1950 data)
V = Variable ceiling (pre-1950 data)
W = Obscured
9 = Missing

SKY-CONDITION-OBSERVATION CAVOK code
The code that represents whether the 'Ceiling and Visibility Okay' (CAVOK) condition has been reported.
DOM: A specific domain comprised of the characters in the ASCII character set.
N = No
Y = Yes
9 = Missing
VISIBILITY-OBSERVATION distance dimension
The horizontal distance at which an object can be seen and identified.
MIN: 000000 MAX: 160000 UNITS: Meters
DOM: A general domain comprised of the numeric characters (0-9).
Missing = 999999
NOTE: Values greater than 160000 are entered as 160000

VISIBILITY-OBSERVATION distance quality code
The code that denotes a quality status of a reported distance of a visibility observation.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

VISIBILITY-OBSERVATION variability code
The code that denotes whether or not the reported visibility is variable.
DOM: A specific domain comprised of the characters in the ASCII character set.
N = Not variable
V = Variable
9 = Missing

VISIBILITY-OBSERVATION quality variability code
The code that denotes a quality status of a reported VISIBILITY-OBSERVATION variability code.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

AIR-TEMPERATURE-OBSERVATION air temperature
The temperature of the air.
MIN: -0932 MAX: +0618 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing.
**AIR-TEMPERATURE-OBSERVATION** air temperature quality code

The code that denotes a quality status of an AIR-TEMPERATURE-OBSERVATION.  
**DOM:** A specific domain comprised of the characters in the ASCII character set.  
- 0 = Passed gross limits check  
- 1 = Passed all quality control checks  
- 2 = Suspect  
- 3 = Erroneous  
- 4 = Passed gross limits check, data originate from an NCEI data source  
- 5 = Passed all quality control checks, data originate from an NCEI data source  
- 6 = Suspect, data originate from an NCEI data source  
- 7 = Erroneous, data originate from an NCEI data source  
- 8 = Passed gross limits check if element is present  
- A = Data value flagged as suspect, but accepted as a good value  
- C = Temperature and dew point received from Automated Weather Observing System (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.  
- I = Data value not originally in data, but inserted by validator  
- M = Manual changes made to value based on information provided by NWS or FAA  
- P = Data value not originally flagged as suspect, but replaced by validator  
- R = Data value replaced with value computed by NCEI software  
- U = Data value replaced with edited value

**POS: 94-98**  
**AIR-TEMPERATURE-OBSERVATION** dew point temperature  
The temperature to which a given parcel of air must be cooled at constant pressure and water vapor content in order for saturation to occur.  
**MIN:** -0.982  
**MAX:** +0.368  
**UNITS:** Degrees Celsius  
**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).  
+9999 = Missing.

**POS: 99-99**  
**AIR-TEMPERATURE-OBSERVATION** dew point quality code  
The code that denotes a quality status of the reported dew point temperature.  
**DOM:** A specific domain comprised of the characters in the ASCII character set.  
- 0 = Passed gross limits check  
- 1 = Passed all quality control checks  
- 2 = Suspect  
- 3 = Erroneous  
- 4 = Passed gross limits check, data originate from an NCEI data source  
- 5 = Passed all quality control checks, data originate from an NCEI data source  
- 6 = Suspect, data originate from an NCEI data source  
- 7 = Erroneous, data originate from an NCEI data source  
- 8 = Passed gross limits check if element is present  
- A = Data value flagged as suspect, but accepted as a good value  
- C = Temperature and dew point received from Automated Weather Observing System (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.  
- I = Data value not originally in data, but inserted by validator  
- M = Manual changes made to value based on information provided by NWS or FAA  
- P = Data value not originally flagged as suspect, but replaced by validator  
- R = Data value replaced with value computed by NCEI software  
- U = Data value replaced with edited value
ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure

The air pressure relative to Mean Sea Level (MSL).

MIN: 08600       MAX: 10900       UNITS: Hectopascals

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

ATMOSPHERIC-PRESSURE-OBSERVATION sea level pressure quality code

The code that denotes a quality status of the sea level pressure of an ATMOSPHERIC-PRESSURE-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
Additional Data Section

Bold type below indicates that the element may include data originating from NCEI’s NCEI SURFACE HOURLY/ASOS/AWOS, NCEI HOURLY PRECIPITATION/Hourly Precip, or from AFCCC’s USAF SURFACE HOURLY. Otherwise, data originated from USAF SURFACE HOURLY.

Note: For the quality code fields with each data element, the following may appear in data which were processed through NCEI’s Interactive QC system (manual interaction), for selected parameters:
A – Data value flagged as suspect, but accepted as good value.
U – Data value replaced with edited value.
P – Data value not originally flagged as suspect, but replaced by validator.
I – Data value not originally in data, but inserted by validator.
M - Manual change made to value based on information provided by NWS or FAA
C - Temperature and dew point received from Automated Weather Observing Systems (AWOS) are reported in whole degrees Celsius. Automated QC flags these values, but they are accepted as valid.
R - Data value replaced with value computed by NCEI software.

FLD LEN: 3
GEOPHYSICAL-POINT-OBSERVATION additional data identifier
The identifier that denotes the beginning of the additional data section.
DOM: A specific domain comprised of the ASCII character set.
ADD Additional Data Section

Precipitation Data

FLD LEN: 3
LIQUID-PRECIPITATION occurrence identifier
The identifier that represents an episode of LIQUID-PRECIPITATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
AA1 - AA4 An indicator of up to 4 repeating fields of the following items:
LIQUID-PRECIPITATION period quantity
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION condition code
LIQUID-PRECIPITATION quality code

FLD LEN: 2
LIQUID-PRECIPITATION period quantity in hours
The quantity of time over which the LIQUID-PRECIPITATION was measured.
MIN: 00 MAX: 98 UNITS: Hours
SCALING FACTOR: 1
DOM: A specific domain comprised of the characters in the ASCII character set
99 = Missing.

FLD LEN: 4
LIQUID-PRECIPITATION depth dimension
The depth of LIQUID-PRECIPITATION that is measured at the time of an observation.
MIN: 0000 MAX: 9998 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9). 9999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION condition code
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Measurement impossible or inaccurate
2 = Trace
3 = Begin accumulated period (precipitation amount missing until end of accumulated period)
4 = End accumulated period
5 = Begin deleted period (precipitation amount missing due to data problem)
6 = End deleted period
7 = Begin missing period
8 = End missing period
E = Estimated data value (eg, from nearby station)
i = Incomplete precipitation amount, excludes one or more missing reports, such as one or more 15-minute reports not included in the 1-hour precipitation total
J = Incomplete precipitation amount, excludes one or more erroneous reports, such as one or more 1-hour precipitation amounts excluded from the 24-hour total
9 = Missing

FLD LEN: 1
LIQUID-PRECIPITATION quality code
The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 3
LIQUID-PRECIPITATION MONTHLY TOTAL identifier
The identifier that represents LIQUID-PRECIPITATION MONTHLY TOTAL data.
DOM: A specific domain comprised of the characters in the ASCII character set.
AB1 = An indicator of the following items:
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION condition code
LIQUID-PRECIPITATION quality code

FLD LEN: 5
LIQUID-PRECIPITATION MONTHLY TOTAL depth dimension
The depth of LIQUID-PRECIPITATION for the month.
MIN: 00000 MAX: 50000 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION MONTHLY TOTAL condition code
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Measurement impossible or inaccurate
2 = Trace
9 = Missing

FLD LEN: 1
LIQUID-PRECIPITATION MONTHLY TOTAL quality code
The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

**FLD LEN: 3**

**PRECIPITATION-OBSERVATION-HISTORY identifier**
The identifier that indicates the occurrence of precipitation history information.
**DOM:** A specific domain comprised of the characters in the ASCII character set.

<table>
<thead>
<tr>
<th>AC1</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRECIPITATION-OBSERVATION-HISTORY duration code</td>
</tr>
<tr>
<td></td>
<td>PRECIPITATION-OBSERVATION-HISTORY characteristic code</td>
</tr>
<tr>
<td></td>
<td>PRECIPITATION-OBSERVATION-HISTORY quality code</td>
</tr>
</tbody>
</table>

| FLD LEN: 1 |

**PRECIPITATION-OBSERVATION-HISTORY duration code**
The code that denotes the duration of precipitation.
**DOM:** A specific domain comprised of the characters in the ASCII character set.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Lasted less than 1 hour</td>
</tr>
<tr>
<td>1</td>
<td>Lasted 1 - 3 hours</td>
</tr>
<tr>
<td>2</td>
<td>Lasted 3 - 6 hours</td>
</tr>
<tr>
<td>3</td>
<td>Lasted more than 6 hours</td>
</tr>
<tr>
<td>9</td>
<td>Missing</td>
</tr>
</tbody>
</table>

| FLD LEN: 1 |

**PRECIPITATION-OBSERVATION-HISTORY characteristic code**
The code that denotes whether precipitation is continuous or intermittent.
**DOM:** A specific domain comprised of the characters in the ASCII character set.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Continuous</td>
</tr>
<tr>
<td>I</td>
<td>Intermittent</td>
</tr>
<tr>
<td>9</td>
<td>Missing</td>
</tr>
</tbody>
</table>

| FLD LEN: 1 |

**PRECIPITATION duration/characteristic quality code**
The code that denotes a quality status of the reported PRECIPITATION duration/characteristic.
**DOM:** A specific domain comprised of the characters in the ASCII character set.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Passed gross limits check</td>
</tr>
<tr>
<td>1</td>
<td>Passed all quality control checks</td>
</tr>
<tr>
<td>2</td>
<td>Suspect</td>
</tr>
<tr>
<td>3</td>
<td>Erroneous</td>
</tr>
<tr>
<td>9</td>
<td>Passed gross limits check if element is present</td>
</tr>
<tr>
<td>A</td>
<td>Data value flagged as suspect, but accepted as good value</td>
</tr>
<tr>
<td>I</td>
<td>Data value not originally in data, but inserted by validator</td>
</tr>
<tr>
<td>M</td>
<td>Manual change made to value based on information provided by NWS or FAA</td>
</tr>
<tr>
<td>P</td>
<td>Data value not originally flagged as suspect, but replaced by validator</td>
</tr>
<tr>
<td>R</td>
<td>Data value replaced with value computed by NCEI software</td>
</tr>
<tr>
<td>U</td>
<td>Data value replaced with edited value</td>
</tr>
</tbody>
</table>

**FLD LEN: 3**

**LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH identifier**
The identifier that represents LIQUID-PRECIPITATION, GREATEST IN 24 HOURS, data.
**DOM:** A specific domain comprised of the characters in the ASCII character set.

<table>
<thead>
<tr>
<th>AD1</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LIQUID-PRECIPITATION depth dimension</td>
</tr>
<tr>
<td></td>
<td>LIQUID-PRECIPITATION condition code</td>
</tr>
<tr>
<td></td>
<td>LIQUID-PRECIPITATION dates of occurrence (3 fields)</td>
</tr>
<tr>
<td></td>
<td>LIQUID-PRECIPITATION quality code</td>
</tr>
</tbody>
</table>

| FLD LEN: 5 |
LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH depth dimension
The depth of LIQUID-PRECIPITATION for the 24-hour period.
MIN: 00000  MAX: 20000  UNITS: millimeters
SCALING FACTOR: 10  DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH condition code
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Measurement impossible or inaccurate
2 = Trace
3 = The amount occurred on other dates in addition to those listed
4 = Trace amount occurred on other dates in addition to those listed
9 = Missing or N/A

FLD LEN: 4
LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence
The dates of occurrence of LIQUID-PRECIPITATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.
MIN: 0101  MAX: 3131
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH quality code
The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value
FLD LEN: 3
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH identifier
The identifier that represents NUMBER OF DAYS WITH LIQUID-PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
AE1 An indicator of the following items:
- LIQUID-PRECIPITATION number of days with .01 inch or more
- LIQUID-PRECIPITATION quality code
- LIQUID-PRECIPITATION number of days with .10 inch or more
- LIQUID-PRECIPITATION quality code
- LIQUID-PRECIPITATION number of days with .50 inch or more
- LIQUID-PRECIPITATION quality code
- LIQUID-PRECIPITATION number of days with 1.00 inch or more
- LIQUID-PRECIPITATION quality code

FLD LEN: 2
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH
The number of days with .01 inch (.25 mm) or more precipitation.
MIN: 00 MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with .01 or more.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- 9 = Passed gross limits check if element is present
- A = Data value flagged as suspect, but accepted as good value
- I = Data value not originally in data, but inserted by validator
- M = Manual change made to value based on information provided by NWS or FAA
- P = Data value not originally flagged as suspect, but replaced by validator
- R = Data value replaced with value computed by NCEI software
- U = Data value replaced with edited value

FLD LEN: 2
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH
The number of days with .10 inch (2.5 mm) or more precipitation.
MIN: 00 MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with .10 or more.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- 9 = Passed gross limits check if element is present
- A = Data value flagged as suspect, but accepted as good value
- I = Data value not originally in data, but inserted by validator
- M = Manual change made to value based on information provided by NWS or FAA
- P = Data value not originally flagged as suspect, but replaced by validator
- R = Data value replaced with value computed by NCEI software
- U = Data value replaced with edited value
FLD LEN: 2
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH
The number of days with .50 inch (12.7 mm) or more precipitation.
MIN: 00        MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with .50 or more.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 2
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH
The number of days with 1.00 inch (25 mm) or more precipitation.
MIN: 00        MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION, NUMBER OF DAYS WITH SPECIFIC AMOUNTS, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with 1.00 or more.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 3
PRECIPITATION-ESTIMATED-OBSERVATION identifier
The identifier that represents a PRECIPITATION-ESTIMATED-OBSERVATION, from AFCCC.
DOM: A specific domain comprised of the characters in the ASCII character set.
AG1 An indicator of the occurrence of the following items:
PRECIPITATION-OBSERVATION discrepancy code
PRECIPITATION-OBSERVATION estimated water depth dimension
FLD LEN: 1
**PRECIPITATION-ESTIMATED-OBSERVATION discrepancy code**
The code that denotes the type of discrepancy between a PRECIPITATION-OBSERVATION and other related observations at the same location.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 0 = Reported amount of precipitation and reported weather agree
- 1 = Precipitation missing or not reported and none inferred by weather
- 2 = Precipitation missing, but precipitation inferred by weather
- 3 = Precipitation reported, but none inferred by weather
- 4 = Zero precipitation reported, but precipitation inferred by weather
- 5 = Zero precipitation reported, no precipitation inferred and precipitation not occurring at the reporting station
- 9 = Missing

FLD LEN: 3
**PRECIPITATION-ESTIMATED-OBSERVATION estimated water depth dimension**
The estimated depth of precipitation in water depth for a 3-hour synoptic period.

- **MIN:** 000
- **MAX:** 998
- **UNITS:** millimeters

**SCALING FACTOR:** 1

**DOM:** A general domain comprised of the numeric characters (0-9).

- 999 = Missing.

FLD LEN: 3
**LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH identifier**
The identifier that represents MAXIMUM SHORT DURATION PRECIPITATION data.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**AH1-AH6:** An indicator of up to 6 repeating fields for the following items:

- LIQUID-PRECIPITATION period quantity
- LIQUID-PRECIPITATION depth dimension
- LIQUID-PRECIPITATION condition code
- LIQUID-PRECIPITATION end date
- LIQUID-PRECIPITATION end time
- LIQUID-PRECIPITATION quality code

FLD LEN: 3
**LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH period quantity**
The quantity of time over which the LIQUID-PRECIPITATION was measured.

- **MIN:** 005
- **MAX:** 045
- **UNITS:** Minutes

**SCALING FACTOR:** 1

**DOM:** A specific domain comprised of the characters in the ASCII character set

- 999 = Missing.

FLD LEN: 4
**LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH depth dimension**
The depth of LIQUID-PRECIPITATION for the defined time period.

- **MIN:** 0000
- **MAX:** 3000
- **UNITS:** millimeters

**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9).

- 9999 = Missing.

FLD LEN: 1
**LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH condition code**
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 1 = Measurement impossible or inaccurate
- 2 = Trace
- 9 = Missing

FLD LEN: 6
**LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH ending date-time**
The ending date of occurrence of the event, given as the date-time in GMT; e.g., 051010 indicates
1010 Z-time on day 05 of the month.

- **MIN:** 010000
- **MAX:** 312359

**DOM:** A general domain comprised of the numeric characters (0-9).

- 999999 = Missing.
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH quality code
The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 3
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH identifier
The identifier that represents MAXIMUM SHORT DURATION PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
NOTE: This data group is identical to the AH1-6 group above, for the purpose of allowing up to 12 occurrences of these reports.
AI1-AI6: An indicator of up to 6 repeating fields for the following items:
LIQUID-PRECIPITATION period quantity
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION condition code
LIQUID-PRECIPITATION end date
LIQUID-PRECIPITATION end time
LIQUID-PRECIPITATION quality code

FLD LEN: 3
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH period quantity
The quantity of time over which the LIQUID-PRECIPITATION was measured.
MIN: 060    MAX: 180    UNITS: Minutes
SCALING FACTOR: 1
DOM: A specific domain comprised of the characters in the ASCII character set
999 = Missing.

FLD LEN: 4
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH depth dimension
The depth of LIQUID-PRECIPITATION for the defined time period.
MIN: 0000    MAX: 3000    UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH condition code
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Measurement impossible or inaccurate
2 = Trace
9 = Missing

FLD LEN: 6
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH ending date-time
The ending date of occurrence of the event, given as the date-time in GMT; e.g., 051010 indicates 1010 Z-time on day 05 of the month.
MIN: 010000    MAX: 312359
DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION MAXIMUM SHORT DURATION, FOR THE MONTH quality code

The code that denotes a quality status of the reported LIQUID-PRECIPITATION data

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 3

SNOW-DEPTH identifier

The identifier that denotes the start of a SNOW-DEPTH data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

AJ1 An indicator of the occurrence of the following items:

  SNOW-DEPTH dimension
  SNOW-DEPTH condition code
  SNOW-DEPTH quality code
  SNOW-DEPTH equivalent water depth dimension
  SNOW-DEPTH equivalent water condition code
  SNOW-DEPTH equivalent water condition quality code

FLD LEN: 4

SNOW-DEPTH dimension

The depth of snow and ice on the ground.

MIN: 0000  MAX: 1200  UNITS: centimeters

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

FLD LEN: 1

SNOW-DEPTH condition code

The code that denotes specific conditions associated with the measurement of snow in a PRECIPITATION-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

1 = Measurement impossible or inaccurate
2 = Snow cover not continuous
3 = Trace
4 = End accumulated period (data include more than one day)
5 = End deleted period (data eliminated due to quality problems)
6 = End missing period
E = Estimated data value (eg, from nearby station)
9 = Missing

FLD LEN: 1

SNOW-DEPTH quality code

The code that denotes a quality status of the reported SNOW-DEPTH data.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 6
SNOW-DEPTH equivalent water depth dimension
The depth of the liquid content of solid precipitation that has accumulated on the ground.
MIN: 000000 MAX: 120000 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing.

FLD LEN: 1
SNOW-DEPTH equivalent water condition code
The code that denotes specific conditions associated with the measurement of the SNOW-DEPTH.
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Measurement impossible or inaccurate
2 = Trace
9 = Missing (no special code to report)

FLD LEN: 1
SNOW-DEPTH equivalent water condition quality code
The code that denotes a quality status of the reported SNOW-DEPTH equivalent water condition
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present
A = Data value flagged as suspect, but accepted as good value
I = Data value not originally in data, but inserted by validator
M = Manual change made to value based on information provided by NWS or FAA
P = Data value not originally flagged as suspect, but replaced by validator
R = Data value replaced with value computed by NCEI software
U = Data value replaced with edited value

FLD LEN: 3
SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH identifier
The identifier that represents SNOW-DEPTH GREATEST SNOW DEPTH ON THE GROUND, data.
DOM: A specific domain comprised of the characters in the ASCII character set.
AK1 An indicator of the following items:
SNOW-DEPTH depth dimension
SNOW-DEPTH condition code
SNOW-DEPTH dates of occurrence
SNOW-DEPTH quality code

FLD LEN: 4
SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH depth dimension
The depth of GREATEST SNOW DEPTH FOR THE MONTH.
MIN: 0000 MAX: 1500 UNITS: centimeters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH condition code
The code that denotes whether a SNOW-DEPTH dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
  1 = Measurement impossible or inaccurate
  2 = Trace
  3 = The amount occurred on other dates in addition to those listed
  4 = Trace amount occurred on other dates in addition to those listed
  9 = Missing or N/A

**FLD LEN: 6**

**SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH dates of occurrence**
The dates of occurrence of SNOW-DEPTH, given as the date for each occurrence, for up to 3 occurrences; e.g., 041016 indicates days 04, 10, and 16.
MIN: 01  MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
  99 = missing for each of the 3 sub-fields.

**FLD LEN: 1**

**SNOW-DEPTH GREATEST DEPTH ON THE GROUND, FOR THE MONTH quality code**
The code that denotes a quality status of the reported SNOW-DEPTH data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  9 = Passed gross limits check if element is present

**FLD LEN: 3**

**SNOW-ACCUMULATION occurrence identifier**
The identifier that represents an episode of SNOW-ACCUMULATION.
DOM: A specific domain comprised of the characters in the ASCII character set.

**AL1 - AL4** An indicator of up to 4 repeating fields of the following items:
SNOW-ACCUMULATION period quantity
SNOW-ACCUMULATION depth dimension
SNOW-ACCUMULATION condition code
SNOW-ACCUMULATION quality code

**FLD LEN: 2**

**SNOW-ACCUMULATION period quantity**
The quantity of time over which the SNOW-ACCUMULATION occurred.
MIN: 00  MAX: 72  UNITS: Hours
SCALING FACTOR: 1
DOM: A general domain comprised of the characters in the ASCII character set.
  99 = Missing.

**FLD LEN: 3**

**SNOW-ACCUMULATION depth dimension**
The depth of a SNOW-ACCUMULATION.
MIN: 000  MAX: 500  UNITS: centimeters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
  999 = Missing.

**FLD LEN: 1**

**SNOW-ACCUMULATION condition code**
The code that denotes specific conditions associated with the measurement of the depth of a SNOW-ACCUMULATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
  1 = Measurement impossible or inaccurate
  2 = Snow cover not continuous
  3 = Trace
  4 = End accumulated period (data include more than one day)
  5 = End deleted period (data eliminated due to quality problems)
  6 = End missing period
E = Estimated data value (eg, from nearby station)
9 = Missing

**FLD LEN: 1**

**SNOW-ACCUMULATION quality code**
The code that denotes a quality status of the reported SNOW-ACCUMULATION.

- **DOM**: A specific domain comprised of the characters in the ASCII character set.
- **0** = Passed gross limits check
- **1** = Passed all quality control checks
- **2** = Suspect
- **3** = Erroneous
- **4** = Passed gross limits check, data originate from an NCEI data source
- **5** = Passed all quality control checks, data originate from an NCEI data source
- **6** = Suspect, data originate from an NCEI data source
- **7** = Erroneous, data originate from an NCEI data source
- **M** = Manual change made to value based on information provided by NWS or FAA
- **9** = Passed gross limits check if element is present

---

**FLD LEN: 3**

**SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH identifier**
The identifier that represents SNOW-ACCUMULATION, GREATEST IN 24 HOURS, data.

- **DOM**: A specific domain comprised of the characters in the ASCII character set.

  - **AM1**: An indicator of the following items:
    - SNOW-ACCUMULATION depth dimension
    - SNOW-ACCUMULATION condition code
    - SNOW-ACCUMULATION dates of occurrence (3 fields)
    - SNOW-ACCUMULATION quality code

---

**FLD LEN: 4**

**SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH depth dimension**
The depth of SNOW-ACCUMULATION for the 24-hour period.

- **MIN**: 0000
- **MAX**: 2000
- **UNITS**: centimeters
- **SCALING FACTOR**: 10

- **DOM**: A general domain comprised of the numeric characters (0-9).

  - **9999** = Missing

---

**FLD LEN: 1**

**SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH condition code**
The code that denotes whether a SNOW-ACCUMULATION depth dimension was a trace value.

- **DOM**: A specific domain comprised of the characters in the ASCII character set.

  - **1** = Measurement impossible or inaccurate
  - **2** = Trace
  - **3** = The amount occurred on other dates in addition to those listed
  - **4** = Trace amount occurred on other dates in addition to those listed
  - **9** = Missing

---

**FLD LEN: 4**

**SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence**
The dates of occurrence of SNOW-ACCUMULATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

- **MIN**: 0101
- **MAX**: 3131

- **DOM**: A general domain comprised of the numeric characters (0-9).

  - **9999** = Missing

---

**FLD LEN: 4**

**SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence**
The dates of occurrence of SNOW-ACCUMULATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.

- **MIN**: 0101
- **MAX**: 3131

- **DOM**: A general domain comprised of the numeric characters (0-9).

  - **9999** = Missing

---

**FLD LEN: 4**

**SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH dates of occurrence**
The dates of occurrence of SNOW-ACCUMULATION, given as the begin-end date for the 24-hour period, for up to 3 occurrences; e.g., 0405 indicates 24-hour period on days 04-05.
MIN: 0101    MAX: 3131
DOM: A general domain comprised of the numeric characters (0-9).
    9999 = Missing.
**FLD LEN: 1
SNOW-ACCUMULATION GREATEST AMOUNT IN 24 HOURS, FOR THE MONTH quality code**
The code that denotes a quality status of the reported SNOW-ACCUMULATION data.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspact
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspact, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- 9 = Passed gross limits check if element is present

---

**FLD LEN: 3
SNOW-ACCUMULATION FOR THE DAY/MONTH occurrence identifier**
The identifier that represents SNOW-ACCUMULATION MONTHLY TOTAL.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**AN1:** An indicator for the occurrence of the following items:
- SNOW-ACCUMULATION period quantity
- SNOW-ACCUMULATION depth dimension
- SNOW-ACCUMULATION condition code
- SNOW-ACCUMULATION quality code

---

**FLD LEN: 3
SNOW-ACCUMULATION period quantity**
The quantity of time over which the SNOW-ACCUMULATION occurred (usually 024 for daily, 744 for monthly)

**MIN:** 001  **MAX:** 744  **UNITS:** Hours

**SCALING FACTOR:** 1

**DOM:** A general domain comprised of the characters in the ASCII character set.

999 = Missing.

---

**FLD LEN: 4
SNOW ACCUMULATION FOR THE MONTH depth dimension**
The depth of a SNOW-ACCUMULATION.

**MIN:** 0000  **MAX:** 9998  **UNITS:** centimeters

**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9).

9999 = Missing.

---

**FLD LEN: 1
SNOW-ACCUMULATION FOR THE MONTH condition code**
The code that denotes specific conditions associated with the measurement of the depth of a SNOW-ACCUMULATION.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 1 = Measurement impossible or inaccurate
- 2 = Snow cover not continuous
- 3 = Trace
- 4 = End accumulated period (data may include more than one month)
- 5 = End deleted period (data eliminated due to quality problems)
- 6 = End missing period
- 7 = Data will be included in subsequent observation
- E = Estimated data value (eg, from nearby station)
- 9 = Missing
FLD LEN: 1
SNO-W-ACCUMULATION FOR THE MONTH quality code
The code that denotes a quality status of the reported SNOW-ACCUMULATION FOR THE MONTH.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 3
LIQUID-PRECIPITATION occurrence identifier
The identifier that represents an episode of LIQUID-PRECIPITATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
AO1 - AO4: An indicator of up to 4 repeating fields of the following items:
LIQUID-PRECIPITATION period quantity
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION condition code
LIQUID-PRECIPITATION quality code

FLD LEN: 2
LIQUID-PRECIPITATION period quantity in minutes
The quantity of time over which the LIQUID-PRECIPITATION was measured.
MIN: 00    MAX: 98    UNITS: Minutes
SCALING FACTOR: 1
DOM: A specific domain comprised of the characters in the ASCII character set
99 = Missing.

FLD LEN: 4
LIQUID-PRECIPITATION depth dimension
The depth of LIQUID-PRECIPITATION that is measured at the time of an observation.
MIN: 0000    MAX: 9998    UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
LIQUID-PRECIPITATION condition code
The code that denotes whether a LIQUID-PRECIPITATION depth dimension was a trace value.
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Measurement impossible or inaccurate
2 = Trace
3 = Begin accumulated period (precipitation amount missing until end of accumulated period)
4 = End accumulated period
5 = Begin deleted period (precipitation amount missing due to data problem)
6 = End deleted period
7 = Begin missing period
8 = End missing period
E = Estimated data value (eg, from nearby station)
I = Incomplete precipitation amount, excludes one or more missing reports, such as one or more minute reports not included in the 1-hour precipitation total
J = Incomplete precipitation amount, excludes one or more erroneous reports, such as one or more 1-hour precipitation amounts excluded from the 24-hour total
9 = Missing
FLD LEN: 1
LIQUID-PRECIPITATION quality code
The code that denotes a quality status of the reported LIQUID-PRECIPITATION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Susp ect
3 = Erroneous
4 = Passed gross limits check, from DSI-3260 or NCEI ASOS/AWOS
5 = Passed all quality control checks, from DSI-3260 or NCEI ASOS/AWOS
6 = Susp ect, from DSI-3260 or NCEI ASOS/AWOS
7 = Erroneous, from DSI-3260 or NCEI ASOS/AWOS
9 = Passed gross limits check if element is present

FLD LEN: 3
15 Minute LIQUID-PRECIPITATION occurrence identifier
The identifier that represents an episode of LIQUID-PRECIPITATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
IMPORTANT NOTE: These data are also provided in the AAx section for typical use in applications. The APx data are mainly intended for quality control processing.
AP1 Indicates HPD gauge value 45 minutes prior to observation time
AP2 Indicates HPD gauge value 30 minutes prior to observation time
AP3 Indicates HPD gauge value 15 minutes prior to observation time
AP4 Indicates HPD gauge value at observation time
LIQUID-PRECIPITATION depth dimension
LIQUID-PRECIPITATION condition code
LIQUID-PRECIPITATION quality code

FLD LEN: 4
HPD (Hourly Precipitation Data network) gauge value
The HPD Gauge value that is measured at the time indicated.
MIN: 0000 MAX: 9998 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

FLD LEN: 1
HPD gauge value condition code
Not used at this time. Value set to missing.
DOM: A specific domain comprised of the characters in the ASCII character set.
9=Missing

FLD LEN: 1
HPD gauge value quality code
The code that denotes a quality status of the reported gauge value.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Susp ect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Susp ect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

Weather Occurrence Data

FLD LEN: 3
PRESENT-WEATHER-OBSERVATION automated occurrence identifier for ASOS/AWOS data
The identifier that signifies the reporting of present weather.
DOM: A specific domain comprised of the ASCII characters.
AT1 – AT8: An indicator of up to 8 repeating fields of the following items:
FLD LEN: 2
**DAILY-PRESENT-WEATHER-OBSERVATION source element**
The code that denotes the source of the daily present weather observation.
DOM: A specific domain comprised of the ASCII characters.
- **AU** = sourced from automated ASOS/AWOS sensors
- **AW** = sourced from automated sensors
- **MW** = sourced from manually reported present weather

FLD LEN: 2
**DAILY-PRESENT-WEATHER-OBSERVATION weather type**
The numeric code that denotes the type of daily present weather being reported.
DOM: A specific domain comprised of the ASCII characters.
- **01** = Fog, ice fog or freezing fog (may include heavy fog)
- **02** = Heavy fog or heavy freezing fog (not always distinguished from fog)
- **03** = Thunder
- **04** = Ice pellets, sleet, snow pellets or small hail
- **05** = Hail (may include small hail)
- **06** = Glaze or rime
- **07** = Dust, volcanic ash, blowing dust, blowing sand or blowing obstruction
- **08** = Smoke or haze
- **09** = Blowing or drifting snow
- **10** = Tornado, water spout or funnel cloud
- **11** = High or damaging winds
- **12** = Blowing spray
- **13** = Mist
- **14** = Drizzle
- **15** = Freezing drizzle
- **16** = Rain
- **17** = Freezing rain
- **18** = Snow, snow pellets, snow grains or ice crystals
- **19** = Unknown precipitation
- **21** = Ground fog
- **22** = Ice fog or freezing fog

FLD LEN: 4
**DAILY-PRESENT-WEATHER-OBSERVATION weather type abbreviation**
The abbreviation that denotes the type of daily present weather being reported. These abbreviations correspond to the Daily Present Weather Observation weather type.
DOM: A specific domain comprised of the ASCII characters.
- **FG** = Fog, ice fog or freezing fog (may include heavy fog)
- **FG+** = Heavy fog or heavy freezing fog (not always distinguished from fog)
- **TS** = Thunder
- **PL** = Ice pellets, sleet, snow pellets or small hail
- **GR** = Hail (may include small hail)
- **GL** = Glaze or rime
- **DU** = Dust, volcanic ash, blowing dust, blowing sand or blowing obstruction
- **HZ** = Smoke or haze
- **BLSN** = Blowing or drifting snow
- **FC** = Tornado, water spout or funnel cloud
- **WIND** = High or damaging winds
- **BLPY** = Blowing spray
- **BR** = Mist
- **DZ** = Drizzle
- **FZDZ** = Freezing drizzle
- **RA** = Rain
- **FZRA** = Freezing rain
- **SN** = Snow, snow pellets, snow grains or ice crystals
- **UP** = Unknown precipitation
- **MIFG** = Ground fog
- **FZFG** = Ice fog or freezing fog

FLD LEN: 1
**DAILY-PRESENT-WEATHER-OBSERVATION quality code**
The code that denotes a quality status of the reported DAILY-PRESENT-WEATHER-OBSERVATION.

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

AU1 – AU9 An indicator of up to 9 repeating fields of the following items:

- PRESENT-WEATHER-OBSERVATION intensity code
- PRESENT-WEATHER-OBSERVATION descriptor code
- PRESENT-WEATHER-OBSERVATION precipitation code
- PRESENT-WEATHER-OBSERVATION obscuration code
- PRESENT-WEATHER-OBSERVATION other weather phenomena code
- PRESENT-WEATHER-OBSERVATION combination indicator code
- PRESENT-WEATHER-OBSERVATION quality code

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION intensity and proximity code

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Not Reported
1 = Light (-)
2 = Moderate or Not Reported (no entry in original observation)
3 = Heavy (+)
4 = Vicinity (VC)
9 = Missing

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION descriptor code

DOM: A specific domain comprised of the characters in the ASCII character set.

0 = No Descriptor
1 = Shallow (MI)
2 = Partial (PR)
3 = Patches (BC)
4 = Low Drifting (DR)
5 = Blowing (BL)
6 = Shower(s) (SH)
7 = Thunderstorm (TS)
8 = Freezing (FZ)
9 = Missing

FLD LEN: 2

PRESENT-WEATHER-OBSERVATION precipitation code

DOM: A specific domain comprised of the characters in the ASCII character set.

00 = No Precipitation
01 = Drizzle (DZ)
02 = Rain (RA)
03 = Snow (SN)
04 = Snow Grains (SG)
05 = Ice Crystals (IC)
06 = Ice Pellets (PL)
07 = Hail (GR)
08 = Small Hail and/or Snow Pellets (GS)
09 = Unknown Precipitation (UP)
99 = Missing
**PRESENT-WEATHER-OBSERVATION obscuration code**

- **DOM:** A specific domain comprised of the characters in the ASCII character set.
- **0** = No Obscuration
- **1** = Mist (BR)
- **2** = Fog (FG)
- **3** = Smoke (FU)
- **4** = Volcanic Ash (VA)
- **5** = Widespread Dust (DU)
- **6** = Sand (SA)
- **7** = Haze (HZ)
- **8** = Spray (PY)
- **9** = Missing

**PRESENT-WEATHER-OBSERVATION other weather phenomena code**

- **DOM:** A specific domain comprised of the characters in the ASCII character set.
- **0** = None Reported
- **1** = Well-Developed Dust/Sand Whirls (PO)
- **2** = Squalls (SQ)
- **3** = Funnel Cloud, Tornado, Waterspout (FC)
- **4** = Sandstorm (SS)
- **5** = Duststorm (DS)
- **9** = Missing

**PRESENT-WEATHER-OBSERVATION combination indicator code**

- **DOM:** A specific domain comprised of the characters in the ASCII character set.
- **1** = Not part of combined weather elements
- **2** = Beginning element of combined weather elements
- **3** = Combined with previous weather element to form a single weather report
- **9** = Missing

**PRESENT-WEATHER-OBSERVATION quality code**

- **DOM:** A specific domain comprised of the characters in the ASCII character set.
- **0** = Passed gross limits
- **1** = Passed all quality control checks
- **2** = Suspect
- **3** = Erroneous
- **4** = Passed gross limits check, data originate from an NCEI data source
- **5** = Passed all quality control checks, data originate from an NCEI data source
- **6** = Suspect, data originate from an NCEI data source
- **7** = Erroneous, data originate from an NCEI data source
- **M** = Manual change made to value based on information provided by NWS or FAA
- **9** = Passed gross limits check if element is present

**PRESENT-WEATHER-OBSERVATION automated occurrence identifier**

- **DOM:** A specific domain comprised of the ASCII character

  - **AW1** = First automated weather report
  - **AW2** = Second automated weather report
  - **AW3** = Third automated weather report
  - **AW4** = Fourth automated weather report

**PRESENT-WEATHER-OBSERVATION automated atmospheric condition code**

- **DOM:** A specific domain comprised of the characters in the ASCII character set.

- **00** = No significant weather observed
- **01** = Clouds generally dissolving or becoming less developed
- **02** = State of sky on the whole unchanged during the past hour
03 = Clouds generally forming or developing during the past hour
04 = Haze, smoke, or dust in suspension in the air, visibility equal to or greater than 1km
05 = Smoke
07 = Dust or sand raised by wind at or near the station at the time of observation, but no well-developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen or, in the case of ships, blowing spray at the station
10 = Mist
11 = Diamond dust
12 = Distant lightning
18 = Squalls

(Code figures 20-26 are used to report precipitation, fog, thunderstorm at the station during the preceding hour, but not at the time of observation.)

20 = Fog
21 = Precipitation
22 = Drizzle (not freezing) or snow grains
23 = Rain (not freezing)
24 = Snow
25 = Freezing drizzle or freezing rain
26 = Thunderstorm (with or without precipitation)
27 = Blowing or drifting snow or sand
28 = Blowing or drifting snow or sand, visibility equal to or greater than 1 km
29 = Blowing or drifting snow or sand, visibility less than 1 km
30 = Fog
31 = Fog or ice fog in patches
32 = Fog or ice fog, has become thinner during the past hour
33 = Fog or ice fog, no appreciable change during the past hour
34 = Fog or ice fog, has begun or become thicker during the past hour
35 = Fog, depositing rime
40 = Precipitation
41 = Precipitation, slight or moderate
42 = Precipitation, heavy
43 = Liquid precipitation, slight or moderate
44 = Liquid precipitation, heavy
45 = Solid precipitation, slight or moderate
46 = Solid precipitation, heavy
47 = Freezing precipitation, slight or moderate
48 = Freezing precipitation, heavy
50 = Drizzle
51 = Drizzle, not freezing, slight
52 = Drizzle, not freezing, moderate
53 = Drizzle, not freezing, heavy
54 = Drizzle, freezing, slight
55 = Drizzle, freezing, moderate
56 = Drizzle, freezing, heavy
57 = Drizzle and rain, slight
58 = Drizzle and rain, moderate or heavy
60 = Rain
61 = Rain, not freezing, slight
62 = Rain, not freezing, moderate
63 = Rain, not freezing, heavy
64 = Rain, freezing, slight
65 = Rain, freezing, moderate
66 = Rain, freezing, heavy
67 = Rain or drizzle and snow, slight
68 = Rain or drizzle and snow, moderate or heavy
70 = Snow
71 = Snow, slight
72 = Snow, moderate
73 = Snow, heavy
74 = Ice pellets, slight
75 = Ice pellets, moderate
76 = Ice pellets, heavy
77 = Snow grains
78 = Ice crystals
80 = Showers or intermittent precipitation
81 = Rain showers or intermittent rain, slight
82 = Rain showers or intermittent rain, moderate
83 = Rain showers or intermittent rain, heavy
84 = Rain showers or intermittent rain, violent
85 = Snow showers or intermittent snow, slight
86 = Snow showers or intermittent snow, moderate
87 = Snow showers or intermittent snow, heavy
88 = Hail
90 = Thunderstorm
91 = Thunderstorm, slight or moderate, with no precipitation
92 = Thunderstorm, slight or moderate, with rain showers and/or snow showers
93 = Thunderstorm, slight or moderate, with hail
94 = Thunderstorm, heavy, with no precipitation
95 = Thunderstorm, heavy, with rain showers and/or snow
96 = Thunderstorm, heavy, with hail
97 = Tornado

FLD LEN: 1

PRESENT-WEATHER-OBSERVATION quality automated atmospheric condition code
The code that denotes a quality status of a reported present weather observation from an automated station.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 3

PAST-WEATHER-OBSERVATION summary of day occurrence identifier
The identifier that signifies the reporting of past weather as summarized for the calendar day.
DOM: A specific domain comprised of the characters in the ASCII character set.
AX1 – AX6 An indicator of up to 6 repeating fields of the following item:
   PAST-WEATHER-OBSERVATION atmospheric condition code
   PAST-WEATHER-OBSERVATION quality atmospheric condition code
   PAST-WEATHER-OBSERVATION period quantity
   PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 2

PAST-WEATHER-OBSERVATION atmospheric condition code
The code that denotes a specific type of past weather observed.
DOM: A specific domain comprised of the characters in the ASCII character set.
00 = none to report
01 = fog
02 = fog reducing visibility to ¼ mile or less
03 = thunder
04 = ice pellets
05 = hail
06 = glaze or rime
07 = blowing dust or sand, visibility ½ mile or less
08 = smoke or haze
09 = blowing snow
10 = tornado
11 = high or damaging winds
99 = missing
FLD LEN: 1
PAST-WEATHER-OBSERVATION quality manual atmospheric condition code
The code that denotes a quality status of a reported past weather observation from a manual station.
DOM: A specific domain comprised of the characters in the ASCII character set.
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  9 = Passed gross limits check if element is present

FLD LEN: 2
PAST-WEATHER-OBSERVATION period quantity
The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.
MIN: 24                MAX: 24               UNITS: hours
DOM: A general domain comprised of the ASCII characters 0-9.
  99 = Missing

FLD LEN: 1
PAST-WEATHER-OBSERVATION period quality code
The code that denotes a quality status of a reported past weather period.
DOM: A specific domain comprised of the characters in the ASCII character set.
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  9 = Passed gross limits check if element is present

FLD LEN: 3
PAST-WEATHER-OBSERVATION manual occurrence identifier
The identifier that signifies the reporting of past weather.
DOM: A specific domain comprised of the characters in the ASCII character set.
  AY1 - AY2 An indicator of up to 2 repeating fields of the following item:
PAST-WEATHER-OBSERVATION manual atmospheric condition code
PAST-WEATHER-OBSERVATION quality manual atmospheric condition code
PAST-WEATHER-OBSERVATION period quantity
PAST-WEATHER-OBSERVATION period quality code

FLD LEN: 1
PAST-WEATHER-OBSERVATION manual atmospheric condition code
The code that denotes a specific type of past weather observed manually.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
  0 = Cloud covering 1/2 or less of the sky throughout the appropriate period
  1 = Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period
  2 = Cloud covering more than 1/2 of the sky throughout the appropriate period
  3 = Sandstorm, duststorm or blowing snow
  4 = Fog or ice fog or thick haze
  5 = Drizzle
  6 = Rain
  7 = Snow, or rain and snow mixed
  8 = Shower(s)
  9 = Thunderstorm(s) with or without precipitation

FLD LEN: 1
PAST-WEATHER-OBSERVATION quality manual atmospheric condition code
The code that denotes a quality status of a reported past weather observation from a manual station.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Passed gross limits check if element is present
FLD LEN: 2
PAST-WEATHER-OBSERVATION period quantity
The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.
MIN: 01    MAX: 24    UNITS: hours
DOM: A general domain comprised of the ASCII characters 0-9.
   99 = Missing

FLD LEN: 1
PAST-WEATHER-OBSERVATION period quality code
The code that denotes a quality status of a reported past weather period.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   9 = Passed gross limits check if element is present

FLD LEN: 3
PAST-WEATHER-OBSERVATION automated occurrence identifier
The identifier that signifies the reporting of present weather.
DOM: A specific domain comprised of the characters in the ASCII character set.
   AZ1- AZ2 An indicator of the following item: (this may occur 0 - 2 times)
   PAST-WEATHER-OBSERVATION automated atmospheric condition code
   PAST-WEATHER-OBSERVATION quality automated atmospheric condition code
   PAST-WEATHER-OBSERVATION period quantity

FLD LEN: 1
PAST-WEATHER-OBSERVATION automated atmospheric condition code
The code that denotes a specific type of past weather reported by an automated device.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = No significant weather observed
   1 = Visibility reduced
   2 = Blowing phenomena, visibility reduced
   3 = Fog
   4 = Precipitation
   5 = Drizzle
   6 = Rain
   7 = Snow or ice pellets
   8 = Showers or intermittent precipitation
   9 = Thunderstorm

FLD LEN: 1
PAST-WEATHER-OBSERVATION quality automated atmospheric condition code
The code that denotes a quality status of a reported past weather observation from an automated station.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   9 = Passed gross limits check if element is present

FLD LEN: 2
PAST-WEATHER-OBSERVATION period quantity
The quantity of time over which a PAST-WEATHER-OBSERVATION occurred.
MIN: 01    MAX: 24    UNITS: hours
DOM: A general domain comprised of the ASCII characters 0-9.
   99 = Missing

FLD LEN: 1
PAST-WEATHER-OBSERVATION period quality code
The code that denotes a quality status of a reported past weather period.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
Climate Reference Network Unique Data

FLD LEN: 3
Subhourly Observed Liquid Precipitation Section: Secondary Sensor
The identifier that indicates the presence of a liquid precipitation measurement made by a secondary precipitation sensor.
DOM: A specific domain comprised of the characters in the ASCII character set.
CB1, CB2 An indicator of the following items:
- PERIOD period quantity
- PRECIPITATION liquid depth
- PRECIP_QC quality code
- PRECIP_FLAG quality code

FLD LEN: 2
PRECIPITATION period quantity
The quantity of time for which the gauge depth was measured.
MIN: 05 MAX: 60 UNITS: Minutes
DOM: A specific domain comprised of the characters in the ASCII character set
99 = Missing

FLD LEN: 6
PRECIPITATION liquid depth
The observed liquid precipitation measurement from the secondary precipitation sensor.
MIN: -99999 MAX: +99998 UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+99999 = Missing

FLD LEN: 1
QC quality code
The code that indicates ISD’s evaluation of the quality status of the liquid precipitation measurement from the secondary precipitation sensor.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
PRECIP_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the reported LIQUID-PRECIPITATION data. Most users will find the preceding quality code DEPTH_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 3
Hourly Fan Speed Section
The identifier that indicates an hourly observation of the fan speed from an aspirated shield housing the temperature sensor. Three instances of this section appear in the last ISD record of the hour.
DOM: A specific domain comprised of the characters in the ASCII character set.
CF1,CF2,CF3 An indicator of the following items:
- FAN speed rate
- FAN_QC quality code
- FAN_FLAG quality code
FLD LEN: 4
FAN  The average fan speed for the hour.
MIN: 0000  MAX: 9998  UNITS: rotations per second
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
FAN_QC quality code
The code that indicates ISD’s evaluation of the quality status of the average fan speed for the hour.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
FAN_QC_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the average fan speed for the hour. Most users will find the preceding quality code FAN_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
  0 = Passed all quality control checks
  1 – 9 = Did not pass all quality checks

FLD LEN: 3
Subhourly Observed Liquid Precipitation Section: Primary Sensor identifier
The identifier that indicates the presence of three concurrent precipitation depth observations made by co-located sensors on the primary precipitation gauge. Three instances of this section (corresponding to the three precipitation sensors) appear in each of the twelve 5-minute data stream records.
DOM: A specific domain comprised of the characters in the ASCII character set.
CG1, CG2, CG3 Three indicators preceding three copies of the following items:
DEPTH liquid depth
DEPTH_QC quality code
DEPTH_FLAG quality code

FLD LEN: 6
DEPTH liquid depth
The observed gauge depth.
MIN: -99999  MAX: +99999  UNITS: millimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+99999 = Missing.

FLD LEN: 1
DEPTH_QC quality code
The code that indicates ISD’s evaluation of the quality status of the observed depth.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
DEPTH_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the observed depth. Most users will find the preceding quality code DEPTH_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  1 – 9 = Did not pass all quality checks

FLD LEN: 3
Hourly/Sub-Hourly Relative Humidity/Temperature Section identifier
The identifier that indicates an observation of relative humidity and temperature measured at the relative humidity instrument. This section appears one or more times per hour.
DOM: A specific domain comprised of the characters in the ASCII character set.

CH1, CH2: An indicator of the following items:
RELATIVE HUMIDITY/TEMPERATURE period quantity
AVG_RH_TEMP average air temperature
AVG_RH_TEMP_QC quality code
AVG_RH_TEMP_FLAG quality code
AVG_RH average relative humidity
AVG_RH_QC quality code
AVG_RH_FLAG quality code

FLD LEN: 2
RELATIVE HUMIDITY/TEMPERATURE period quantity in minutes
The quantity of time over which the RELATIVE HUMIDITY/TEMPERATURE was measured.
MIN: 00  MAX: 60   UNITS: Minutes
SCALING FACTOR: 1
DOM: A specific domain comprised of the characters in the ASCII character set
99 = Missing.

FLD LEN: 5
AVG_RH_TEMP average air temperature
The average air temperature measured at the relative humidity instrument.
MIN: -9999  MAX: +9998   UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)
+9999 = Missing.

FLD LEN: 1
AVG_RH_TEMP_QC quality code
The code that indicates ISD’s evaluation of the quality status of the average air temperature measured at the relative humidity instrument.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
AVG_RH_TEMP_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the average air temperature measured at the relative humidity instrument. Most users will find the preceding quality code AVG_RH_TEMP_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 4
AVG_RH average relative humidity
The average relative humidity measured at the relative humidity instrument.
MIN: 0000  MAX: 1000   UNITS: percent
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
AVG_RH_QC quality code
The code that indicates ISD’s evaluation of the quality status of the average relative humidity.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
AVG_RH_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the average relative humidity. Most users will find the preceding quality code AVG_RH_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks
Hourly Relative Humidity/Temperature Section identifier

The identifier that indicates an hourly observation of relative humidity and temperature measured at the relative humidity instrument. This section appears in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CI 1 An indicator of the following items:
- MIN_RH_TEMP hourly air temperature
- MIN_RH_TEMP_QC quality code
- MIN_RH_TEMP_FLAG quality code
- MAX_RH_TEMP hourly air temperature
- MAX_RH_TEMP_QC quality code
- MAX_RH_TEMP_FLAG quality code
- STD_RH_TEMP hourly air temperature standard deviation
- STD_RH_TEMP_QC quality code
- STD_RH_TEMP_FLAG quality code
- STD_RH hourly relative humidity standard deviation
- STD_RH_QC quality code
- STD_RH_FLAG quality code

FLD LEN: 5

MIN_RH_TEMP hourly air temperature

The minimum air temperature measured at the relative humidity instrument.

MIN: -9999  MAX: +9999  UNITS: degrees Celsius

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)

+9999 = Missing.

FLD LEN: 1

MIN_RH_TEMP_QC quality code

The code that indicates ISD’s evaluation of the quality status of the minimum hourly air temperature measured at the relative humidity instrument.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1

MIN_RH_TEMP_FLAG quality code

The code that indicates the network’s internal evaluation of the quality status of the minimum hourly air temperature measured at the relative humidity instrument. Most users will find the preceding quality code AVG_RH_TEMP_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 5

MAX_RH_TEMP hourly air temperature

The maximum air temperature measured at the relative humidity instrument.

MIN: -9999  MAX: +9998  UNITS: degrees Celsius

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)

+9999 = Missing.

FLD LEN: 1

MAX_RH_TEMP_QC quality code

The code that indicates ISD’s evaluation of the quality status of the maximum hourly air temperature measured at the relative humidity instrument.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing
**FLD LEN: 1**

**MAX_RH_TEMP_FLAG** quality code

The code that indicates the network's internal evaluation of the quality status of the maximum hourly air temperature measured at the relative humidity instrument. Most users will find the preceding quality code **AVG_RH_TEMP_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

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**FLD LEN: 5**

**STD_RH_TEMP** hourly air temperature standard deviation

The standard deviation for the hourly air temperature measured at the relative humidity instrument.

MIN: 00000    MAX: 99998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

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**FLD LEN: 1**

**STD_RH_TEMP_QC** quality code

The code that indicates ISD’s evaluation of the quality status of the standard deviation for the air temperature measured at the relative humidity instrument.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

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**FLD LEN: 1**

**STD_RH_TEMP_FLAG** quality code

The code that indicates the network's internal evaluation of the quality status of the standard deviation for the air temperature measured at the relative humidity instrument. Most users will find the preceding quality code **STD_RH_TEMP_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

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**FLD LEN: 5**

**STD_RH** hourly relative humidity standard deviation

The hourly relative humidity standard deviation.

MIN: 00000    MAX: 99998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

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**FLD LEN: 1**

**STD_RH_QC** quality code

The code that indicates ISD’s evaluation of the quality status of the hourly relative humidity standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

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**FLD LEN: 1**

**STD_RH_FLAG** quality code

The code that indicates the network’s internal evaluation of the quality status of the hourly relative humidity standard deviation. Most users will find the preceding quality code **STD_RH_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks
Hourly Battery Voltage Section identifier
The identifier that indicates an hourly observation of battery voltages. This section appears in the last ISD record of the hour.
DOM: A specific domain comprised of the characters in the ASCII character set.

**CN1**
An indicator of the following items:
- BATVOL average voltage
- BATVOL_QC quality code
- BATVOL_FLAG quality code
- BATVOL_FL average voltage
- BATVOL_FL_QC quality code
- BATVOL_FL_FLAG quality code
- BATVOL_DL average voltage
- BATVOL_DL_QC quality code
- BATVOL_DL_FLAG quality code

**Hourly Average Voltage**
The hourly average voltage for the batteries powering the sensors and the transmitter.
MIN: 0000 MAX: 9998 UNITS: volts
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

**Quality Code**
The code that indicates ISD's evaluation of the quality status of the hourly average station battery voltage.
DOM: A specific domain comprised of the numeric characters (0-9).
- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

**Quality Flag**
A flag that indicates the network's internal evaluation of the quality status of the hourly average station battery voltage. Most users will find the preceding quality code BATVOL_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

**Full Load Voltage**
The voltage for the batteries powering the observing station while the station is transmitting (“full load”).
MIN: 0000 MAX: 9998 UNITS: volts
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

**Full Load Quality Code**
The code that indicates ISD's evaluation of the quality status of the battery voltage under full load.
DOM: A specific domain comprised of the numeric characters (0-9).
- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

**Full Load Quality Flag**
A flag that indicates the network’s internal evaluation of the quality status of battery voltage under full load. Most users will find the preceding quality code BATVOL_FL_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks
FLD LEN: 4
BATVOL_DL average voltage
The voltage for the batteries powering the datalogger.
MIN: 0000  MAX: 9998  UNITS: volts
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
BATVOL_DL_QC quality code
The code that indicates ISD’s evaluation of the quality status of the datalogger battery voltage.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
BATVOL_DL_QC_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the datalogger battery voltage. Most users will find this preceding quality code BATVOL_DL_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 3
Hourly Diagnostic Section identifier
The identifier of a diagnostic section of miscellaneous diagnostic data. This section appears in the last ISD record of the hour.
DOM: A specific domain comprised of the characters in the ASCII character set.
CN2 An indicator of the following items:
TPANEL equipment temperature
TPANEL_QC quality code
TPANEL_FLAG quality code
TINLET_MAX equipment temperature
TINLET_MAX_QC quality code
TINLET_MAX_FLAG quality code
OPENDOOR_TM equipment status
OPENDOOR_TM_QC quality code
OPENDOOR_TM_FLAG quality code

FLD LEN: 5
TPANEL equipment temperature
The temperature of the datalogger panel.
MIN: -9999  MAX: +9998  UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing.

FLD LEN: 1
TPANEL_QC quality code
The code that indicates ISD’s evaluation of the quality status of the datalogger panel temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
TPANEL_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the datalogger panel temperature. Most users will find the preceding quality code TPANEL_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks
FLD LEN: 5
TINLET_MAX equipment temperature
The maximum temperature of the Geonor inlet for the hour.
MIN: -9999 MAX: +9998 UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing.

FLD LEN: 1
TINLET_MAX_QC quality code
The code that indicates ISD’s evaluation of the quality status of the maximum temperature of the Geonor inlet for the hour.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
TINLET_MAX_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the maximum temperature of the Geonor inlet for the hour. Most users will find the preceding quality code TINLET QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 2
OPENDOOR_TM equipment status
The time in minutes the datalogger door was open during the hour.
MIN: 00 MAX: 60 UNITS: minutes
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

FLD LEN: 1
OPENDOOR_TM_QC quality code
The code that indicates ISD’s evaluation of the quality status of the time the datalogger door was open.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
OPENDOOR_TM_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the time the datalogger door was open. Most users will find the preceding quality code OPENDOOR_TM QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 3
Secondary Hourly Diagnostic Section identifier
The identifier that indicates an hourly observation of miscellaneous diagnostic data. This section appears in the Last ISD record of the hour.
DOM: A specific domain comprised of the characters in the ASCII character set.
CN3 An indicator of the following items:
  REFRESAVG resistance
  REFRESAVG_QC quality code
  REFRESAVG_FLAG quality code
  DSIGNATURE identifier
  DSIGNATURE_QC quality code
  DSIGNATURE_FLAG quality code

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REFRESAVG resistance
The reference resistor average.
MIN: 000000 MAX: 999998 UNITS: ohms
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing.

REFRESAVG_QC quality code
The code that indicates ISD’s evaluation of the quality status of the datalogger reference resistor average.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

REFRESAVG_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the reference resistor average. Most users will find the preceding quality code REFRESAVG_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

DSIGNATURE identifier
A signature generated by the datalogger which changes if there is a content or sequence change in the datalogger programs.
MIN: 000000 MAX: 999998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999999 = Missing.

DSIGNATURE_QC quality code
The code that indicates ISD’s evaluation of the quality status of the datalogger signature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

DSIGNATURE_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the datalogger signature. Most users will find the preceding quality code DSIGNATURE_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

Secondary Hourly Diagnostic Section identifier
The identifier that indicates another hourly observation of miscellaneous diagnostic data. This section appears in the last ISD record of the hour
DOM: A specific domain comprised of the characters in the ASCII character set.
CN4 An indicator of the following items:
LIQUID-PRECIPITATION gauge heater flag bit field
LIQUID-PRECIPITATION gauge flag quality code
LIQUID-PRECIPITATION gauge flag quality code
DOORFLAG field
DOORFLAG quality code
DOORFLAG quality code
FORTRANS wattage
FORTRANS wattage quality code
FORTRANS wattage quality code
REFLTRANS wattage
REFLTRANS wattage quality code
REFLTRANS wattage quality code

FLD LEN: 1
LIQUID-PRECIPITATION gauge heater flag bit field
The code that indicates the gauge heater flag bit field setting.
DOM: A specific domain comprised of the numeric characters (0-1).

0 = Off
1 = On
9 = Missing
MIN: 0 MAX: 9

FLD LEN: 1
LIQUID-PRECIPITATION gauge heater flag quality code
The code that indicates ISD’s evaluation of the quality status of the gauge heater flag code.
DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
LIQUID-PRECIPITATION gauge heater flag quality code
A flag that indicates the network’s internal evaluation of the quality status of the gauge heater flag code. Most users will find the preceding quality code to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 4
DOORFLAG field
The code that indicates the datalogger door bit field setting.
DOM: A specific domain comprised of the numeric characters (0-1).

0000 = Closed
0001 – 8192 = Open
9999 = Missing
MIN: 0000 MAX: 9999

FLD LEN: 1
DOORFLAG field quality code
The code that indicates ISD’s evaluation of the quality status of the datalogger door bit field setting.
DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
DOORFLAG field quality code
A flag that indicates the network’s internal evaluation of the quality status of the datalogger door bit field setting code. Most users will find the preceding quality code to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 3
FORTRANS wattage
Forward transmitter RF power in tenths of watts
MIN: 000 MAX: 500 UNITS: Watts
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

FLD LEN: 1
FORTRANS wattage quality code
The code that indicates ISD’s evaluation of the quality status of the forward transmitter RF power.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing
FLD LEN: 1
**FORTRANS wattage quality code**
A flag that indicates the network’s internal evaluation of the quality status of the forward transmitter RF power. Most users will find the preceding quality code to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

FLD LEN: 3
**REFLTRANS wattage**
Reflected transmitter RF power in tenths of watts

MIN: 000  MAX: 500  UNITS: Watts

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing

FLD LEN: 1
**REFLTRANS wattage quality code**
The code that indicates ISD’s evaluation of the quality status of the reflected transmitter RF power.

DOM: A specific domain comprised of the numeric characters (0-9).
- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

FLD LEN: 1
**REFLTRANS wattage quality code**
A flag that indicates the network’s internal evaluation of the quality status of the reflected transmitter RF power. Most users will find the preceding quality code to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

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**Network Metadata**

FLD LEN: 3
**US-NETWORK-METADATA identifier**
The identifier that indicates the occurrence of US Network metadata, used in NCEI data processing.

DOM: A specific domain comprised of the ASCII characters.

**CO1**
An indicator of the following item:
- **NETWORK-METADATA climate division number**
- **NETWORK-METADATA UTC-LST time conversion**

FLD LEN: 2
**NETWORK-METADATA climate division number**
The climate division number, for this station, within the US state that it resides.

MIN: 00  MAX: 09  UNITS: N/A

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9).

99 = Missing

FLD LEN: 3
**NETWORK-METADATA UTC-LST time conversion**
The UTC to LST time conversion for this station.

MIN: -12  MAX: +12  UNITS: hours

SCALING FACTOR: 1

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)

+99 = Missing
The identifier that indicates a specified element's observation time differs from the time listed in "Control Section".

**CO2 - CO9** An indicator of up to 8 repeating fields of the following item:

- **COOPERATIVE-NETWORK-ELEMENT-ID**
- **COOPERATIVE-NETWORK-TIME-OFFSET**

The element identifier to be offset, based on the identifier as shown in this document.

**DOM:** A general domain comprised of the characters in the ASCII character set.

999 = Missing

The offset in hours. To obtain the actual observation time of the element/parameter indicated, add the value in this field to the date-time value in the "Control Section."

**MIN:** -9998 **MAX:** +9998 **UNITS:** Hours

**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+9999 = Missing

**CRN Control Section** identifier

The identifier that indicates an occurrence of datalogger program information.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**CR1** An indicator of the following items:

- **DL_VN** identifier
- **DL_VN_QC quality code**
- **DL_VN_FLAG quality code**

**DL_VN** identifier

The version number which uniquely identifies the datalogger program that produced the CRN observation for this hour. This section appears once in every ISD record.

**MIN:** 0000 **MAX:** 9999

**SCALING FACTOR:** 1000

**DOM:** A general domain comprised of the numeric characters (0-9).

99999 = Missing

**DL_VN_QC** quality code

The code that indicates ISD's evaluation of the quality status of the reported datalogger program version number.

**DOM:** A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

**DL_VN_FLAG** quality code

A flag that indicates the network's internal evaluation of the quality status of the reported datalogger program version number. Most users will find the preceding quality code **DL_VN_QC** to be the simplest and most useful quality indicator.

**DOM:** A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks
1–9 = Did not pass all quality checks

**Subhourly Temperature Section** identifier
The identifier that indicates one of three concurrent air temperature observations made by co-located sensors. Three instances of this section (corresponding to the three temperature sensors) appear in each of the twelve 5-minute data stream records. In the 15-minute data stream, the three instances of this section appear in the last record of the hour, and contain the average temperature for the last 5 minutes of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CT1, CT2, CT3 Three indicators preceding three copies of the following items:
- **AVG_TEMP** air temperature
- **AVG_TEMP_QC** quality code
- **AVG_TEMP_FLAG** quality code

**FLD LEN: 5**

**AVG_TEMP** air temperature

The average air temperature for a 5-minute period.

MIN: -9999 MAX: +9998 UNITS: degrees Celsius

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+9999 = Missing.

**FLD LEN: 1**

**AVG_TEMP_QC** quality code

The code that indicates ISD’s evaluation of the quality status of the 5-minute air temperature average.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

**FLD LEN: 1**

**AVG_TEMP_FLAG** quality code

A flag that indicates the network’s internal evaluation of the quality status of the 5-minute air temperature average. Most users will find the preceding quality code **AVG_TEMP_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

**FLD LEN: 3**

**Hourly Temperature Section** identifier

The identifier that indicates one of three concurrent air temperature observations made by co-located sensors. Three instances of this section (corresponding to the three temperature sensors) appear in the last ISD record of the hour.

DOM: A specific domain comprised of the characters in the ASCII character set.

CU1, CU2, CU3 Three indicators preceding three copies of the following items:
- **TEMP_AVG** air temperature
- **TEMP_AVG_QC** quality code
- **TEMP_AVG_FLAG** quality code
- **TEMP_STD** air temperature standard deviation
- **TEMP_STD_QC** quality code
- **TEMP_STD_FLAG** quality code

**FLD LEN: 5**

**TEMP_AVG** air temperature

The average air temperature for an hour.

MIN: -9999 MAX: +9998 UNITS: degrees Celsius

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+9999 = Missing.

**FLD LEN: 1**

**TEMP_AVG_QC** quality code

The code that indicates ISD’s evaluation of the quality status of the hourly temperature average.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing
TEMP_AVG_FLAG quality code
A flag that indicates the network's internal evaluation of the quality status the hourly temperature average. Most users will find the preceding quality code TEMP_AVG_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

TEMP_STD air temperature standard deviation
The temperature standard deviation.
MIN: 00000 MAX: 9998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

TEMP_STD_QC quality code
The code that indicates ISD's evaluation of the quality status of the hourly temperature standard deviation.

DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

TEMP_STD_FLAG quality code
A flag that indicates the network's internal evaluation of the quality status the hourly temperature standard deviation. Most users will find the preceding quality code TEMP_STD_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

TEMP_MIN minimum air temperature
The minimum air temperature for the hour.
MIN: -99999 MAX: +99988 UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-), +99999 = Missing.
The code that indicates ISD’s evaluation of the quality status of the minimum hourly temperature.

DOM: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing
**FLD LEN: 1**

**TEMP_MIN_FLAG** quality code
A flag that indicates the network's internal evaluation of the quality status the minimum hourly. Most users will find the preceding quality code **TEMP_MIN_QC** to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

**FLD LEN: 4**

**TEMP_MIN_TIME** time of minimum air temperature
The time at which the minimum temperature occurred, in z-time HHMM format
MIN: 0000  MAX: 2359
DOM: A specific domain comprised of the numeric characters (0-9)
  9999 = Missing.

**FLD LEN: 1**

**TEMP_MIN_TIME_QC** quality code
The code that indicates ISD's evaluation of the quality status of the time of minimum hourly temperature.
DOM: A specific domain comprised of the numeric characters (0-9)
- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

**FLD LEN: 1**

**TEMP_MIN_TIME_FLAG** quality code
A flag that indicates the network's internal evaluation of the quality status of the minimum hourly air temperature.
Most users will find the preceding quality code **TEMP_MIN_TIME_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

**FLD LEN: 5**

**TEMP_MAX** maximum air temperature
The maximum air temperature for an hour.
MIN: -9999  MAX: +9999  UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
  +9999 = Missing.

**FLD LEN: 1**

**TEMP_MAX_QC** quality code
The code that indicates ISD's evaluation of the quality status of the maximum hourly.
DOM: A specific domain comprised of the numeric characters (0-9)
- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

**FLD LEN: 1**

**TEMP_MAX_FLAG** quality code
A flag that indicates the network's internal evaluation of the quality status the maximum hourly. Most users will find the preceding quality code **TEMP_MAX_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9)
- 0 = Passed all quality control checks
- 1 – 9 = Did not pass all quality checks

**FLD LEN: 4**

**TEMP_MAX_TIME** time of maximum air temperature
The time at which the maximum temperature occurred, in z-time HHMM format
MIN: 0000  MAX: 2359
DOM: A specific domain comprised of the numeric characters (0-9)
  9999 = Missing.

**FLD LEN: 1**

**TEMP_MAX_TIME_QC** quality code
The code that indicates ISD's evaluation of the quality status of the time of maximum hourly temperature.
DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FDL LEN: 1

TEMP_MAX_TIME_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the time of maximum hourly temperature. Most users will find the preceding quality code TEMP_MAX_TIME_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FDL LEN: 3

Subhourly Wetness Section identifier
The identifier that indicates a subhourly wetness sensor observation.

DOM: A specific domain comprised of the characters in the ASCII character set.

CW1 An indicator of the following items:
  WET1 wetness indicator
  WET1_QC quality code
  WET1_FLAG quality code
  WET2 wetness indicator
  WET2_QC quality code
  WET2_FLAG quality code

FDL LEN: 5

WET1 wetness indicator
Wetness sensor channel 1 value indicating the existence or non-existence of moisture on the sensor.

MIN: 00000  MAX: 99999
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

FDL LEN: 1

WET1_QC quality code
The code that indicates ISD’s evaluation of the quality status of the wetness sensor channel 1 value.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FDL LEN: 1

WET1_FLAG quality code
The code that indicates ISD’s evaluation of the quality status of the wetness sensor channel 1 value. Most users will find the preceding quality code WET1_QC to be the simplest and most useful quality indicator.

DOM: A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FDL LEN: 5

WET2 wetness indicator
Wetness sensor channel 2 value indicating the existence or non-existence of moisture on the sensor.

MIN: 00000  MAX: 99999
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).

99999 = Missing.

FDL LEN: 1

WET2_QC quality code
The code that indicates ISD’s evaluation of the quality status of the wetness sensor channel 2 value.

DOM: A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing
FLD LEN: 1

**WET2_FLAG** quality code
The code that indicates ISD’s evaluation of the quality status of the wetness sensor channel 2 value.
Most users will find the preceding quality code **WET2_QC** to be the simplest and most useful quality indicator.

**DOM:** A specific domain comprised of the numeric characters (0-9)

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

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FLD LEN: 3

**Hourly Geonor Vibrating Wire Summary Section** identifier
The identifier that indicates the presence of summary data for three concurrent precipitation observations made by co-located sensors. It appears in the last ISD record of the hour for the 15-minute data stream only. This section is not present for the 5-minute data stream.

**Note:** This section contains the frequencies which are the fundamental output from a vibrating wire transducer. They were transmitted as part of datastream versions which held 15 minute precipitation values. When the 5 minute datastream was defined, the decision was made to transmit engineering units such as millimeters which could be reversed to the fundamental output values using the formulas and coefficients found in the metadata.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- **CX1, CX2, CX3** An indicator of the following items:
  - **PRECIPITATION** total hourly precipitation
  - **PRECIP_QC** quality code
  - **PRECIP_FLAG** quality code
  - **FREQ_AVG** hourly average frequency
  - **FREQ_AVG_QC** quality code
  - **FREQ_AVG_FLAG**
  - **FREQ_MIN** hourly minimum frequency
  - **FREQ_MIN_QC** quality code
  - **FREQ_MIN_FLAG** quality code
  - **FREQ_MAX** hourly maximum frequency
  - **FREQ_MAX_QC** quality code
  - **FREQ_MAX_FLAG** quality code

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FLD LEN: 6

**PRECIPITATION** total hourly precipitation
The total hourly precipitation amount for the sensor.

**MIN:** -99999  **MAX:** +99999  **UNITS:** millimeters

**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)

+99999 = Missing.

---

FLD LEN: 1

**PRECIP_QC** quality code
The code that indicates ISD’s evaluation of the quality status of the hourly precipitation amount.

**DOM:** A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

---

FLD LEN: 1

**PRECIP_FLAG** quality code
The code that indicates the network’s internal evaluation of the quality status of the hourly precipitation amount. Most users will find the preceding quality code **PRECIP_QC** to be the simplest and most useful quality indicator.

**DOM:** A specific domain comprised of the numeric characters (0-9).

0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

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FLD LEN: 4

**FREQ_AVG** hourly average frequency
The hourly average frequency for the sensor.

**MIN:** 0000  **MAX:** 9999  **UNITS:** Hertz

**DOM:** A general domain comprised of the numeric characters (0-9).

9999 = Missing.
FLD LEN: 1
FREQ_AVG_QC quality code
The code that indicates ISD’s evaluation of the quality status of the hourly average frequency.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
FREQ_AVG_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the hourly average frequency. Most users will find the preceding quality code FREQ_AVG_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  1 – 9 = Did not pass all quality checks

FLD LEN: 4
FREQ_MIN hourly minimum frequency
The minimum frequency during the hour for the sensor.
MIN: 0000   MAX: 9998   UNITS: Hertz
DOM: A general domain comprised of the numeric characters (0-9).
  9999 = Missing.

FLD LEN: 1
FREQ_MIN_QC quality code
The code that indicates ISD’s evaluation of the quality status of the hourly minimum frequency.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
FREQ_MIN_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the hourly minimum frequency. Most users will find the preceding quality code FREQ_MIN_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  1 – 9 = Did not pass all quality checks

FLD LEN: 4
FREQ_MAX hourly maximum frequency
The minimum frequency during the hour for the sensor.
MIN: 0000   MAX: 9998   UNITS: Hertz
DOM: A general domain comprised of the numeric characters (0-9).
  9999 = Missing.

FLD LEN: 1
FREQ_MAX_QC quality code
The code that indicates ISD’s evaluation of the quality status of the hourly maximum frequency.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
FREQ_MAX_FLAG quality code
The code that indicates the network’s internal evaluation of the quality status of the hourly maximum frequency. Most users will find the preceding quality code FREQ_MAX_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  1 – 9 = Did not pass all quality checks
Runway Visual Range Data

FLD LEN: 3

RUNWAY-VISUAL-RANGE-OBSERVATION identifier
The identifier that indicates the occurrence of a runway visibility report.
DOM: A specific domain comprised of the ASCII characters.
ED1 An indicator of the following items:
   RUNWAY-VISUAL-RANGE-OBSERVATION direction angle
   RUNWAY-VISUAL-RANGE-OBSERVATION runway designator code
   RUNWAY-VISUAL-RANGE-OBSERVATION visibility dimension
   RUNWAY-VISUAL-RANGE-OBSERVATION quality code

FLD LEN: 2

RUNWAY-VISUAL-RANGE-OBSERVATION direction angle
The angle as measured from magnetic north to the runway along which the visibility is observed.
MIN: 01          MAX: 36          UNITS: Tens of degrees
SCALING FACTOR:  1/10
DOM: A general domain comprised of the numeric characters (0-9).
   99 = Missing

FLD LEN: 1

RUNWAY-VISUAL-RANGE-OBSERVATION runway designator code
The code that denotes the left, right or center runway as the one to which the visibility applies.
DOM: A specific domain comprised of the ASCII characters:
   L = left
   C = center
   R = right
   U = unknown
   9 = missing

FLD LEN: 4

RUNWAY-VISUAL-RANGE-OBSERVATION visibility dimension
The dimension of the horizontal distance that can be seen along the runway.
MIN: 0000          MAX: 5000          UNITS: meters
DOM: A general domain comprised of the ASCII characters 0-9.
   9999 = Missing

FLD LEN: 1

RUNWAY-VISUAL-RANGE-OBSERVATION quality code
The code that denotes a quality status of the reported RUNWAY-VISUAL-RANGE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   9 = Passed gross limits check if element is present
Cloud and Solar Data

**FLD LEN: 3**

**SKY-COVER-LAYER** identifier

The identifier that represents a SKY-COVER-LAYER.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**GA1-GA6** An indicator of up to 6 repeating fields of the following items:

- **SKY-COVER-LAYER coverage code**
- **SKY-COVER-LAYER coverage quality code**
- **SKY-COVER-LAYER base height dimension**
- **SKY-COVER-LAYER base height quality code**
- **SKY-COVER-LAYER cloud type code**
- **SKY-COVER-LAYER cloud type quality code**

**FLD LEN: 2**

**SKY-COVER-LAYER** coverage code

The code that denotes the fraction of the total celestial dome covered by a SKY-COVER-LAYER.

**Note:** This is for a discrete cloud layer, as opposed to the cloud later summation data in the GD1-GD6 section.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 00 = None, SKC or CLR
- 01 = One okta - 1/10 or less but not zero
- 02 = Two oktas - 2/10 - 3/10, or FEW
- 03 = Three oktas - 4/10
- 04 = Four oktas - 5/10, or SCT
- 05 = Five oktas - 6/10
- 06 = Six oktas - 7/10 - 8/10
- 07 = Seven oktas - 9/10 or more but not 10/10, or BKN
- 08 = Eight oktas - 10/10, or OVC
- 09 = Sky obscured, or cloud amount cannot be estimated
- 10 = Partial obscuration
- 99 = Missing

**FLD LEN: 1**

**SKY-COVER-LAYER** coverage quality code

The code that denotes a quality status of the reported SKY-COVER-LAYER coverage.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, from NCEI SURFACE HOURLY
- 5 = Passed all quality control checks, from NCEI SURFACE HOURLY
- 6 = Suspect, from NCEI SURFACE HOURLY
- 7 = Erroneous, from NCEI SURFACE HOURLY
- M = Manual change made to value based on information provided by NWS or FAA
- 9 = Passed gross limits check if element is present

**FLD LEN: 6**

**SKY-COVER-LAYER base height dimension**

The height relative to a VERTICAL-REFERENCE-DATUM of the lowest surface of a cloud.

**MIN:** -00400 **MAX:** +35000 **UNITS:** Meters

SCALING FACTOR: 1

**DOM:** A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+99999 = Missing

**FLD LEN: 1**

**SKY-COVER-LAYER base height quality code**

The code that denotes a quality status of the reported SKY-COVER-LAYER base height.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, from NCEI SURFACE HOURLY
- 5 = Passed all quality control checks, from NCEI SURFACE HOURLY
- 6 = Suspect, from NCEI SURFACE HOURLY
- 7 = Erroneous, from NCEI SURFACE HOURLY
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 2

SKY-COVER-LAYER cloud type code
The code that denotes the classification of the clouds that comprise a SKY-COVER-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
00 = Cirrus (Ci)
01 = Cirrocumulus (Cc)
02 = Cirrostratus (Cs)
03 = Altocumulus (Ac)
04 = Altostratus (As)
05 = Nimbostratus (Ns)
06 = Stratocumulus (Sc)
07 = Stratus (St)
08 = Cumulus (Cu)
09 = Cumulonimbus (Cb)
10 = Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena/sky obscured
11 = Not used
12 = Towering Cumulus (Tcu)
13 = Stratus fractus (Stfra)
14 = Stratocumulus Lenticular (Scsl)
15 = Cumulus Fractus (Cufra)
16 = Cumulonimbus Mammatus (Cbmm)
17 = Altocumulus Lenticular (Acsl)
18 = Altocumulus Castellanus (Accas)
19 = Altocumulus Mammatus (Acmm)
20 = Cirrocumulus Lenticular (Ccsl)
21 = Cirrus and/or Cirrocumulus
22 = Cold-Stratus and/or Fracto-stratus
23 = Cumulus and/or Fracto-cumulus
24 = Not used
99 = Missing

FLD LEN: 1

SKY-COVER-LAYER cloud type quality code
The code that denotes a quality status of the reported SKY-COVER-LAYER cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, from NCEI SURFACE HOURLY
5 = Passed all quality control checks, from NCEI SURFACE HOURLY
6 = Suspect, from NCEI SURFACE HOURLY
7 = Erroneous, from NCEI SURFACE HOURLY
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 3

SKY-COVER-SUMMATION-STATE identifier
The identifier that denotes the availability of a SKY-COVER-SUMMATION-STATE.
DOM: A specific domain comprised of the ASCII characters.
GD1 - GD6 An indicator of up to 6 repeating fields of the following items:
SKY-COVER-SUMMATION-STATE coverage code
SKY-COVER-SUMMATION-STATE coverage code #2
SKY-COVER-SUMMATION-STATE coverage quality code
SKY-COVER-SUMMATION-STATE height dimension
SKY-COVER-SUMMATION-STATE height dimension quality code
SKY-COVER-SUMMATION-STATE characteristic code

FLD LEN: 1

SKY-COVER-SUMMATION-STATE coverage code
The code that denotes the portion of the total celestial dome covered by all layers of clouds and other obscuring phenomena at or below a given height.
DOM: A specific domain comprised of the ASCII characters
FLD LEN: 2
SKY-COVER-SUMMATION coverage code #2
The code that denotes the fraction of the total celestial dome covered by a by all layers of clouds and other obscuring phenomena at or below a given height, if reported by the station in octas.
DOM: A specific domain comprised of the characters in the ASCII character set.

0 = None, SKC or CLR
1 = One okta - 1/10 or less but not zero
2 = Two oktas - 2/10 - 3/10, or FEW
3 = Three oktas - 4/10
4 = Four oktas - 5/10, or SCT
5 = Five oktas - 6/10
6 = Six oktas - 7/10 - 8/10
7 = Seven oktas - 9/10 or more but not 10/10, or BKN
8 = Eight oktas - 10/10, or OVC
9 = Sky obscured, or cloud amount cannot be estimated
10 = Partial Obscuration
11 = Thin Scattered
12 = Scattered
13 = Dark Scattered
14 = Thin Broken
15 = Broken
16 = Dark Broken
17 = Thin Overcast
18 = Overcast
19 = Dark overcast
99 = Missing

FLD LEN: 1
SKY-COVER-SUMMATION-STATE coverage quality code
The code that denotes a quality status of the reported SKY-COVER-SUMMATION-STATE coverage.
DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

FLD LEN: 6
SKY-COVER-SUMMATION-STATE height dimension
The height above ground level (AGL) of the base of the cloud layer or obscuring phenomena.
MIN: -0.0400  MAX: +3500.00  UNITS: meters
SCALING FACTOR: 1
DOM: A general domain comprised of the ASCII characters 0-9, a plus (+) and a minus sign (-).
+999999 = Missing

FLD LEN: 1
SKY-COVER-SUMMATION-STATE height dimension quality code
The code that denotes a quality status of the reported SKY-COVER-SUMMATION-STATE height dimension.
DOM: A specific domain comprised of the characters in the ASCII character set.

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source

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FLD LEN: 1
SKY-COVER-SUMMATION-STATE characteristic code
The code that represents a characteristic of a specific cloud or other obscuring phenomena layer.
DOM: A specific domain comprised of the characters in the ASCII character set.
  1 = Variable height
  2 = Variable amount
  3 = Thin clouds
  4 = Dark layer (reported in data prior to 1950)
  9 = Missing

FLD LEN: 3
SKY-CONDITION-OBSERVATION identifier
An indicator that denotes the start of a SKY-CONDITION-OBSERVATION data group.
DOM: A specific domain comprised of the characters in the ASCII character set.
  GE1: An indicator of the occurrence of the following data items:
  SKY-CONDITION-OBSERVATION convective cloud attribute
  SKY-CONDITION-OBSERVATION vertical datum attribute
  SKY-CONDITION-OBSERVATION base height upper range attribute
  SKY-CONDITION-OBSERVATION base height lower range attribute

FLD LEN: 1
SKY-CONDITION-OBSERVATION convective cloud attribute
The code that denotes the convective cloud type in an observation.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = None
  1 = ACSL (Altocumulus Standing Lenticular)
  2 = ACCAS (Altocumulus Castelanus)
  3 = TCU (Towering Cumulus)
  4 = MDT CU (Moderate Cumulus)
  5 = CB/CB MAM DISTANT (Cumulonimbus or Cumulonimbus Mammatus in the distance)
  6 = CB/CBMAM (Cumulonimbus or Cumulonimbus Mammatus within 20 nautical miles)
  7 = Unknown
  9 = Missing

FLD LEN: 6
SKY-CONDITION-OBSERVATION vertical datum attribute
The code that represents a VERTICAL-REFERENCE-DATUM. Under the stewardship of the FDAD for Intelligence.
DOM: A specific domain comprised of the characters in the ASCII character set.
  AGL: Above Ground Level
  ALAT: Approximate lowest astronomical tide
  AP: Apparent
  CFB: Crest of first berm
  CRD: Columbia River datum
  ESLW: Equatorial Spring low water
  GLWD: Gulf Coast low water datum
  HAT: Highest astronomical tide
  HHW: Higher high water
  HTWW: High tide wave wash
  HW: High water
  HWFC: High water full and change
  IND: Indefinite
  ISLW: Indian Spring low water
  LAT: Lowest astronomical tide
  LLW: Lowest low water
  LNLW: Lowest normal low water
  LRLW: Lower low water
  LSD: Land survey datum
  LW: Low water
  LWFC: Low water full and change
  MHHW: Mean higher high water
  MHLW: Mean higher low water
  MHW: Mean high water
  MHWN: Mean high water neap
MHWS: Mean high water spring
MLHW: Mean lower high water
MLLW: Mean lower low water
MLLWS: Mean lower low water springs
MLWN: Mean low water neap
MLW: Mean low water
MLWS: Mean low water spring
MSL: Mean sea level
MTL: Mean tide level
NC: No correction
NT: Neap tide
ST: Spring tide
SWA: Storm wave action
TLLW: Tropic lower low water
UD: Undetermined
UK: Unknown
WGS84E: WGS84 Ellipsoid
WGS84G: WGS84 GEOID
999999: missing

**FLD LEN: 6**

**SKY-CONDITION-OBSERVATION base height upper range attribute**
The height relative to a VERTICAL-REFERENCE-DATUM for cloud bases reported in a range or the highest height for a variable cloud height report. The concept of a range is to accommodate the WMO practice of reporting a cloud layer by a range of heights.

**MIN:** -0400  
**MAX:** +15000  
**UNITS:** meters  
**DOM:** A general domain comprised of the ASCII characters 0-9, a plus (+) and a minus sign (-).  
+99999 = Missing

**FLD LEN: 6**

**SKY-CONDITION-OBSERVATION base height lower range attribute**
The height relative to a VERTICAL-REFERENCE-DATUM for cloud bases reported in a range or lowest height for a variable cloud height report. The concept of a range is to accommodate the WMO practice of reporting a cloud layer by a range of heights.

**MIN:** -0400  
**MAX:** +15000  
**UNITS:** meters  
**DOM:** A general domain comprised of the ASCII characters 0-9, a plus (+) and a minus sign (-).  
+99999 = Missing

**FLD LEN: 3**

**SKY-CONDITION-OBSERVATION identifier**
An indicator that denotes the start of a SKY-CONDITION-OBSERVATION data group.  
**DOM:** A specific domain comprised of the characters in the ASCII character set.  
**GF1:** An indicator of the occurrence of the following data items:
SKY-CONDITION-OBSERVATION total coverage code  
SKY-CONDITION-OBSERVATION total opaque coverage code  
SKY-CONDITION-OBSERVATION quality total coverage code  
SKY-CONDITION-OBSERVATION total lowest cloud cover code  
SKY-CONDITION-OBSERVATION quality total lowest cloud cover code  
SKY-CONDITION-OBSERVATION low cloud genus code  
SKY-CONDITION-OBSERVATION quality low cloud genus code  
SKY-CONDITION-OBSERVATION lowest cloud base height dimension  
SKY-CONDITION-OBSERVATION lowest cloud base height quality code  
SKY-CONDITION-OBSERVATION mid cloud genus code  
SKY-CONDITION-OBSERVATION quality mid cloud genus code  
SKY-CONDITION-OBSERVATION high cloud genus code  
SKY-CONDITION-OBSERVATION quality high cloud genus code

**FLD LEN: 2**

**SKY-CONDITION-OBSERVATION total coverage code**
The code that denotes the fraction of the total celestial dome covered by clouds or other obscuring phenomena.  
**DOM:** A specific domain comprised of the characters in the ASCII character set.  
00 = None, SKC or CLR  
01 = One okta - 1/10 or less but not zero  
02 = Two oktas - 2/10 - 3/10, or FEW  
03 = Three oktas - 4/10  
04 = Four oktas - 5/10, or SCT
05 = Five oktas - 6/10
06 = Six oktas - 7/10 - 8/10
07 = Seven oktas - 9/10 or more but not 10/10, or BKN
08 = Eight oktas - 10/10, or OVC
09 = Sky obscured, or cloud amount cannot be estimated
10 = Partial obscuration
11 = Thin scattered
12 = Scattered
13 = Dark scattered
14 = Thin broken
15 = Broken
16 = Dark broken
17 = Thin overcast
18 = Overcast
19 = Dark overcast
99 = Missing

FLD LEN: 2
SKY-CONDITION-OBSERVATION total opaque coverage code
The code that denotes the fraction of the total celestial dome covered by opaque clouds or other obscuring phenomena. Only reported by selected U.S. stations during selected periods.
DOM: A specific domain comprised of the characters in the ASCII character set.
   00 = None, SKC or CLR
   01 = One okta - 1/10 or less but not zero
   02 = Two oktas - 2/10 - 3/10, or FEW
   03 = Three oktas - 4/10
   04 = Four oktas - 5/10, or SCT
   05 = Five oktas - 6/10
   06 = Six oktas - 7/10 - 8/10
   07 = Seven oktas - 9/10 or more but not 10/10, or BKN
   08 = Eight oktas - 10/10, or OVC
   09 = Sky obscured, or cloud amount cannot be estimated
   10 = Partial obscuration
   12 = Scattered
   13 = Dark scattered
   15 = Broken
   16 = Dark broken
   18 = Overcast
   19 = Dark overcast
   99 = Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality total coverage code
The code that denotes a quality status of a reported total sky coverage code.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   4 = Passed gross limits check, data originate from an NCEI data source
   5 = Passed all quality control checks, data originate from an NCEI data source
   6 = Suspect, data originate from an NCEI data source
   7 = Erroneous, data originate from an NCEI data source
   9 = Passed gross limits check if element is present

FLD LEN: 2
SKY-CONDITION-OBSERVATION total lowest cloud cover code
The code that represents the fraction of the celestial dome covered by all low clouds present. If no low clouds are present; the code denotes the fraction covered by all middle level clouds present.
DOM: A specific domain comprised of the characters in the ASCII character set.
   00 = None
   01 = One okta or 1/10 or less but not zero
   02 = Two oktas or 2/10 - 3/10
   03 = Three oktas or 4/10
   04 = Four oktas or 5/10
   05 = Five oktas or 6/10
   06 = Six oktas or 7/10 - 8/10
   07 = Seven oktas or 9/10 or more but not 10/10
08 = Eight oktas or 10/10
09 = Sky obscured, or cloud amount cannot be estimated
10 = Partial obscuration
11 = Thin Scattered
12 = Scattered
13 = Dark Scattered
14 = Thin Broken
15 = Broken
16 = Dark Broken
17 = Thin Overcast
18 = Overcast
19 = Dark overcast
99 = Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality total lowest cloud cover code
The code that denotes a quality status of a reported total lowest cloud cover code.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

FLD LEN: 2
SKY-CONDITION-OBSERVATION low cloud genus code
The code that denotes a type of low cloud.
DOM: A specific domain comprised of the characters in the ASCII Character set.
00 = No low clouds
01 = Cumulus humulis or Cumulus fractus other than of bad weather or both
02 = Cumulus mediocris or congestus, with or without Cumulus of species fractus or humulis or
Stratocumulus all having bases at the same level
03 = Cumulonimbus calvus, with or without Cumulus, Stratocumulus or Stratus
04 = Stratocumulus cumulogenitus
05 = Stratocumulus other than Stratocumulus cumulogenitus
06 = Stratus nebulosus or Stratus fractus other than of bad weather, or both
07 = Stratus fractus or Cumulus fractus of bad weather, both (pannus) usually below Altostratus or Nimbostratus.
08 = Cumulus and Stratocumulus other than Stratocumulus cumulogenitus, with bases at different levels
09 = Cumulonimbus capillatus (often with an anvil), with or without Cumulonimbus calvus,
        Cumulus, Stratocumulus, Stratus or pannus
99 = Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality low cloud genus code
The code that denotes a quality status of a reported low cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

FLD LEN: 5
SKY-CONDITION-OBSERVATION lowest cloud base height dimension
The height, above ground level (AGL), of the base of the lowest cloud.
MIN: -0400   MAX: 15000   UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.
FLD LEN: 1
SKY-CONDITION-OBSERVATION lowest cloud base height quality code
The code that denotes a quality status of a lowest cloud base height.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

FLD LEN: 2
SKY-CONDITION-OBSERVATION mid cloud genus code
The code that denotes a type of middle level cloud.
DOM: A specific domain comprised of the characters in the ASCII character set.
00 = No middle clouds
01 = Altostratus translucidus
02 = Altostratus opacus or Nimbostratus
03 = Altocumulus translucidus at a single level
04 = Patches (often lenticulre) of Altocumulus translucidus, continually changing and occurring at one or more levels
05 = Altocumulus translucidus in bands, or one or more layers of Altocumulus translucidus or opacus, progressing invading the sky; these Altocumulus clouds generally thicken as a whole
06 = Altocumulus cumulogentis (or cumulonimbogentus)
07 = Altocumulus translucidus or opacus in two or more layers, or Altocumulus opacus in a single layer, not progressively invading the sky, or Altocumulus with Altostratus or Nimbostratus
08 = Altocumulus castellanus or floccus
09 = Altocumulus of a chaotic sky; generally at several levels
99 = Missing

FLD LEN: 1
SKY-CONDITION-OBSERVATION quality mid cloud genus code
The code that denotes a quality status of a reported mid cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

FLD LEN: 2
SKY-CONDITION-OBSERVATION high cloud genus code
The code that denotes a type of high cloud.
DOM: A specific domain comprised of the characters in the ASCII character set.
00 = No High Clouds
01 = Cirrus fibratus, sometimes uncinus, not progressively invading the sky
02 = Cirrus spissatus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus castellanus or floccus
03 = Cirrus spissatus cumulonimbogenitus
04 = Cirrus uncinus or fibratus, or both, progressively invading the sky; they generally thicken as a whole
05 = Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole, but the continuous veil does not reach 45 degrees above the horizon
06 = Cirrus (often in bands) and Cirrostratus, or Cirrostratus alone, progressively invading the sky; they generally thicken as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered.
07 = Cirrostratus covering the whole sky
08 = Cirrostratus not progressively invading the sky and not entirely covering it
09 = Cirrocumulus alone, or Cirrocumulus predominant among the High clouds
99 = Missing
FLD LEN: 1

SKY-CONDITION-OBSERVATION quality high cloud genus code
The code that denotes a quality status of a reported high cloud type.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

FLD LEN: 3

BELOW-STATION-CLOUD-LAYER identifier
The identifier that represents a BELOW-STATION-CLOUD-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
GG1-GG6 An indicator of up to 6 repeating fields of the following items:
BELOW-STATION-CLOUD-LAYER coverage code
BELOW-STATION-CLOUD-LAYER coverage quality code
BELOW-STATION-CLOUD-LAYER top height dimension
BELOW-STATION-CLOUD-LAYER top height dimension quality code
BELOW-STATION-CLOUD-LAYER type code
BELOW-STATION-CLOUD-LAYER type quality code
BELOW-STATION-CLOUD-LAYER top code
BELOW-STATION-CLOUD-LAYER top quality code

FLD LEN: 2

BELOW-STATION-CLOUD-LAYER coverage code
The code that denotes the extent of coverage of a BELOW-STATION-CLOUD-LAYER.
DOM: A specific domain comprised of the characters in the ASCII character set.
00 = None
01 = One okta - 1/10 or less but not zero
02 = Two oktas - 2/10 - 3/10
03 = Three oktas - 4/10
04 = Four oktas - 5/10
05 = Five oktas - 6/10
06 = Six oktas - 7/10 - 8/10
07 = Seven oktas - 9/10 or more but not 10/10
08 = Eight oktas - 10/10
09 = Sky obscured, or cloud amount cannot be estimated
10 = Partial obscuration
99 = Missing

FLD LEN: 1

BELOW-STATION-CLOUD-LAYER coverage quality code
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER coverage.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

FLD LEN: 5

BELOW-STATION-CLOUD-LAYER top height dimension
The height above mean sea level (MSL) of the top of a BELOW-STATION-CLOUD-LAYER.
MIN: 00000 MAX: 35000 UNITS: Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing

FLD LEN: 1

BELOW-STATION-CLOUD-LAYER top height dimension quality code
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER top height dimension.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present
FLD LEN: 2

**BELOW-STATION-CLOUD-LAYER type code**
The code that denotes the classification of the clouds that comprise a BELOW-STATION-CLOUD-LAYER.
**DOM:** A specific domain comprised of the characters in the ASCII character set.
- 00 = Cirrus (Ci)
- 01 = Cirrocumulus (Cc)
- 02 = Cirrostratus (Cs)
- 03 = Altocumulus (Ac)
- 04 = Altostratus (As)
- 05 = Nimbostratus (Ns)
- 06 = Stratocumulus (Sc)
- 07 = Stratus (St)
- 08 = Cumulus (Cu)
- 09 = Cumulonimbus (Cb)
- 10: Cloud not visible owing to darkness, fog, dust storm, sandstorm, or other analogous phenomena
- 99 = Missing

FLD LEN: 1

**BELOW-STATION-CLOUD-LAYER type quality code**
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER type.
**DOM:** A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

FLD LEN: 2

**BELOW-STATION-CLOUD-LAYER top code**
The code that denotes the characteristics of the upper surface of a BELOW-STATION-CLOUD-LAYER
**DOM:** A specific domain comprised of the characters in the ASCII character set.
- 00 = Isolated cloud or fragments of clouds
- 01 = Continuous flat tops
- 02 = Broken cloud - small breaks, flat tops
- 03 = Broken cloud - large breaks, flat tops
- 04 = Continuous cloud, undulation tops
- 05 = Broken cloud - small breaks, undulating tops
- 06 = Broken cloud - large breaks, undulating tops
- 07 = Continuous or almost continuous with towering clouds above the top of the layer
- 08 = Groups of waves with towering clouds above the top of the layer
- 09 = Two of more layers at different levels
- 99 = Missing

FLD LEN: 1

**BELOW-STATION-CLOUD-LAYER top quality code**
The code that denotes a quality status of the reported BELOW-STATION-CLOUD-LAYER top.
**DOM:** A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present

FLD LEN: 3

**Hourly Solar Radiation Section**
**identifier**
The identifier that indicates an hourly observation of solar radiation. This section appears in the last ISD record of the hour.
**DOM:** A specific domain comprised of the characters in the ASCII character set.
**GH1** An indicator of the following items:
- **SOLARAD** hourly average solar radiation
- **SOLARAD_QC** quality code
- **SOLARAD_FLAG** quality code
- **SOLARAD_MIN** minimum solar radiation
- **SOLARAD_MIN_QC** quality code
- **SOLARAD_MIN_FLAG** quality code
- **SOLARAD_MAX** maximum solar radiation

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SOLARAD_MAX_QC quality code
SOLARAD_MAX_FLAG quality code
SOLARAD_STD solar radiation standard deviation
SOLARAD_STD_QC quality code
SOLARAD_STD_FLAG quality code

FLD LEN: 5
SOLARAD hourly average solar radiation
The hourly average solar radiation.
MIN: 0000 MAX: 99998 UNITS: watts per square meter
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
SOLARAD_QC quality code
The code that indicates ISD's evaluation of the quality status of the hourly average solar radiation.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
SOLARAD_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the hourly average solar radiation. Most users will find the preceding quality code SOLARAD_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5
SOLARAD_MIN minimum solar radiation
The minimum 10 second solar radiation for the hour.
MIN: 00000 MAX: 99998 UNITS: watts per square meter
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
SOLARAD_MIN_QC quality code
The code that indicates ISD's evaluation of the quality status of the hourly minimum solar radiation.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
SOLARAD_MIN_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the hourly minimum solar radiation. Most users will find the preceding quality code SOLARAD_MIN_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 5
SOLARAD_MAX maximum solar radiation
The maximum 10 second solar radiation for the hour.
MIN: 00000 MAX: 99998 UNITS: watts per square meter
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
SOLARAD_MAX_QC quality code
The code that indicates ISD's evaluation of the quality status of the hourly maximum solar radiation.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing
FLD LEN: 1
**SOLARAD_MAX_FLAG** quality code
The code that indicates the network’s internal evaluation of the quality status of the hourly maximum solar radiation. Most users will find the preceding quality code **SOLARAD_MAX_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  other – Did not pass all quality checks

FLD LEN: 5
**SOLARAD_STD** solar radiation standard deviation
The hourly 10 second hourly solar radiation standard deviation.
MIN: 00000 MAX: 99998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing.

FLD LEN: 1
**SOLARAD_STD_QC** quality code
The code that indicates ISD’s evaluation of the quality status of the hourly solar radiation standard deviation.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
**SOLARAD_STD_FLAG** quality code
The code that indicates the network’s internal evaluation of the quality status of hourly solar radiation standard deviation. Most users will find the preceding quality code **SOLARAD_STD_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  other – Did not pass all quality checks

FLD LEN: 3
**SUNSHINE-OBSERVATION** identifier
The identifier that denotes the availability of sunshine information.
DOM: A specific domain comprised of the ASCII characters
  **GJ1** An indicator of the occurrence of the following items:
  SUNSHINE-OBSERVATION sunshine duration quantity
  SUNSHINE-OBSERVATION sunshine duration quality code

FLD LEN: 4
**SUNSHINE-OBSERVATION** sunshine duration quantity
The quantity of time sunshine occurred over the reporting period.
MIN: 0000 MAX: 6000 UNITS: minutes
DOM: A general domain comprised of the ASCII characters 0-9.
9999 = Missing

FLD LEN: 1
**SUNSHINE-OBSERVATION** sunshine duration quality code
The code that denotes a quality status of the reported SUNSHINE-OBSERVATION sunshine duration.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  M = Manual change made to value based on information provided by NWS or FAA
  9 = Passed gross limits check if element is present
FLD LEN: 3
SUNSHINE-OBSERVATION identifier
The identifier that denotes the availability of percent of possible sunshine information.
DOM: A specific domain comprised of the ASCII characters

FLD LEN: 3
SUNSHINE-OBSERVATION percent of possible sunshine quantity
The percent of possible sunshine that occurred over the previous 24-hour period.
MIN: 000 MAX: 100 UNITS: percentage
DOM: A general domain comprised of the ASCII characters 0-9, 999 = Missing.

FLD LEN: 1
SUNSHINE-OBSERVATION percent of possible sunshine quality code
The code that denotes a quality status of the reported SUNSHINE-OBSERVATION percent of possible sunshine.
DOM: A specific domain comprised of the characters in the ASCII character set.
   4 = Passed gross limits check, data originate from an NCEI data source
   5 = Passed all quality control checks, data originate from an NCEI data source
   6 = Suspect, data originate from an NCEI data source
   7 = Erroneous, data originate from an NCEI data source
   M = Manual change made to value based on information provided by NWS or FAA
   9 = Passed gross limits check if element is present

FLD LEN: 3
SUNSHINE-OBSERVATION FOR THE MONTH identifier
The identifier that denotes the availability of sunshine information.
DOM: A specific domain comprised of the ASCII characters

FLD LEN: 5
SUNSHINE-OBSERVATION FOR THE MONTH sunshine duration quantity
The quantity of time sunshine occurred over the reporting period.
MIN: 00000 MAX: 30000 UNITS: minutes
DOM: A general domain comprised of the ASCII characters 0-9, 99999 = Missing

FLD LEN: 1
SUNSHINE-OBSERVATION FOR THE MONTH sunshine duration quality code
The code that denotes a quality status of the reported SUNSHINE-OBSERVATION sunshine duration.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   4 = Passed gross limits check, data originate from an NCEI data source
   5 = Passed all quality control checks, data originate from an NCEI data source
   6 = Suspect, data originate from an NCEI data source
   7 = Erroneous, data originate from an NCEI data source
   9 = Passed gross limits check if element is present

FLD LEN: 3
Solar Irradiance Section identifier
The identifier that indicates an observation of solar irradiance data integrated over the specified time period.
DOM: A specific domain comprised of the characters in the ASCII character set.

GM1: An indicator of the following items:
   Solar irradiance data time period
   Global irradiance
   Global irradiance data flag
   Global irradiance quality code
   Direct beam irradiance
Direct beam irradiance data flag
Direct beam irradiance quality code
Diffuse irradiance
Diffuse irradiance data flag
Diffuse irradiance quality code
UVB global irradiance
UVB global irradiance data flag
UVB global irradiance quality code

FLD LEN: 4
Time period in minutes, for which the data in this section (GM1) pertains—eg, 0060 = 60 minutes (1 hour).
MIN: 0001  MAX: 9998  UNITS: Minutes
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4
Global irradiance
Global horizontal irradiance measured using a pyranometer. Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers.
MIN: 0000  MAX: 9998  UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 2
Global irradiance data flag
The code that provides additional information regarding the global irradiance data.
DOM: A specific domain comprised of the numeric characters (00-99).
00 = Untested (raw data)
01 = Passed one-component test; data fall within max-min limits of Kt, Kn, or Kd
02 = Passed two-component test; data fall within 0.03 of the Gompertz boundaries
03 = Passed three-component test; data come within + 0.03 of satisfying Kt = Kn + Kd
04 = Passed visual inspection: not used by SERI_QC1
05 = Failed visual inspection: not used by SERI_QC1
06 = Value estimated; passes all pertinent SERI_QC tests
07 = Failed one-component test; lower than allowed minimum
08 = Failed one-component test; higher than allowed maximum
09 = Passed three-component test but failed two-component test by 0.05
10-93 = Failed two- or three- component tests in one of four ways.
94-97 = Data falls into physically impossible region where Kn > Kt by K-space distances of 0.05 to 0.10 (94), 0.10 to 0.15 (95), 0.15 to 0.20 (96), and > 0.20 (97).
98 = Not used
99 = Missing data

FLD LEN: 1
Global irradiance quality code
The code that denotes a quality status of the reported global irradiance value.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 4
Direct beam irradiance
Direct beam irradiance measured using a pyrheliometer or other instrument. Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers.
MIN: 0000  MAX: 9998  UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.
FLD LEN: 2

Direct beam irradiance data flag
The code that provides additional information regarding the direct beam irradiance data.
DOM: A specific domain comprised of the numeric characters (00-99).
  00 = Untested (raw data)
  01 = Passed one-component test; data fall within max-min limits of Kt, Kn, or Kd
  02 = Passed two-component test; data fall within 0.03 of the Gompertz boundaries
  03 = Passed three-component test; data come within + 0.03 of satisfying Kt = Kn + Kd
  04 = Passed visual inspection: not used by SERI_QC1
  05 = Failed visual inspection: not used by SERI_QC1
  06 = Value estimated; passes all pertinent SERI_QC tests
  07 = Failed one-component test; lower than allowed minimum
  08 = Failed one-component test; higher than allowed maximum
  09 = Passed three-component test but failed two-component test by 0.05
  10-93 = Failed two- or three- component tests in one of four ways.
  94-97 = Data fails into physically impossible region where Kn > Kt by K-space distances of 0.05 to 0.10 (94),
          0.10 to 0.15 (95), 0.15 to 0.20 (96), and > 0.20 (97).
  98 = Not used
  99 = Missing data

FLD LEN: 1

Direct beam irradiance quality code
The code that denotes a quality status of the reported direct beam irradiance value.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Missing

FLD LEN: 4

Diffuse irradiance
Diffuse irradiance measured using a pyranometer under a shading device. Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers. Instrument is mounted under a shadowband.
MIN: 0000    MAX: 9998    UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
  9999 = Missing.

FLD LEN: 2

Diffuse irradiance data flag
The code that provides additional information regarding the diffuse irradiance data.
DOM: A specific domain comprised of the numeric characters (00-99).
  00 = Untested (raw data)
  01 = Passed one-component test; data fall within max-min limits of Kt, Kn, or Kd
  02 = Passed two-component test; data fall within 0.03 of the Gompertz boundaries
  03 = Passed three-component test; data come within + 0.03 of satisfying Kt = Kn + Kd
  04 = Passed visual inspection: not used by SERI_QC1
  05 = Failed visual inspection: not used by SERI_QC1
  06 = Value estimated; passes all pertinent SERI_QC tests
  07 = Failed one-component test; lower than allowed minimum
  08 = Failed one-component test; higher than allowed maximum
  09 = Passed three-component test but failed two-component test by 0.05
  10-93 = Failed two- or three- component tests in one of four ways.
  94-97 = Data fails into physically impossible region where Kn > Kt by K-space distances of 0.05 to 0.10 (94),
          0.10 to 0.15 (95), 0.15 to 0.20 (96), and > 0.20 (97).
  98 = Not used
  99 = Missing data

FLD LEN: 1

Diffuse irradiance quality code
The code that denotes a quality status of the reported diffuse irradiance value.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Missing

FLD LEN: 4
UVB global irradiance
Ultra-violet global irradiance measured using a Ultra-violet Biometer (Solar Light). Unit is milli-watts per square meter (mW/m²) of erythema effective irradiance in whole values. Waveband ranges from 290-320 nanometers.
MIN: 0000    MAX: 9998    UNITS: milli-watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
UVB global irradiance quality code
The code that denotes a quality status of the reported UVB global irradiance value.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

FLD LEN: 3
Solar Radiation Section identifier
The identifier that indicates an observation of solar radiation data.
DOM: A specific domain comprised of the characters in the ASCII character set.
GN1 An indicator of the following items:
- Solar radiation data time period
  - Upwelling global solar radiation
  - Upwelling global solar radiation quality code
  - Downwelling thermal infrared radiation
  - Downwelling thermal infrared radiation quality code
  - Upwelling thermal infrared radiation
  - Upwelling thermal infrared radiation quality code
  - Photosynthetically active radiation
  - Photosynthetically active radiation quality code
  - Solar zenith angle
  - Solar zenith angle quality code

FLD LEN: 4
Time period in minutes, for which the data in this section (GN1) pertains—eg, 0060 = 60 minutes (1 hour).
MIN: 0001    MAX: 9998    UNITS: Minutes
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 4
Upwelling global solar radiation
Global radiation measured using an Epply Precision Spectral Pyranometer mounted upside down ten meters above the surface on a meteorological tower. Unit is milli-watts per square meter (mW/m²). Waveband ranges from 270 to 3000 nanometers.
MIN: 0000    MAX: 9998    UNITS: milli-watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
Upwelling global solar radiation quality code
The code that denotes a quality status of the reported upwelling global solar radiation value.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing
Downwelling thermal infrared radiation
Infrared radiation measured using an Epply Precision Infrared Radiometer mounted upright ten meters above the surface on a meteorological tower. Unit is milli-watts per square meter (mW/m²). Waveband ranges from 3000 to 50,000 nanometers.
MIN: 0000    MAX: 9998    UNITS: milli-watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

Downwelling thermal infrared radiation quality code
The code that denotes a quality status of the reported downwelling thermal infrared radiation value.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

Upwelling thermal infrared radiation
Infrared radiation measured using an Epply Precision Infrared Radiometer mounted upside-down ten meters above the surface on a meteorological tower. Unit is Watts per meter per meter (mW/m²). Waveband ranges from 3000 to 50,000 nanometers.
MIN: 0000    MAX: 9998    UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

Upwelling thermal infrared radiation quality code
The code that denotes a quality status of the reported upwelling thermal infrared radiation value.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

Photosynthetically active radiation
The PAR sensor measures global solar radiation from 400 to 700 nm in Watts per square meter (mW/m²), which approximates the spectral band active in photosynthesis.
MIN: 0000    MAX: 9998    UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

Photosynthetically active radiation quality code
The code that denotes a quality status of the reported photosynthetically active radiation value.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Missing

Solar zenith angle
The Solar Zenith Angle is the angle in degrees between the sun and the perpendicular to the earth's surface. At sunrise it is 90 degrees, at noon it is a function of latitude, and at sunset it is again 90 degrees. Below the horizon value is 100. Values are reported to the nearest tens of degrees (eg, 090).
MIN: 000    MAX: 998    UNITS: angular degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.
**Solar zenith angle quality code**
The code that denotes a quality status of the reported solar zenith angle value.
DOM: A specific domain comprised of the numeric characters (0-9).
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

**FLD LEN: 3**
**Net Solar Radiation Section identifier**
The identifier that indicates an observation of net solar radiation data.
DOM: A specific domain comprised of the characters in the ASCII character set.

**GO1** An indicator of the following items:
- Net solar radiation data time period
- Net solar radiation
- Net solar radiation quality code
- Net infrared radiation
- Net infrared radiation quality code
- Net radiation
- Net radiation quality code

**FLD LEN: 4**
Time period in minutes, for which the data in this section (GO1) pertains—eg, 0060 = 60 minutes (1 hour).
MIN: 0001 MAX: 9998 UNITS: Minutes
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

**FLD LEN: 4**
**Net solar radiation**
The difference between global radiation and upwelling global radiation measured in Watts per square meter (W/m²). If negative, left most position contains a "-" sign.
MIN: -999 MAX: 9998 UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

**FLD LEN: 1**
**Net solar radiation quality code**
The code that denotes a quality status of the reported net solar radiation value.
DOM: A specific domain comprised of the numeric characters (0-9).
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

**FLD LEN: 4**
**Net infrared radiation**
The difference between downwelling infrared and upwelling infrared measured in Watts per square meter (W/m²). If negative, left most position contains a "-" sign.
MIN: -999 MAX: 9998 UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

**FLD LEN: 1**
**Net infrared radiation quality code**
The code that denotes a quality status of the reported net infrared radiation value.
DOM: A specific domain comprised of the numeric characters (0-9).
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

**FLD LEN: 4**
### Net radiation
The total of Net Solar and Net Infrared radiation measured in Watts per square meter (W/m²).

**MIN:** -999  **MAX:** 9998  **UNITS:** watts per square meter

**SCALING FACTOR:** 1  **DOM:** A general domain comprised of the numeric characters (0-9).

9999 = Missing.

**FLD LEN:** 1

#### Net radiation quality code
The code that denotes a quality status of the reported net radiation value.

**DOM:** A specific domain comprised of the numeric characters (0-9).

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

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### Modeled Solar Irradiance Section identifier

**GP1**
An indicator of the following items:
- Modeled solar irradiance data time period
- Modeled global horizontal
- Modeled global horizontal source flag
- Modeled global horizontal uncertainty
- Modeled direct normal
- Modeled direct normal source flag
- Modeled direct normal uncertainty
- Modeled diffuse horizontal
- Modeled diffuse horizontal source flag
- Modeled diffuse horizontal uncertainty

**FLD LEN:** 3

### Time period in minutes.
For which the data in this section pertains—eg, 0060 = 60 minutes (1 hour).

**MAX:** 9998  **UNITS:** Minutes

**DOM:** A general domain comprised of the numeric characters (0-9).

9999 = Missing.

**FLD LEN:** 4

### Modeled global horizontal
Total amount of direct and diffuse solar radiation (modeled) received on a horizontal surface. Unit is watts per square meter (W/m²) in whole values.

**MIN:** 0000  **MAX:** 9998  **UNITS:** watts per square meter

**SCALING FACTOR:** 1  **DOM:** A general domain comprised of the numeric characters (0-9).

9999 = Missing.

**FLD LEN:** 4

### Modeled global horizontal source flag
The code that provides source information regarding the global horizontal data.

**DOM:** A specific domain comprised of the numeric characters (00-99).

- 01 = Value modeled from METSTAT model
- 02 = Value time-shifted from SUNY satellite model
- 03 = Value time-shifted from SUNY satellite model, adjusted to a minimum low-diffuse envelope
- 99 = Missing data

**FLD LEN:** 2

### Modeled global horizontal uncertainty
The uncertainty values are based on model type and quality of input data.

**MIN:** 000  **MAX:** 100  **UNITS:** Percent

**SCALING FACTOR:** 1  **DOM:** A general domain comprised of the numeric characters (0-9).

999 = Missing data

**FLD LEN:** 3

### Modeled direct normal

**FLD LEN:** 4
The amount of solar radiation (modeled) on a surface normal to the sun. Unit is watts per square meter (W/m²) in whole values.

**MIN**: 0000  **MAX**: 9998  **UNITS**: watts per square meter

**SCALING FACTOR**: 1

**DOM**: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

**FLD LEN**: 2

**Modeled direct normal source flag**
The code that provides source information regarding the direct normal data.

**DOM**: A specific domain comprised of the numeric characters (00-99).

- 01 = Value modeled from METSTAT model
- 02 = Value time-shifted from SUNY satellite model
- 03 = Value time-shifted from SUNY satellite model, adjusted to a minimum low-diffuse envelope
- 99 = Missing data

**FLD LEN**: 3

**Modeled direct normal uncertainty**
The uncertainty values are based on model type and quality of input data.

**MIN**: 000  **MAX**: 100  **UNITS**: Percent

**SCALING FACTOR**: 1

**DOM**: A general domain comprised of the numeric characters (0-9).

999 = Missing data

**FLD LEN**: 4

**Modeled diffuse horizontal**
The amount of solar radiation (modeled) received from the sky (excluding the solar disk) on a horizontal surface.

Unit is watts per square meter (W/m²) in whole values. Waveband ranges from 0.4 - 2.3 micrometers.

**MIN**: 0000  **MAX**: 9998  **UNITS**: watts per square meter

**SCALING FACTOR**: 1

**DOM**: A general domain comprised of the numeric characters (0-9).

9999 = Missing.

**FLD LEN**: 2

**Modeled diffuse horizontal source flag**
The code that provides source information regarding the diffuse horizontal data.

**DOM**: A specific domain comprised of the numeric characters (00-99).

- 01 = Value modeled from METSTAT model
- 02 = Value time-shifted from SUNY satellite model
- 03 = Value time-shifted from SUNY satellite model, adjusted to a minimum low-diffuse envelope
- 99 = Missing data

**FLD LEN**: 3

**Modeled diffuse horizontal uncertainty**
The uncertainty values are based on model type and quality of input data.

**MIN**: 000  **MAX**: 100  **UNITS**: Percent

**SCALING FACTOR**: 1

**DOM**: A general domain comprised of the numeric characters (0-9).

999 = Missing data

**FLD LEN**: 3

**Hourly Solar Angle Section identifier**
The identifier that denotes the start of the Hourly Solar angle data section.

**DOM**: A specific domain comprised of the characters in the ASCII character set.

**GQ1** An indicator of the occurrence of the following items:
- Hourly solar angle time period
- Hourly mean zenith angle
- Hourly mean zenith angle quality code
- Hourly mean azimuth angle
- Hourly mean azimuth angle quality code
FLD LEN: 4
Time period in minutes, for which the data in this section pertains—eg, 0060 = 60 minutes (1 hour).
MIN: 0001 MAX: 9998 UNITS: Minutes
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing data

FLD LEN: 4
Hourly mean zenith angle (for sunup periods)
The angle between sun and the zenith as the mean of all 1-minute sunup zenith angle values.
MIN: 0000 MAX: 3600 UNITS: Angular Degrees
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing data

FLD LEN: 1
Hourly mean zenith angle quality code
The code that denotes a quality status of the hourly mean zenith angle.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspct
3 = Erroneous
9 = Missing

FLD LEN: 4
Hourly mean azimuth angle (for sunup periods)
The angle between sun and north as the mean of all 1-minute sunup azimuth angle values.
MIN: 0000 MAX: 3600 UNITS: Angular Degrees
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing data

FLD LEN: 1
Hourly mean azimuth angle quality code
The code that denotes a quality status of the hourly mean azimuth angle.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspct
3 = Erroneous
9 = Missing

FLD LEN: 3
Hourly Extraterrestrial Radiation Section identifier
The identifier that denotes the start of the Hourly Extraterrestrial radiation data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
GR1 An indicator of the occurrence of the following items:
Hourly extraterrestrial radiation time period
Hourly extraterrestrial radiation on a horizontal surface
Hourly extraterrestrial radiation on a horizontal surface quality code
Hourly extraterrestrial radiation normal to the sun
Hourly extraterrestrial radiation normal to the sun quality code

FLD LEN: 4
Time period in minutes, for which the data in this section pertains—eg, 0060 = 60 minutes (1 hour).
MIN: 0001 MAX: 9998 UNITS: Minutes
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing data

FLD LEN: 4
Hourly extraterrestrial radiation on a horizontal surface
The amount of solar radiation received (modeled) on a horizontal surface at the top of the atmosphere. Unit is watts per square meter (W/m2) in whole values.
MIN: 0000 MAX: 9998 UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing data
FLD LEN: 1
**Hourly extraterrestrial radiation on a horizontal surface quality code**
The code that denotes a quality status of the hourly extraterrestrial radiation on a horizontal surface value.
DOM: A specific domain comprised of the numeric characters (0-9).
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

FLD LEN: 4
**Hourly extraterrestrial radiation normal to the sun**
The amount of solar radiation received (modeled) on a surface normal to the sun at the top of the atmosphere. Unit is watts per square meter (W/m²) in whole values.
MIN: 0000 MAX: 9998 UNITS: watts per square meter
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
- 9999 = Missing data

FLD LEN: 1
**Hourly extraterrestrial radiation normal to the sun quality code**
The code that denotes a quality status of the hourly extraterrestrial radiation normal to the sun value.
DOM: A specific domain comprised of the numeric characters (0-9).
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Missing

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**Hail Data**

FLD LEN: 3
**HAIL identifier**
The identifier that denotes the start of a HAIL data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
An indicator of the occurrence of the following item:
- Hail size
- Hail size quality code

FLD LEN: 3
**HAIL size**
The diameter of the largest hailstone observed.
MIN: 000 MAX: 200 UNITS: Centimeters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9)
- 999 = missing

FLD LEN: 1
**HAIL size quality code**
The code that denotes a quality status of the reported HAIL size.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present
Ground Surface Data

FLD LEN: 3
GROUND-SURFACE-OBSERVATION identifier
The identifier that denotes the availability of a GROUND-SURFACE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
IA1: An indicator of the occurrence of the following data item:
GROUND-SURFACE-OBSERVATION code
GROUND-SURFACE-OBSERVATION quality code

FLD LEN: 2
GROUND-SURFACE-OBSERVATION code
The code that denotes the physical condition of the ground's surface.
NOTE: Code values 10-19 indicate the state of the ground without snow or measurable ice cover.
00 = Surface of ground dry (no appreciable amount of dust or loose sand)
01 = Surface of ground dry (without cracks and no appreciable amount of dust or loose sand and without snow or measurable ice cover)
02 = Extremely dry with cracks (without snow or measurable ice cover)
03 = Loose dry dust or sand not covering ground completely (without snow or measurable ice cover)
04 = Loose dry dust or sand covering more than one-half of ground (but not completely)
05 = Loose dry dust or sand covering ground completely
06 = Thin cover of loose dry dust or sand covering ground completely (without snow or measurable ice cover)
07 = Moderate or thick cover of loose dry dust or sand covering ground completely (without snow or measurable ice cover)
08 = Surface of ground moist
09 = Surface of ground moist (without snow or measurable ice cover)
10 = Surface of ground wet (standing water in small or large pools on surface)
11 = Surface of ground wet (standing water in small or large pools on surface without snow or measurable ice cover)
12 = Flooded (without snow or measurable ice cover)
13 = Surface of ground frozen
14 = Surface of ground frozen (without snow or measurable ice cover)
15 = Glaze or ice on ground, but no snow or melting snow
16 = Glaze on ground (without snow or measurable ice cover)
17 = Ground predominantly covered by ice
18 = Snow or melting snow (with or without ice) covering less than one-half of the ground
19 = Snow or melting snow (with or without ice) covering more than one-half of the ground but ground not completely covered
20 = Snow or melting snow (with or without ice) covering ground completely
21 = Loose dry snow covering less than one-half of the ground
22 = Loose dry snow covering at least one-half of the ground (but not completely)
23 = Even layer of loose dry snow covering ground completely
24 = Uneven layer of loose dry snow covering ground completely
25 = Compact or wet snow (with or without ice) covering less than one-half of the ground
26 = Compact or wet snow (with or without ice) covering at least one-half of the ground but ground not completely covered
27 = Even layer of compact or wet snow covering ground completely
28 = Uneven layer of compact or wet snow covering ground completely
29 = Snow covering ground completely; deep drifts
30 = Loose dry dust or sand covering one-half of the ground (but not completely)
31 = Loose dry snow, dust or sand covering ground completely
99 = Missing
FLD LEN: 1
GROUND-SURFACE-OBSERVATION code quality code
The code that denotes a quality status of the reported GROUND-SURFACE-OBSERVATION code.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   9 = Passed gross limits check if element is present

FLD LEN: 3
GROUND-SURFACE-OBSERVATION minimum-temperature identifier
The identifier that denotes the availability of GROUND-SURFACE-OBSERVATION minimum temperature data.
DOM: A specific domain comprised of the characters in the ASCII character set.
   IA2: An indicator of the occurrence of the following data item:
       GROUND-SURFACE-OBSERVATION minimum-temperature period quantity
       GROUND-SURFACE-OBSERVATION minimum temperature
       GROUND-SURFACE-OBSERVATION minimum temperature quality code

FLD LEN: 3
GROUND-SURFACE-OBSERVATION minimum-temperature period quantity
The quantity of time over which the ground temperature was sampled to determine the minimum temperature.
MIN: 001       MAX: 480       UNITS: hours
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), 999 = Missing

FLD LEN: 5
GROUND-SURFACE-OBSERVATION minimum temperature
The minimum temperature of the ground's surface recorded during the observation period.
MIN: -1100       MAX: +1500       UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign(-).
     +9999 = Missing

FLD LEN: 1
GROUND-SURFACE-OBSERVATION minimum temperature quality code
The code that denotes a quality status of the reported GROUND-SURFACE-OBSERVATION minimum temperature.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   9 = Passed gross limits check if element is present

FLD LEN: 3
Hourly Surface Temperature Section identifier
The identifier that indicates an hourly observation of surface temperature as measured by a radiation sensor for the ground surface. This section appears in the last ISD record of the hour.
DOM: A specific domain comprised of the characters in the ASCII character set.
   IB1: An indicator of the following items:
       SURFTEMP hourly average surface temperature
       SURFTEMP_QC quality code
       SURFTEMP_FLAG quality code
       SURFTEMP_MIN minimum surface temperature
       SURFTEMP_MIN_QC quality code
       SURFTEMP_MIN_FLAG quality code
       SURFTEMP_MAX maximum surface temperature
       SURFTEMP_MAX_QC quality code
       SURFTEMP_MAX_FLAG quality code
       SURFTEMP_STD surface temperature standard deviation for the hour
       SURFTEMP_STD_QC quality code
       SURFTEMP_STD_FLAG quality code

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**FLD LEN: 5**

**SURFTEMP** hourly average surface temperature
The hourly average surface temperature.
MIN: -9999 MAX: +9998 UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9) a plus sign (+), and a minus sign (-).
+9999 = Missing.

**FLD LEN: 1**

**SURFTEMP_QC** quality code
The code that indicates ISD's evaluation of the quality status of the hourly average surface temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

**FLD LEN: 1**

**SURFTEMP_FLAG** quality code
The code that indicates the network's internal evaluation of the quality status of the hourly average surface temperature.
Most users will find the preceding quality code **SURFTEMP_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

**FLD LEN: 5**

**SURFTEMP_MIN** hourly minimum surface temperature
The minimum 10 second surface temperature for the hour.
MIN: -9999 MAX: +9998 UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9) a plus sign (+), and a minus sign (-)
+9999 = Missing.

**FLD LEN: 1**

**SURFTEMP_MIN_QC** quality code
The code that indicates ISD's evaluation of the quality status of the hourly minimum surface temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

**FLD LEN: 1**

**SURFTEMP_MIN_FLAG** quality code
The code that indicates the network's internal evaluation of the quality status of the hourly minimum surface temperature.
Most users will find the preceding quality code **SURFTEMP_MIN_QC** to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

**FLD LEN: 5**

**SURFTEMP_MAX** hourly maximum surface temperature
The maximum 10 second surface temperature for the hour.
MIN: -9999 MAX: +9998 UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9) a plus sign (+), and a minus sign (-)
+9999 = Missing.

**FLD LEN: 1**

**SURFTEMP_MAX_QC** quality code
The code that indicates ISD's evaluation of the quality status of the hourly maximum surface temperature.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing
The code that indicates the network’s internal evaluation of the quality status of the hourly maximum surface temperature. Most users will find the preceding quality code `SURFTEMP_MAX_QC` to be the simplest and most useful quality indicator.

**DOM**: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

**FLD LEN: 4**

`SURFTEMP_STD` hourly surface temperature standard deviation

The hourly surface temperature standard deviation.

- **MIN**: 0000
- **MAX**: 9998
- **SCALING FACTOR**: 10
- **DOM**: A general domain comprised of the numeric characters (0-9).
  
  - 9999 = Missing

**FLD LEN: 1**

`SURFTEMP_STD_QC` quality code

The code that indicates ISD’s evaluation of the quality status of the hourly surface temperature standard deviation.

**DOM**: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

**FLD LEN: 1**

`SURFTEMP_STD_FLAG` quality code

The code that indicates the network’s internal evaluation of the quality status of hourly surface temperature standard deviation. Most users will find the preceding quality code `SURFTEMP_STD_QC` to be the simplest and most useful quality indicator.

**DOM**: A specific domain comprised of the numeric characters (0-9).

- 0 = Passed all quality control checks
- other – Did not pass all quality checks

**FLD LEN: 3**

**Hourly Surface Temperature Sensor Section** identifier

The identifier that indicates an hourly observation of the equipment temperature for the sensor used to measure ground surface temperature. This section appears in the last ISD record of the hour.

**IB2** An indicator of the following items:

- `SURFTEMP_SB` equipment temperature
- `SURFTEMP_SB_QC` quality code
- `SURFTEMP_SB_FLAG` quality code
- `SURFTEMP_SB_STD` equipment temperature standard deviation for the hour
- `SURFTEMP_SB_STD_QC` quality code
- `SURFTEMP_SB_STD_FLAG` quality code

**FLD LEN: 5**

`SURFTEMP_SB` equipment temperature

The average temperature of the surface temperature sensor housing (sensor body) for the hour.

- **MIN**: -9999
- **MAX**: +9998
- **UNITS**: degrees Celsius
- **SCALING FACTOR**: 10
- **DOM**: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-)
  
  +9999 = Missing

**FLD LEN: 1**

`SURFTEMP_SB_QC` quality code

The code that indicates ISD’s evaluation of the quality status of the surface temperature sensor housing temperature.

**DOM**: A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing
FLD LEN: 1
SURFTEMP_SB_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of the surface temperature sensor housing temperature. Most users will find the preceding quality code SURFTEMP_SB_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
other – Did not pass all quality checks

FLD LEN: 4
SURFTEMP_SB_STD hourly sensor housing temperature standard deviation for the hour
The hourly 10 second hourly surface temperature standard deviation.
MIN: 0000 MAX: 9998
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing.

FLD LEN: 1
SURFTEMP_SB_STD_QC quality code
The code that indicates ISD's evaluation of the quality status of the hourly sensor housing temperature standard deviation.
DOM: A specific domain comprised of the numeric characters (0-9).
1 = Passed all quality control checks
3 = Failed all quality control checks
9 = Missing

FLD LEN: 1
SURFTEMP_SB_STD_FLAG quality code
The code that indicates the network's internal evaluation of the quality status of sensor housing temperature standard deviation. Most users will find the preceding quality code SURFTEMP_SB_STD_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
0 = Passed all quality control checks
1 – 9 = Did not pass all quality checks

FLD LEN: 3
GROUND-SURFACE-OBSERVATION pan evaporation data identifier
The identifier that denotes the availability of GROUND-SURFACE-OBSERVATION evaporation data.
IC1: An indicator of the occurrence of the following data item:
GROUND-SURFACE-OBSERVATION time period in hours
GROUND-SURFACE-OBSERVATION wind movement
GROUND-SURFACE-OBSERVATION wind movement condition code
GROUND-SURFACE-OBSERVATION wind movement quality code
GROUND-SURFACE-OBSERVATION evaporation data
GROUND-SURFACE-OBSERVATION evaporation condition code
GROUND-SURFACE-OBSERVATION evaporation quality code
GROUND-SURFACE-OBSERVATION maximum pan water temperature
GROUND-SURFACE-OBSERVATION maximum water temperature condition code
GROUND-SURFACE-OBSERVATION maximum water temperature quality code
GROUND-SURFACE-OBSERVATION minimum pan water temperature
GROUND-SURFACE-OBSERVATION minimum water temperature condition code
GROUND-SURFACE-OBSERVATION minimum water temperature quality code

FLD LEN: 2
GROUND-SURFACE-OBSERVATION time period in hours
The quantity of time over which the evaporation and related data were sampled.
MIN: 01 MAX: 98 UNITS: hours
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 4
GROUND-SURFACE-OBSERVATION wind movement
The wind movement over the evaporation pan during the time period of the observation.
MIN: 0000 MAX: 9998 UNITS: Statute Miles
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

FLD LEN: 1
GROUND-SURFACE-OBSERVATION wind movement condition code
The code that denotes certain conditions or flags which describe the data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  1 = No special conditions
  2 = Data will be included in subsequent observation
  3 = Data are accumulated from previous observation(s), so cover a longer than typical time period
  9 = Missing

FLD LEN: 1
GROUND-SURFACE-OBSERVATION wind movement quality code
The code that denotes a quality status of the reported wind movement data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  4 = Passed gross limits check, from NCEI Data source
  5 = Passed all quality control checks, from NCEI Data source
  6 = Suspect, from NCEI Data source
  7 = Erroneous, from NCEI Data source
  9 = Passed gross limits check if element is present

FLD LEN: 3
GROUND-SURFACE-OBSERVATION evaporation data
The total evaporation which was measured during the time period of the observation.
MIN: 000 MAX: 998 UNITS: Inches
SCALING FACTOR: 100
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 1
GROUND-SURFACE-OBSERVATION evaporation condition code
The code that denotes certain conditions or flags which describe the data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  1 = No special conditions
  2 = Data will be included in subsequent observation
  3 = Data are accumulated from previous observation(s), so cover a longer than typical time period
  9 = Missing

FLD LEN: 1
GROUND-SURFACE-OBSERVATION evaporation quality code
The code that denotes a quality status of the reported evaporation data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  4 = Passed gross limits check, from NCEI Data source
  5 = Passed all quality control checks, from NCEI Data source
  6 = Suspect, from NCEI Data source
  7 = Erroneous, from NCEI Data source
  9 = Passed gross limits check if element is present

FLD LEN: 4
GROUND-SURFACE-OBSERVATION maximum pan water temperature
The maximum temperature in the evaporation pan during the time period of the observation.
MIN: -100 MAX: +500 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), as a signed field.
+999 = Missing

FLD LEN: 1
GROUND-SURFACE-OBSERVATION maximum pan water temperature condition code
The code that denotes certain conditions or flags which describe the data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  1 = No special conditions
  2 = Data will be included in subsequent observation
  3 = Data are accumulated from previous observation(s), so cover a longer than typical time period
  9 = Missing
The code that denotes a quality status of the reported maximum water temperature data.

**FLD LEN: 1**

**GROUND-SURFACE-OBSERVATION maximum pan water temperature quality code**

DOM: A specific domain comprised of the characters in the ASCII character set.

4 = Passed gross limits check, from NCEI Data source
5 = Passed all quality control checks, from NCEI Data source
6 = Suspect, from NCEI Data source
7 = Erroneous, from NCEI Data source
9 = Passed gross limits check if element is present

**FLD LEN: 4**

**GROUND-SURFACE-OBSERVATION minimum pan water temperature**

The maximum temperature in the evaporation pan during the time period of the observation.

MIN: -100 MAX: +500 UNITS: Degrees Celsius

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9), as a signed field.
+999 = Missing

**FLD LEN: 1**

**GROUND-SURFACE-OBSERVATION minimum pan water temperature condition code**

The code that denotes certain conditions or flags which describe the data.

DOM: A specific domain comprised of the characters in the ASCII character set.
1 = No special conditions
2 = Data will be included in subsequent observation
3 = Data are accumulated from previous observation(s), so cover a longer than typical time period
9 = Missing

**FLD LEN: 1**

**GROUND-SURFACE-OBSERVATION minimum pan water temperature quality code**

The code that denotes a quality status of the reported minimum water temperature data.

DOM: A specific domain comprised of the characters in the ASCII character set.

4 = Passed gross limits check, from NCEI Data source
5 = Passed all quality control checks, from NCEI Data source
6 = Suspect, from NCEI Data source
7 = Erroneous, from NCEI Data source
9 = Passed gross limits check if element is present

**Temperature Data**

**FLD LEN: 3**

**EXTREME-AIR-TEMPERATURE identifier**

The identifier that denotes the start of an EXTREME-AIR-TEMPERATURE data section.

DOM: A specific domain comprised of the characters in the ASCII character set.

**KA1-KA4** An indicator of up to 4 repeating fields of the following items:
- EXTREME-AIR-TEMPERATURE period quantity
- EXTREME-AIR-TEMPERATURE code
- EXTREME-AIR-TEMPERATURE air temperature
- EXTREME-AIR-TEMPERATURE temperature quality code

**FLD LEN: 3**

**EXTREME-AIR-TEMPERATURE period quantity**

The quantity of time over which temperatures were sampled to determine the EXTREME-AIR-TEMPERATURE.

MIN: 001 MAX: 480 UNITS: Hours

SCALING FACTOR: 10

DOM: A general domain comprised of the numeric characters (0-9)
999 = Missing

**FLD LEN: 1**

**EXTREME-AIR-TEMPERATURE code**

The code that denotes an EXTREME-AIR-TEMPERATURE as a maximum or a minimum.

DOM: A specific domain comprised of the characters in the ASCII character set.

N = Minimum temperature
M = Maximum temperature
O = Estimated minimum temperature
P = Estimated maximum temperature
9 = Missing

FLD LEN: 5
EXTREME-AIR-TEMPERATURE temperature
The temperature of the high or low air temperature for a given period.
MIN: -0.932 MAX: +0.618 UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing

FLD LEN: 1
EXTREME-AIR-TEMPERATURE temperature quality code
The code that denotes a quality status of the reported EXTREME-AIR-TEMPERATURE temperature.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 3
AVERAGE-AIR-TEMPERATURE identifier
The identifier that denotes the start of an AVERAGE-AIR-TEMPERATURE data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
KB1-KB3 = An indicator of up to 3 repeating fields for the following items:
AVERAGE-AIR-TEMPERATURE period quantity
AVERAGE-AIR-TEMPERATURE type code
AVERAGE-AIR-TEMPERATURE air temperature
AVERAGE-AIR-TEMPERATURE temperature quality code

FLD LEN: 3
AVERAGE-AIR-TEMPERATURE period quantity
The quantity of time over which temperatures were sampled to determine the AVERAGE-AIR-TEMPERATURE.
MIN: 001 MAX: 744 UNITS: Hours
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9)
999 = Missing

FLD LEN: 1
AVERAGE-AIR-TEMPERATURE code
The code that denotes an AVERAGE-AIR-TEMPERATURE as a mean, an average maximum, or an average minimum.
DOM: A specific domain comprised of the characters in the ASCII character set.
N = Minimum temperature average
M = Maximum temperature average
A = Mean temperature
9 = Missing

FLD LEN: 5
AVERAGE-AIR-TEMPERATURE temperature
The mean air temperature for a given period, typically for the day or month, as reported by the station (i.e., not derived from other data fields).
MIN: -9900 MAX: +6300 UNITS: Degrees Celsius
SCALING FACTOR: 100
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing
**FLD LEN: 1**

**AVERAGE-AIR-TEMPERATURE temperature quality code**
The code that denotes a quality status of the reported AVERAGE-AIR-TEMPERATURE temperature.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- 9 = Passed gross limits check if element is present

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**FLD LEN: 3**

**EXTREME AIR-TEMPERATURE FOR THE MONTH**
The identifier that denotes the start of an EXTREME AIR-TEMPERATURE data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
**KC1-KC2** An indicator of up to 2 repeating fields for the following items:
- EXTREME AIR-TEMPERATURE code
- EXTREME AIR-TEMPERATURE condition code
- EXTREME AIR-TEMPERATURE temperature
- EXTREME AIR-TEMPERATURE date of occurrence
- EXTREME AIR-TEMPERATURE temperature quality code

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**FLD LEN: 1**

**EXTREME AIR-TEMPERATURE FOR THE MONTH**
The code that denotes an EXTREME AIR-TEMPERATURE FOR THE MONTH as a maximum or a minimum.
DOM: A specific domain comprised of the characters in the ASCII character set.
- N = Minimum temperature
- M = Maximum temperature
- 9 = Missing

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**FLD LEN: 1**

**EXTREME AIR-TEMPERATURE FOR THE MONTH**
The code for EXTREME AIR-TEMPERATURE FOR THE MONTH.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 1 = The value occurred on other dates in addition to those listed
- 9 = Missing or not applicable

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**FLD LEN: 5**

**EXTREME AIR-TEMPERATURE FOR THE MONTH**
The extremes air temperature for the month, as reported by the station (ie, not derived from other data fields).
**MIN:** -1100  **MAX:** +0630  **UNITS:** Degrees Celsius
**SCALING FACTOR:** 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing

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**FLD LEN: 6**

**EXTREME AIR-TEMPERATURE FOR THE MONTH**
The dates of occurrence of EXTREME AIR-TEMPERATURE, given as the date for each occurrence, for up to 3 occurrences; e.g., 041016 indicates days 04, 10, and 16.
**MIN:** 01  **MAX:** 31
DOM: A general domain comprised of the numeric characters (0-9).
99 = missing for each of the 3 sub-fields.

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**FLD LEN: 1**

**EXTREME AIR-TEMPERATURE FOR THE MONTH**
The code that denotes a quality status of the reported EXTREME AIR-TEMPERATURE FOR THE MONTH.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source

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6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

**FIELD LENGTH: 3**
**HEATING-COOLING-DEGREE-DAYS identifier**
The identifier that denotes the start of an HEATING-COOLING-DEGREE-DAYS data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
**KD1-KD2** An indicator of up to 2 repeating fields of the following items:
HEATING-COOLING-DEGREE-DAYS period quantity
HEATING-COOLING-DEGREE-DAYS code
HEATING-COOLING-DEGREE-DAYS value
HEATING-COOLING-DEGREE-DAYS quality code

**FIELD LENGTH: 3**
**HEATING-COOLING-DEGREE-DAYS period quantity**
The quantity of time over which temperatures were sampled to determine the HEATING-COOLING-DEGREE-DAYS.
MIN: 001  MAX: 744  UNITS: Hours
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9). 999 = Missing

**FIELD LENGTH: 1**
**HEATING-COOLING-DEGREE-DAYS code**
The code that denotes the value as being heating degree days or cooling degree days.
DOM: A specific domain comprised of the characters in the ASCII character set.
H = Heating Degree Days
C = Cooling Degree Days

**FIELD LENGTH: 4**
**HEATING-COOLING-DEGREE-DAYS value**
The total heating or cooling degree days for a given period, typically for the day or month, as reported by the station (ie, not derived from other data fields). These data use the 65-degree Fahrenheit base as raditionally used for degree days.
MIN: 0000  MAX: 5000  UNITS: Heating or Cooling Degree Days
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9). 9999 = Missing

**FIELD LENGTH: 1**
**HEATING-COOLING-DEGREE-DAYS quality code**
The code that denotes a quality status of the reported HEATING-COOLING-DEGREE-DAYS data.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

**FIELD LENGTH: 3**
**EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH identifier**
The identifier that represents NUMBER OF DAYS EXCEEDING CRITERIA data.
DOM: A specific domain comprised of the characters in the ASCII character set.
**KE1** An indicator of the following items:
EXTREME TEMPERATURE, NUMBER OF DAYS with maximum temperature 32 F or lower
EXTREME TEMPERATURE, NUMBER OF DAYS quality code
EXTREME TEMPERATURE, NUMBER OF DAYS with maximum temperature 90 F or higher
EXTREME TEMPERATURE, NUMBER OF DAYS quality code
EXTREME TEMPERATURE, NUMBER OF DAYS with minimum temperature 32 F or lower
EXTREME TEMPERATURE, NUMBER OF DAYS quality code
EXTREME TEMPERATURE, NUMBER OF DAYS with minimum temperature 0 F or lower
EXTREME TEMPERATURE, NUMBER OF DAYS quality code

FLD LEN: 2
EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH
The number of days with maximum temperature 32 F (0.0 C) or lower.
MIN: 00 MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
  99 = Missing.

FLD LEN: 1
EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with max temperature 32 F (0.0 C) or lower.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  9 = Passed gross limits check if element is present

FLD LEN: 2
EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH
The number of days with maximum temperature 90 F (32.2 C) or higher, except for Alaska—70 F (21.1 C) or higher.
MIN: 00 MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
  99 = Missing.

FLD LEN: 1
EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with max temperature 90 F (32.2 C) or higher (70 F for Alaska).
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  9 = Passed gross limits check if element is present

FLD LEN: 2
TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH
The number of days with minimum temperature 32 F (0.0 C) or lower.
MIN: 00 MAX: 31
DOM: A general domain comprised of the numeric characters (0-9).
  99 = Missing.

FLD LEN: 1
EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code
The code that denotes a quality status of the reported days with min temperature 32 F (0.0 C) or lower.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
  9 = Passed gross limits check if element is present

FLD LEN: 2
EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH
The number of days with minimum temperature 0 F (-17.8 C) or lower.
MIN: 00        MAX: 31
99 = Missing.

**FLD LEN: 1**

**EXTREME TEMPERATURES, NUMBER OF DAYS EXCEEDING CRITERIA, FOR THE MONTH quality code**

The code that denotes a quality status of the reported days with min temperature 0 F (-17.8 C) or lower.

**DOM:** A specific domain comprised of the numeric characters (0-9).

0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
9 = Passed gross limits check if element is present

**FLD LEN: 3**

**Hourly Calculated Temperature Section** identifier

The identifier that indicates a calculated hourly average air temperature derived by an algorithm whose inputs are hourly temperature averages from each of the 3 co-located temperature sensors. This section appears in the last ISD record of the hour for the 15-minute data stream only. Unlike the temperature value found in the mandatory data section which is produced using 5-minute values, this value is calculated using an hourly average.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**KF1** An indicator of the following items:
- TEMP derived air temperature
- TEMP_QC quality code

**FLD LEN: 5**

**TEMP** derived air temperature

The calculated hourly average air temperature.

**MIN:** -9999        **MAX:** +9998        **UNITS:** degrees Celsius

**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).

+9999 = Missing.

**FLD LEN: 1**

**TEMP_QC** quality code

The code that indicates ISD’s evaluation of the quality status of the calculated hourly average air temperature.

**DOM:** A specific domain comprised of the numeric characters (0-9).

1 = Passed all quality control checks
3 = Failed all quality control checks
9 = missing

**FLD LEN: 3**

**AVERAGE DEW POINT AND WET BULB TEMPERATURE occurrence identifier**

The identifier that denotes the start of an AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**KG1-KG2** An indicator of up to two repeating fields of the following items:
- AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE period quantity
- AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE code
- AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE temperature
- AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE derived code
- AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE quality code

**FLD LEN: 3**

**AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE period quantity**

The quantity of time over which temperature were averaged to determine the AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE.

**MIN:** 001        **MAX:** 744        **UNITS:** hours

**SCALING FACTOR:** 1

**DOM:** A general domain comprised of the numeric characters (0-9).
999 = Missing.
FLD LEN: 1

**AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE code**
The code that denotes an AVERAGE-DEW-POINT-AND-AVERAGE-WET-BULB-TEMPERATURE as an average
DOM: A specific domain comprised of the characters in the ASCII character set.
- D = Average dew point temperature
- W = Average wet bulb temperature
- 9 = missing

FLD LEN: 5

**AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE temperature**
The average dew point or average wet bulb temperature for a given period, typically for the day or month, derived from other data fields
MIN: -9900 MAX: +6300 UNITS: degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = missing

FLD LEN: 1

**AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE derived code**
The code that denotes a quality status of the reported AVERAGE-DEW-POINT-AND-AVERAGE-WET-BULB-TEMPERATURE
DOM: A specific domain comprised of the characters in the ASCII character set.
- D = Derived from hourly values
- 9 = missing

FLD LEN: 1

**AVERAGE-DEW-POINT-AND-WET-BULB-TEMPERATURE quality code**
The code that denotes a quality status of the reported AVERAGE-DEW-POINT-AND-AVERAGE-WET-BULB-TEMPERATURE
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, from NCEI ASOS/AWOS
- 5 = Passed all quality control checks, from NCEI ASOS/AWOS
- 6 = Suspect, from NCEI ASOS/AWOS
- 7 = Erroneous, from NCEI ASOS/AWOS
- 9 = Missing

---

**Pressure Data**

FLD LEN: 3

**ATMOSPHERIC-PRESSURE-OBSERVATION identifier**
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
- MA1 An indicator of the occurrence of the following items:
  - ATMOSPHERIC-PRESSURE-OBSERVATION altimeter setting rate
  - ATMOSPHERIC-PRESSURE-OBSERVATION altimeter quality code
  - ATMOSPHERIC-PRESSURE-OBSERVATION station pressure rate
  - ATMOSPHERIC-PRESSURE-OBSERVATION station pressure quality code

FLD LEN: 5

**ATMOSPHERIC-PRESSURE-OBSERVATION altimeter setting rate**
The pressure value to which an aircraft altimeter is set so that it will indicate the altitude relative to mean sea level of an aircraft on the ground at the location for which the value was determined.
MIN: 08635 MAX: 10904 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
Missing = 99999

95
FLD LEN: 1

**ATMOSPHERIC-PRESSURE-OBSERVATION altimeter quality code**
The code that denotes a quality status of an altimeter setting rate.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- M = Manual change made to value based on information provided by NWS or FAA
- 9 = Passed gross limits check if element is present

FLD LEN: 5

**ATMOSPHERIC-PRESSURE-OBSERVATION station pressure rate**
The atmospheric pressure at the observation point.

**MIN:** 04500  **MAX:** 10900  **UNITS:** Hectopascals

**SCALING FACTOR:** 10

**DOM:** A general domain comprised of the numeric characters (0-9).

99999 = Missing.

FLD LEN: 1

**ATMOSPHERIC-PRESSURE-OBSERVATION station pressure quality code**
The code that denotes a quality status of the station pressure of an ATMOSPHERIC-PRESSURE-OBSERVATION.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- M = Manual change made to value based on information provided by NWS or FAA
- 9 = Passed gross limits check if element is present

FLD LEN: 3

**ATMOSPHERIC-PRESSURE-CHANGE identifier**
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-CHANGE data section.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**Domain Value ID:** Domain Value Definition Text

MD1 An indicator of the occurrence of the following items:
- ATMOSPHERIC-PRESSURE-CHANGE tendency code
- ATMOSPHERIC-PRESSURE-CHANGE quality tendency code
- ATMOSPHERIC-PRESSURE-CHANGE three hour quantity
- ATMOSPHERIC-PRESSURE-CHANGE quality three hour code
- ATMOSPHERIC-PRESSURE-CHANGE twenty four hour quantity
- ATMOSPHERIC-PRESSURE-CHANGE quality twenty four hour code

FLD LEN: 1

**ATMOSPHERIC-PRESSURE-CHANGE tendency code**
The code that denotes the characteristics of an ATMOSPHERIC-PRESSURE-CHANGE that occurs over a period of three hours.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

**Domain Value ID:** Domain Value Definition Text

- 0 = Increasing, then decreasing; atmospheric pressure the same or higher than 3 hours ago
- 1 = Increasing then steady; or increasing, then increasing more slowly; atmospheric pressure now higher than 3 hours ago
- 2 = Increasing (steadily or unsteadily); atmospheric pressure now higher than 3 hours ago
- 3 = Decreasing or steady, then increasing; or increasing, then increasing more rapidly; atmospheric pressure now higher than 3 hours ago
- 4 = Steady; atmospheric pressure the same as 3 hours ago
- 5 = Decreasing, then increasing; atmospheric pressure the same or lower than 3 hours ago
- 6 = Decreasing, then steady; or decreasing, then decreasing more slowly; atmospheric pressure now lower than 3 hours ago
7 = Decreasing (steadily or unsteadily); atmospheric pressure now lower than 3 hours ago
8 = Steady or increasing, then decreasing; or decreasing, then decreasing more rapidly; atmospheric pressure
now lower than 3 hours ago
9 = Missing

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE quality tendency code
The code that denotes a quality status of the tendency of an ATMOSPHERIC-PRESSURE-CHANGE.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Passed gross limits check if element is present

FLD LEN: 3
ATMOSPHERIC-PRESSURE-CHANGE three hour quantity
The absolute value of the quantity of change in atmospheric pressure measured at the
beginning and end of a three hour period.
MIN: 000 MAX: 500 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
Missing = 999

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE quality three hour code
The code that denotes the quality status of the three hour quantity for an ATMOSPHERIC-
PRESSURE-CHANGE.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Passed gross limits check if element is present

FLD LEN: 4
ATMOSPHERIC-PRESSURE-CHANGE twenty four hour quantity
The quantity of change in atmospheric pressure measured at the beginning and end of a twenty four
hour period.
MIN: -800 MAX: +800 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters(0-9), a plus sign (+), and a minus
sign (-).
  +999 = Missing

FLD LEN: 1
ATMOSPHERIC-PRESSURE-CHANGE quality twenty four hour code
The code that denotes a quality status of a reported twenty four hour ATMOSPHERIC-PRESSURE-
CHANGE.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Passed gross limits check if element is present

FLD LEN: 3
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL identifier
The identifier that denotes the availability of GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL data.
DOM: A specific domain comprised of the characters in the ASCII character set.
  ME1: An indicator of the occurrence of the following data items:
    GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL code
    GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension
    GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension quality code
FLD LEN: 1
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL code
The code that denotes the isobaric surface used to represent geopotential height.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
   1 = 1000 hectopascals
   2 = 925 hectopascals
   3 = 850 hectopascals
   4 = 700 hectopascals
   5 = 500 hectopascals
   9 = Missing

FLD LEN: 4
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension
The height of a GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL.
MIN: 0000    MAX: 9998        UNITS: Geopotential Meters
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
   9999 = Missing

FLD LEN: 1
GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension quality code
The code that denotes a quality status of the reported GEOPOTENTIAL-HEIGHT-ISOBARIC-LEVEL height dimension.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   9 = Passed gross limits check if element is present

FLD LEN: 3
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) occurrence identifier
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
   MF1 An indicator of the following items:
      ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average station pressure for the day (derived)
      ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average station pressure quality code
      ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average sea level pressure for the day (derived)
      ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average sea level pressure quality code

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average station pressure for the day
The average pressure at the observed point for the day derived computationally from other QC'ed elements
MIN: 04500    MAX: 10900     UNITS: hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
   99999 = Missing.

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) quality code
The code that denotes a quality status of an average station pressure
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   4 = Passed gross limits check, from NCEI ASOS/AWOS
   5 = Passed all quality control checks, from NCEI ASOS/AWOS
   6 = Suspect, from NCEI ASOS/AWOS
   7 = Erroneous, from NCEI ASOS/AWOS
   9 = Missing
FLD LEN: 5  
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) average sea level pressure for the day  
The average sea level pressure at the observed point for the day derived computationally from other QC'ed elements  
MIN: 08600  MAX: 10900  UNITS: hectopascals  
SCALING FACTOR: 10  
DOM: A general domain comprised of the numeric characters (0-9).  
99999 = Missing.

FLD LEN: 1  
ATMOSPHERIC-PRESSURE-OBSERVATION (STP/SLP) quality code  
The code that denotes a quality status of an average station pressure  
DOM: A specific domain comprised of the characters in the ASCII character set.  
0 = Passed gross limits check  
1 = Passed all quality control checks  
2 = Suspect  
3 = Erroneous  
4 = Passed gross limits check, data originate from an NCEI data source  
5 = Passed all quality control checks, data originate from an NCEI data source  
6 = Suspect, data originate from an NCEI data source  
7 = Erroneous, from NCEI ASOS/AWOS  
9 = Missing

FLD LEN: 3  
ATMOSPHERIC-PRESSURE-OBSERVATION identifier  
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-OBSERVATION data section.  
DOM: A specific domain comprised of the characters in the ASCII character set.  
MG1 An indicator of the occurrence of the following items:  
ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure for the day  
ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure quality code  
ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the day  
ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure quality code

FLD LEN: 5  
ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure for the day  
The average pressure at the observation point for the day.  
MIN: 04500  MAX: 10900  UNITS: Hectopascals  
SCALING FACTOR: 10  
DOM: A general domain comprised of the numeric characters (0-9).  
99999 = Missing.

FLD LEN: 1  
ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure quality code  
The code that denotes the quality status of an average station pressure.  
DOM: A specific domain comprised of the characters in the ASCII character set.  
4 = Passed gross limits check, data originate from an NCEI data source  
5 = Passed all quality control checks, data originate from an NCEI data source  
6 = Suspect, data originate from an NCEI data source  
7 = Erroneous, data originate from an NCEI data source  
M = Manual change made to value based on information provided by NWS or FAA  
9 = Passed gross limits check if element is present

FLD LEN: 5  
ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the day  
The minimum sea level pressure for the day at the observation point.  
MIN: 08600  MAX: 10900  UNITS: Hectopascals  
SCALING FACTOR: 10  
DOM: A general domain comprised of the numeric characters (0-9).  
99999 = Missing.

FLD LEN: 1  
ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the day quality code  
The code that denotes the quality status of the minimum sea level pressure for the day.  
DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 3
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH identifier
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
MH1 An indicator of the occurrence of the following items:
ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure for the month
ATMOSPHERIC-PRESSURE-OBSERVATION average station pressure quality code
ATMOSPHERIC-PRESSURE-OBSERVATION average sea level pressure for the month
ATMOSPHERIC-PRESSURE-OBSERVATION average sea level pressure quality code

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH average station pressure for the month
The average pressure at the observation point for the month.
MIN: 04500 MAX: 10900 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
  9999 = Missing.

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH average station pressure quality code
The code that denotes the quality status of an average station pressure.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
  9 = Passed gross limits check if element is present

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH average sea level pressure for the month
The average sea level pressure for the month at the observation point.
MIN: 08600 MAX: 10900 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
  9999 = Missing.

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH average sea level pressure for the month quality code
The code that denotes the quality status of the average sea level pressure for the month.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  4 = Passed gross limits check, data originate from an NCEI data source
  5 = Passed all quality control checks, data originate from an NCEI data source
  6 = Suspect, data originate from an NCEI data source
  7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
  9 = Passed gross limits check if element is present

100
FLD LEN: 3
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH identifier
The identifier that denotes the start of an ATMOSPHERIC-PRESSURE-OBSERVATION data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
MK1 An indicator of the occurrence of the following items:
   ATMOSPHERIC-PRESSURE-OBSERVATION maximum sea level pressure for the month
   ATMOSPHERIC-PRESSURE-OBSERVATION maximum sea level pressure date-time
   ATMOSPHERIC-PRESSURE-OBSERVATION maximum sea level pressure quality code
   ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure for the month
   ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure date-time
   ATMOSPHERIC-PRESSURE-OBSERVATION minimum sea level pressure quality code

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH maximum sea level pressure for the month
The maximum sea level pressure at the observation point for the month.
MIN: 086000 MAX: 109000 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
   99999 = Missing

FLD LEN: 6
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH maximum sea level pressure, date-time
The date-time of occurrence of the pressure value, given as the date-time; e.g., 051500 indicates day 05, time 1500.
MIN: 010000 MAX: 312359
DOM: A general domain comprised of the numeric characters (0-9).
   999999 = Missing

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH maximum sea level pressure quality code
The code that denotes the quality status of a maximum sea level pressure.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   4 = Passed gross limits check, data originate from an NCEI data source
   5 = Passed all quality control checks, data originate from an NCEI data source
   6 = Suspect, data originate from an NCEI data source
   7 = Erroneous, data originate from an NCEI data source
   M = Manual change made to value based on information provided by NWS or FAA
   9 = Passed gross limits check if element is present

FLD LEN: 5
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH minimum sea level pressure for the month
The minimum sea level pressure at the observation point for the month.
MIN: 086000 MAX: 109000 UNITS: Hectopascals
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
   99999 = Missing

FLD LEN: 6
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH minimum sea level pressure, date-time
The date-time of occurrence of the pressure value, given as the date-time; e.g., 051500 indicates day 05, time 1500.
MIN: 010000 MAX: 312359
DOM: A general domain comprised of the numeric characters (0-9).
   999999 = Missing

FLD LEN: 1
ATMOSPHERIC-PRESSURE-OBSERVATION FOR THE MONTH minimum sea level pressure quality code
The code that denotes the quality status of a minimum sea level pressure.
DOM: A specific domain comprised of the characters in the ASCII character set.
   0 = Passed gross limits check
   1 = Passed all quality control checks
   2 = Suspect
   3 = Erroneous
   4 = Passed gross limits check, data originate from an NCEI data source
   5 = Passed all quality control checks, data originate from an NCEI data source
   6 = Suspect, data originate from an NCEI data source
Weather Occurrence Data

**FLD LEN: 3**

**PRESENT-WEATHER-IN-VICINITY-OBSERVATION occurrence identifier**
The identifier that signifies the reporting of present weather.

**DOM:** A specific domain comprised of the ASCII characters.
- MV1 = first weather reported
- MV2 = second weather reported
- MV3 = third weather reported
- MV4 = fourth weather reported
- MV5 = fifth weather reported
- MV6 = sixth weather reported
- MV7 = seventh weather reported

An indicator of up to 7 repeating fields of the following items:
- PRESENT-WEATHER-OBSERVATION atmospheric condition code.
- PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code

**FLD LEN: 2**

**PRESENT-WEATHER-IN-VICINITY-OBSERVATION atmospheric condition code**
The code that denotes a specific type of weather observed between 5 and 10 statute miles of the station at the time of Observation. Observed at selected stations from July 1, 1996 to present.

**DOM:** A specific domain comprised of the characters in the ASCII character set.
- 00 = No observation
- 01 = Thunderstorm in vicinity
- 02 = Showers in vicinity
- 03 = Sandstorm in vicinity
- 04 = Sand / dust whirls in vicinity
- 05 = Duststorm in vicinity
- 06 = Blowing snow in vicinity
- 07 = Blowing sand in vicinity
- 08 = Blowing dust in vicinity
- 09 = Fog in vicinity
- 99 = Missing

**FLD LEN: 1**

**PRESENT-WEATHER-IN-VICINITY-OBSERVATION quality atmospheric condition code**
The code that denotes a quality status of a reported present weather in vicinity observation from a station.

**DOM:** A specific domain comprised of the characters in the ASCII character set.
- 4 = Passed gross limits check, data originate from an NCEI data source
- 5 = Passed all quality control checks, data originate from an NCEI data source
- 6 = Suspect, data originate from an NCEI data source
- 7 = Erroneous, data originate from an NCEI data source
- 9 = Passed gross limits check if element is present

**FLD LEN: 3**

**PRESENT-WEATHER-OBSERVATION manual occurrence identifier**
The identifier that signifies the reporting of present weather.

**DOM:** A specific domain comprised of the ASCII characters.
- MW1 = first weather reported
- MW2 = second weather reported
- MW3 = third weather reported
- MW4 = fourth weather reported
- MW5 = fifth weather reported
- MW6 = sixth weather reported
- MW7 = seventh weather reported

An indicator of up to 7 repeating fields of the following items:
- PRESENT-WEATHER-OBSERVATION manual atmospheric condition code.
- PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code
### PRESENT-WEATHER-OBSERVATION manual atmospheric condition code

**DOM:** A specific domain comprised of the characters in the ASCII character set.

Note: Lack of an MW1 report normally indicates that the station did not report any present weather data.

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**No precipitation, fog, ice fog (except for 11 and 12), duststorm, sandstorm, drifting or blowing snow at the station at the time of observation or, except for 09 and 17, during the preceding hour.**

---

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Cloud development not observed or not observable</td>
</tr>
<tr>
<td>01</td>
<td>Clouds generally dissolving or becoming less developed</td>
</tr>
<tr>
<td>02</td>
<td>State of sky on the whole unchanged</td>
</tr>
<tr>
<td>03</td>
<td>Clouds generally forming or developing</td>
</tr>
<tr>
<td>04</td>
<td>Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes</td>
</tr>
<tr>
<td>05</td>
<td>Haze</td>
</tr>
<tr>
<td>06</td>
<td>Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation</td>
</tr>
<tr>
<td>07</td>
<td>Dust or sand raised by wind at or near the station at the time of observation, but no well-developed dust whirl(s) sand whirl(s), and no duststorm or sandstorm seen or, in the case of ships, blowing spray at the station</td>
</tr>
<tr>
<td>08</td>
<td>Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm</td>
</tr>
<tr>
<td>09</td>
<td>Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour</td>
</tr>
<tr>
<td>10</td>
<td>Mist</td>
</tr>
<tr>
<td>11</td>
<td>Patches of shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 meters on land or 10 meters at sea</td>
</tr>
<tr>
<td>12</td>
<td>More or less continuous shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 meters on land or 10 meters at sea</td>
</tr>
<tr>
<td>13</td>
<td>Lightning visible, no thunder heard</td>
</tr>
<tr>
<td>14</td>
<td>Precipitation within sight, not reaching the ground or the surface of the sea</td>
</tr>
<tr>
<td>15</td>
<td>Precipitation within sight, reaching the ground or the surface of the sea, but distant, i.e., estimated to be more than 5 km from the station</td>
</tr>
<tr>
<td>16</td>
<td>Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station</td>
</tr>
<tr>
<td>17</td>
<td>Thunderstorm, no precipitation at the time of observation</td>
</tr>
<tr>
<td>18</td>
<td>Squalls at or within sight of the station during the preceding hour or at the time of observation</td>
</tr>
<tr>
<td>19</td>
<td>Funnel cloud(s) (Tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation</td>
</tr>
</tbody>
</table>

---

**Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour, but not at the time of observation**

---

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Drizzle (not freezing) or snow grains not falling as shower(s)</td>
</tr>
<tr>
<td>21</td>
<td>Rain (not freezing) not falling as shower(s)</td>
</tr>
<tr>
<td>22</td>
<td>Snow not falling as shower(s)</td>
</tr>
<tr>
<td>23</td>
<td>Rain and snow or ice pellets not falling as shower(s)</td>
</tr>
<tr>
<td>24</td>
<td>Freezing drizzle or freezing rain not falling as shower(s)</td>
</tr>
<tr>
<td>25</td>
<td>Shower(s) of rain</td>
</tr>
<tr>
<td>26</td>
<td>Shower(s) of snow or of rain and snow</td>
</tr>
<tr>
<td>27</td>
<td>Shower(s) of hail (Hail, small hail, snow pellets), or rain and hail</td>
</tr>
<tr>
<td>28</td>
<td>Fog or ice fog</td>
</tr>
<tr>
<td>29</td>
<td>Thunderstorm (with or without precipitation)</td>
</tr>
</tbody>
</table>

---

**Dust, sand, or blowing snow in the air, but no precipitation at the time of observation.**

---

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Slight or moderate duststorm or sandstorm has decreased during the preceding hour</td>
</tr>
<tr>
<td>31</td>
<td>Slight or moderate duststorm or sandstorm no appreciable change during the preceding hour</td>
</tr>
<tr>
<td>32</td>
<td>Slight or moderate duststorm or sandstorm has begun or has increased during the preceding hour</td>
</tr>
<tr>
<td>33</td>
<td>Severe duststorm or sandstorm has decreased during the preceding hour</td>
</tr>
<tr>
<td>34</td>
<td>Severe duststorm or sandstorm no appreciable change during the preceding hour</td>
</tr>
<tr>
<td>35</td>
<td>Severe duststorm or sandstorm has begun or has increased during the preceding hour</td>
</tr>
<tr>
<td>36</td>
<td>Slight or moderate drifting snow generally low (below eye level)</td>
</tr>
<tr>
<td>37</td>
<td>Heavy drifting snow generally low (below eye level)</td>
</tr>
<tr>
<td>38</td>
<td>Slight or moderate blowing snow generally high (above eye level)</td>
</tr>
<tr>
<td>39</td>
<td>Heavy blowing snow generally high (above eye level)</td>
</tr>
</tbody>
</table>

---

**Fog or ice fog at the time of observation**

---

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer</td>
</tr>
<tr>
<td>Precipitation at the station at the time of observation – including Drizzle, Rain, Solid Precipitation, and Precipitation with current or recent Thunder</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td>41 = Fog or ice fog in patches</td>
<td></td>
</tr>
<tr>
<td>42 = Fog or ice fog, sky visible, has become thinner during the preceding hour</td>
<td></td>
</tr>
<tr>
<td>43 = Fog or ice fog, sky invisible, has become thinner during the preceding hour</td>
<td></td>
</tr>
<tr>
<td>44 = Fog or ice fog, sky visible, no appreciable change during the preceding hour</td>
<td></td>
</tr>
<tr>
<td>45 = Fog or ice fog, sky invisible, no appreciable change during the preceding hour</td>
<td></td>
</tr>
<tr>
<td>46 = Fog or ice fog, sky visible, has begun or has become thicker during the preceding hour</td>
<td></td>
</tr>
<tr>
<td>47 = Fog or ice fog, sky invisible, has begun or has become thicker during the preceding hour</td>
<td></td>
</tr>
<tr>
<td>48 = Fog, depositing rime, sky visible</td>
<td></td>
</tr>
<tr>
<td>49 = Fog, depositing rime, sky invisible</td>
<td></td>
</tr>
</tbody>
</table>

| 50 = Drizzle, not freezing, intermittent, slight at time of observation |
| 51 = Drizzle, not freezing, continuous, slight at time of observation |
| 52 = Drizzle, not freezing, intermittent, moderate at time of observation |
| 53 = Drizzle, not freezing, continuous, moderate at time of observation |
| 54 = Drizzle, not freezing, intermittent, heavy (dense) at time of observation |
| 55 = Drizzle, not freezing, continuous, heavy (dense) at time of observation |
| 56 = Drizzle, freezing, slight |
| 57 = Drizzle, freezing, moderate or heavy (dense) |
| 58 = Drizzle and rain, slight |
| 59 = Drizzle and rain, moderate or heavy |
| 60 = Rain, not freezing, intermittent, slight at time of observation |
| 61 = Rain, not freezing, continuous, slight at time of observation |
| 62 = Rain, not freezing, intermittent, moderate at time of observation |
| 63 = Rain, not freezing, continuous, moderate at time of observation |
| 64 = Rain, not freezing, intermittent, heavy at time of observation |
| 65 = Rain, not freezing, continuous, heavy at time of observation |
| 66 = Rain, freezing, slight |
| 67 = Rain, freezing, moderate or heavy |
| 68 = Rain or drizzle and snow, slight |
| 69 = Rain or drizzle and snow, moderate or heavy |
| 70 = Intermittent fall of snowflakes, slight at time of observation |
| 71 = Continuous fall of snowflakes, slight at time of observation |
| 72 = Intermittent fall of snowflakes, moderate at time of observation |
| 73 = Continuous fall of snowflakes, moderate at time of observation |
| 74 = Intermittent fall of snowflakes, heavy at time of observation |
| 75 = Continuous fall of snowflakes, heavy at time of observation |
| 76 = Diamond dust (with or without fog) |
| 77 = Snow grains (with or without fog) |
| 78 = Isolated star-like snow crystals (with or without fog) |
| 79 = Ice pellets |
| 80 = Rain shower(s), slight |
| 81 = Rain shower(s), moderate or heavy |
| 82 = Rain shower(s), violent |
| 83 = Shower(s) of rain and snow mixed, slight |
| 84 = Shower(s) of rain and snow mixed, moderate or heavy |
| 85 = Show shower(s), slight |
| 86 = Snow shower(s), moderate or heavy |
| 87 = Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, slight |
| 88 = Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, moderate or heavy |
| 89 = Shower(s) of hail (hail, small hail, snow pellets), with or without rain or rain and snow mixed, not associated with thunder, slight |
| 90 = Shower(s) of hail (hail, small hail, snow pellets), with or without rain or rain and snow mixed, not associated with thunder, moderate or heavy |
| 91 = Slight rain at time of observation, thunderstorm during the preceding hour but not at time of observation |
| 92 = Moderate or heavy rain at time of observation, thunderstorm during the preceding hour but not at time of observation |
| 93 = Slight snow, or rain and snow mixed or hail (Hail, small hail, snow pellets), at time of observation, thunderstorm during the preceding hour but not at time of observation |
| 94 = Moderate or heavy snow, or rain and snow mixed or hail (Hail, small hail, snow pellets) at time of observation, thunderstorm during the preceding hour but not at time of observation |
| 95 = Thunderstorm, slight or moderate, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation |
| 96 = Thunderstorm, slight or moderate, with hail (hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation |
107

97 = Thunderstorm, heavy, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation
98 = Thunderstorm combined with duststorm or sandstorm at time of observation, thunderstorm at time of observation
99 = Thunderstorm, heavy, with hail (Hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation

**FLD LEN: 1**

**PRESENT-WEATHER-OBSERVATION quality manual atmospheric condition code**
The code that denotes a quality status of a reported present weather observation from a manual station.
**DOM:** A specific domain comprised of the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

---

**Wind Data**

**FLD LEN: 3**

**SUPPLEMENTARY-WIND-OBSERVATION identifier**
The identifier that denotes the start of a SUPPLEMENTARY-WIND-OBSERVATION data section.
**DOM:** A specific domain comprised of the ASCII character set.
**OA1 - OA3:** An indicator of up to 3 occurrences of the following item:
- **SUPPLEMENTARY-WIND-OBSERVATION type code**
- **SUPPLEMENTARY-WIND-OBSERVATION period quantity**
- **SUPPLEMENTARY-WIND-OBSERVATION speed rate**
- **SUPPLEMENTARY-WIND-OBSERVATION speed rate quality code**

**FLD LEN: 1**

**SUPPLEMENTARY-WIND-OBSERVATION type code**
The code that denotes a type of SUPPLEMENTARY-WIND-OBSERVATION.
**DOM:** A specific domain comprised of the ASCII characters.
1 = Average speed of prevailing wind
2 = Mean wind speed
3 = Maximum instantaneous wind speed
4 = Maximum gust speed
5 = Maximum mean wind speed
6 = Maximum 1-minute mean wind speed
9 = Missing

**FLD LEN: 2**

**SUPPLEMENTARY-WIND-OBSERVATION period quantity**
The quantity of time over which a SUPPLEMENTARY-WIND-OBSERVATION occurred.
**MIN:** 01 **MAX:** 48 **UNITS:** Hours
**DOM:** A general domain comprised of the numeric characters (0-9).
99 = Missing

**FLD LEN: 4**

**SUPPLEMENTARY-WIND-OBSERVATION speed rate**
The rate of horizontal speed of air reported in the SUPPLEMENTARY-WIND-OBSERVATION.
**MIN:** 0000 **MAX:** 2000 **UNITS:** Meters per Second
**SCALING FACTOR:** 10
**DOM:** A general domain comprised of the numeric characters (0-9).
9999 = Missing

**FLD LEN: 1**

**SUPPLEMENTARY-WIND-OBSERVATION speed rate quality code**
The code that denotes a quality status of the reported SUPPLEMENTARY-WIND-OBSERVATION speed rate.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

FLD LEN: 3
Hourly/Sub-Hourly Wind Section identifier
The identifier that indicates an observation of wind speed at a height of 1.5 meters from the ground, typically used by Climate Reference Network stations. This section appears one or more times per hour. The wind average value in this section is a duplicate of the wind average value in the mandatory data section. It is included in this section so that all wind values are conveniently available in a single section.
DOM: A specific domain comprised of the characters in the ASCII character set.

OB1, OB2: An indicator of the following items:
- WIND_AVG time period
- WIND_MAX maximum gust
- WIND_MAX_QC quality code
- WIND_MAX_FLAG quality code
- WIND_MAX direction of the maximum gust
- WIND_MAX_QC direction quality code
- WIND_MAX_FLAG direction quality code
- WIND_STD wind speed standard deviation
- WIND_STD_QC quality code
- WIND_STD_FLAG quality code
- WIND_DIR_STD wind direction standard deviation
- WIND_DIR_STD_QC quality code
- WIND_DIR_STD_FLAG quality code

FLD LEN: 3
WIND_AVG Time period in minutes, for which the data in this section (OB1) pertains—eg, 060 = 60 minutes (1 hour).
MIN: 001 MAX: 998 UNITS: Minutes
DOM: A general domain comprised of the numeric characters (0-9).
  999 = Missing.

FLD LEN: 4
WIND_MAX maximum gust
The maximum 10 second wind speed.
MIN: 0000 MAX: 9998 UNITS: meters per second
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
  9999 = Missing.

FLD LEN: 1
WIND_MAX_QC quality code
The code that indicates ISD's evaluation of the quality status of the maximum gust.
DOM: A specific domain comprised of the numeric characters (0-9).
  1 = Passed all quality control checks
  3 = Failed all quality control checks
  9 = Missing

FLD LEN: 1
WIND_MAX_FLAG quality code
A flag that indicates the network’s internal evaluation of the quality status of the maximum gust. Most users will find the preceding quality code WIND_MAX_QC to be the simplest and most useful quality indicator.
DOM: A specific domain comprised of the numeric characters (0-9).
  0 = Passed all quality control checks
  1 – 8 = Did not pass all quality checks
  9 = Missing

FLD LEN: 3
WIND_MAX direction of the maximum gust
The direction measured in clockwise angular degrees from which the maximum 10 second wind speed occurred.
MIN: 001 MAX: 360 UNITS: Angular degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).

999 = Missing.
The code that indicates ISD’s evaluation of the quality status of the maximum gust direction.

**DOM:** A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

A flag that indicates the network’s internal evaluation of the quality status of the maximum gust direction. Most users will find the preceding quality code \( \text{WIND\_MAX\_QC} \) to be the simplest and most useful quality indicator.

**DOM:** A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- 1 – 8 = Did not pass all quality checks
- 9 = Missing

The wind speed standard deviation.

**MIN:** 00000  **MAX:** 99999

**SCALING FACTOR:** 100

**DOM:** A general domain comprised of the numeric characters (0-9).

- 99999 = Missing.

The code that indicates ISD’s evaluation of the quality status of the wind speed standard deviation.

**DOM:** A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

A flag that indicates the network’s internal evaluation of the quality status of the wind speed standard deviation. Most users will find the preceding quality code \( \text{WIND\_STD\_QC} \) to be the simplest and most useful quality indicator.

**DOM:** A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- 1 – 8 = Did not pass all quality checks
- 9 = Missing

The wind direction standard deviation.

**MIN:** 00000  **MAX:** 99999

**SCALING FACTOR:** 100

**DOM:** A general domain comprised of the numeric characters (0-9).

- 99999 = Missing.

The code that indicates ISD’s evaluation of the quality status of the wind direction standard deviation.

**DOM:** A specific domain comprised of the numeric characters (0-9).

- 1 = Passed all quality control checks
- 3 = Failed all quality control checks
- 9 = Missing

A flag that indicates the network’s internal evaluation of the quality status of the wind direction standard deviation. Most users will find the preceding quality code \( \text{WIND\_STD\_FLAG} \) to be the simplest and most useful quality indicator.

**DOM:** A specific domain comprised of the numeric characters (0-9)

- 0 = Passed all quality control checks
- 1 – 8 = Did not pass all quality checks
- 9 = Missing
FLD LEN: 3  
WIND-GUST-OBSERVATION identifier  
The identifier that denotes the start of a WIND-GUST-OBSERVATION data section.  
DOM: A specific domain comprised of the characters in the ASCII character set.  
OC1: An indicator of the occurrence of the following item:  
  WIND-GUST-OBSERVATION speed rate  
  WIND-GUST-OBSERVATION quality code

FLD LEN: 4  
WIND-GUST-OBSERVATION speed rate  
The rate of speed of a wind gust.  
MIN: 0050  MAX: 1100  UNITS: Meters per second  
SCALING FACTOR: 10  
DOM: A general domain comprised of the numeric characters (0-9).  
  9999 = Missing

FLD LEN: 1  
WIND-GUST-OBSERVATION quality code  
The code that denotes a quality status of a reported WIND-GUST-OBSERVATION speed rate.  
DOM: A specific domain comprised of the characters in the ASCII character set.  
  0 = Passed gross limits check  
  1 = Passed all quality control checks  
  2 = Suspect  
  3 = Erroneous  
  4 = Passed gross limits check, data originate from an NCEI data source  
  5 = Passed all quality control checks, data originate from an NCEI data source  
  6 = Suspect, data originate from an NCEI data source  
  7 = Erroneous, data originate from an NCEI data source  
  M = Manual change made to value based on information provided by NWS or FAA  
  9 = Passed gross limits check if element is present

FLD LEN: 3  
SUPPLEMENTARY-WIND-OBSERVATION identifier  
The identifier that denotes the start of a SUPPLEMENTARY-WIND-OBSERVATION data section.  
DOM: A specific domain comprised of the characters in the ASCII character set.  
  OD1 - OD3: An indicator of up to 3 occurrences of the following item:  
    SUPPLEMENTARY-WIND-OBSERVATION type code  
    SUPPLEMENTARY-WIND-OBSERVATION period quantity  
    SUPPLEMENTARY-WIND-OBSERVATION direction quantity  
    SUPPLEMENTARY-WIND-OBSERVATION speed rate  
    SUPPLEMENTARY-WIND-OBSERVATION speed rate quality code

FLD LEN: 1  
SUPPLEMENTARY-WIND-OBSERVATION type code  
The code that denotes a type of SUPPLEMENTARY-WIND-OBSERVATION.  
DOM: A specific domain comprised of the ASCII characters.  
  1 = Average speed of prevailing wind  
  2 = Mean wind speed  
  3 = Maximum instantaneous wind speed  
  4 = Maximum gust speed  
  5 = Maximum mean wind speed  
  6 = Maximum 1-minute mean wind speed  
  9 = Missing

FLD LEN: 2  
SUPPLEMENTARY-WIND-OBSERVATION period quantity  
The quantity of time over which a SUPPLEMENTARY-WIND-OBSERVATION occurred.  
MIN: 01  MAX: 48  UNITS: Hours  
DOM: A general domain comprised of the numeric characters (0-9).  
  99 = Missing
SUPPLEMENTARY-WIND-OBSERVATION speed rate
The rate of horizontal speed of air reported in the SUPPLEMENTARY-WIND-OBSERVATION.
MIN: 0000 MAX: 2000 UNITS: Meters per Second
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

SUPPLEMENTARY-WIND-OBSERVATION speed rate quality code
The code that denotes a quality status of the reported SUPPLEMENTARY-WIND-OBSERVATION speed rate.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = missing

SUPPLEMENTARY-WIND-OBSERVATION direction quantity
The angle, measured in a clockwise direction, between true north and the direction from which the wind is blowing.
MIN: 001 MAX: 360 UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing
Note: A direction of 999 with a speed of 0000 indicates calm conditions (0 wind speed).

SUMMARY-OF-DAY-WIND-OBSERVATION identifier
The identifier that denotes the start of a SUMMARY-OF-DAY-WIND-OBSERVATION data section.
DOM: A specific domain comprised of the ASCII characters.
OE1 - OE3: An indicator of up to 3 occurrences of the following item:
SUMMARY-OF-DAY-WIND-OBSERVATION type code
SUMMARY-OF-DAY-WIND-OBSERVATION period quantity
SUMMARY-OF-DAY-WIND-OBSERVATION speed rate
SUMMARY-OF-DAY-WIND-OBSERVATION direction
SUMMARY-OF-DAY-WIND-OBSERVATION time of occurrence
SUMMARY-OF-DAY-WIND-OBSERVATION quality code

SUMMARY-OF-DAY-WIND-OBSERVATION type code
The code that denotes a type of SUMMARY-OF-DAY-WIND-OBSERVATION.
DOM: A specific domain comprised of the ASCII characters.
1 = Peak wind speed for the day
2 = Fastest 2-minute wind speed for the day
3 = Average wind speed for the day
4 = Fastest 5-minute wind speed for the day
5 = Fastest mile wind speed for the day

SUMMARY-OF-DAY-WIND-OBSERVATION period quantity
The quantity of time over which a SUMMARY-OF-DAY-WIND-OBSERVATION occurred.
MIN: 24 MAX: 24 UNITS: Hours
DOM: A general domain comprised of the ASCII characters.
99 = Missing

SUMMARY-OF-DAY-WIND-OBSERVATION speed
The rate of horizontal wind speed of air reported in the SUMMARY-OF-DAY-WIND-OBSERVATION.
MIN: 00000 MAX: 20000 UNITS: Meters per Second
SCALING FACTOR: 100
DOM: A general domain comprised of the numeric characters (0-9).
99999 = Missing
FLD LEN: 3
SUMMARY-OF-DAY-WIND-OBSERVATION direction of wind
The angle, measured in a clockwise direction, between true north and the direction from which the wind is blowing, for the summary of day wind report.
MIN: 001     MAX: 360     UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing
Note: A direction of 999 with a speed of 00000 indicates calm conditions (0 wind speed).

FLD LEN: 4
SUMMARY-OF-DAY-WIND-OBSERVATION time of occurrence in Z-time (UTC)
The time of occurrence of the wind reported in the SUMMARY-OF-DAY-WIND-OBSERVATION.
MIN: 0000     MAX: 2359     UNITS: hours-minutes
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
9999 = Missing

FLD LEN: 1
SUMMARY-OF-DAY-WIND-OBSERVATION quality code
The code that denotes a quality status of the reported SUMMARY-OF-DAY-WIND-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check, data originate from an NCEI data source
5 = Passed all quality control checks, data originate from an NCEI data source
6 = Suspect, data originate from an NCEI data source
7 = Erroneous, data originate from an NCEI data source
M = Manual change made to value based on information provided by NWS or FAA
9 = Passed gross limits check if element is present

FLD LEN: 3
RELATIVE HUMIDITY occurrence identifier
The identifier that denotes the start of a RELATIVE-HUMIDITY data section
DOM: A specific domain comprised of the characters in the ASCII character set
RH1 – RH3: An indicator of up to 3 occurrences of the following items
RELATIVE HUMIDITY period quantity
RELATIVE HUMIDITY code
RELATIVE HUMIDITY percentage
RELATIVE HUMIDITY derived code
RELATIVE HUMIDITY quality code

FLD LEN: 3
RELATIVE HUMIDITY period quantity
The quantity of time over which relative humidity percentages were averaged to determine the RELATIVE HUMIDITY
MIN: 001     MAX: 744     UNITS: Hours
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9)
999 = missing

FLD LEN: 1
RELATIVE HUMIDITY code
The code that denotes the RELATIVE HUMIDITY as an average, maximum or minimum
DOM: A specific domain comprised of the characters in the ASCII character set
M = Mean relative humidity
N = Minimum relative humidity
X = Maximum relative humidity
9 = missing

FLD LEN: 3
RELATIVE HUMIDITY percentage
The average maximum or minimum relative humidity for a given period, typically for the day or month, derived from other data fields. Note: Values only take into account hourly observations (not specials or other unscheduled observations).
MIN: 000     MAX: 100     UNITS: percent
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9)
999 = missing
FLD LEN: 1

**RELATIVE HUMIDITY derived code**
The code that denotes a derived code of the reported RELATIVE HUMIDITY percentage.
DOM: A specific domain comprised of the characters in the ASCII character set.
- D = Derived from hourly values
- 9 = missing

FLD LEN: 1

**RELATIVE HUMIDITY quality code**
The code that denotes a quality status of the reported RELATIVE HUMIDITY percentage.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 4 = Passed gross limits check, from NCEI ASOS/AWOS
- 5 = Passed all quality control checks, from NCEI ASOS/AWOS
- 6 = Suspect, from NCEI ASOS/AWOS
- 7 = Erroneous, from NCEI ASOS/AWOS
- 9 = Missing

---

**Sea Surface Temperature Data**

FLD LEN: 3

**SEA-SURFACE-TEMPERATURE-OBSERVATION identifier**
The identifier that denotes the start of a SEA-SURFACE-TEMPERATURE-OBSERVATION temperature data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
- **SA1**: An indicator of the occurrence of the following item:
  - SEA-SURFACE-TEMPERATURE-OBSERVATION temperature
  - SEA-SURFACE-TEMPERATURE-OBSERVATION temperature quality code

FLD LEN: 4

**SEA-SURFACE-TEMPERATURE-OBSERVATION temperature**
The temperature of the water at the surface.
- MIN: -0.50
- MAX: +450
- UNITS: Degrees Celsius
- SCALING FACTOR: 10
- DOM: A general domain comprised of the numeric characters(0-9), a plus sign (+), and a minus sign (-).
- +999 = Missing

FLD LEN: 1

**SEA-SURFACE-TEMPERATURE-OBSERVATION temperature quality code**
The code that denotes a quality status of the reported SEA-SURFACE-TEMPERATURE-OBSERVATION temperature.
DOM: A specific domain comprised of the characters in the ASCII character set.
- 0 = Passed gross limits check
- 1 = Passed all quality control checks
- 2 = Suspect
- 3 = Erroneous
- 9 = Passed gross limits check if element is present
Soil Temperature Data

FLD LEN: 3
SOIL-TEMPERATURE identifier
The identifier that denotes the start of a SOIL TEMPERATURE data section.
DOM: A specific domain comprised of the characters in the ASCII character set.
ST1: An indicator of fields of the following items:
   SOIL-TEMPERATURE Temperature Type
   SOIL-TEMPERATURE Soil Temperature
   SOIL-TEMPERATURE quality code
   SOIL-TEMPERATURE Depth
   SOIL-TEMPERATURE quality code
   SOIL-TEMPERATURE Soil Cover
   SOIL-TEMPERATURE quality code
   SOIL-TEMPERATURE Sub Plot
   SOIL-TEMPERATURE quality code

FLD LEN: 1
SOIL-TEMPERATURE temperature type
The type of temperature reported.
MIN: 1  MAX: 9
DOM: A specific domain comprised of the characters in the ASCII character set.
1 = Maximum Temperature
2 = Minimum Temperature
3 = AM or Noon Temperature
4 = PM or Midnight Temperature
9 = Missing

FLD LEN: 5
SOIL-TEMPERATURE soil temperature
The temperature of the soil for the previous 24 hours.
MIN: -1100  MAX: +0630  UNITS: Degrees Celsius
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9), a plus sign (+), and a minus sign (-).
+9999 = Missing

FLD LEN: 1
SOIL-TEMPERATURE quality code
The code that denotes a quality status of the reported temperature data.
DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check, from NCEI Data source
5 = Passed all quality control checks, from NCEI Data source
6 = Suspect, from NCEI Data source
7 = Erroneous, from NCEI Data source
9 = Passed gross limits check if element is present

FLD LEN: 4
SOIL-TEMPERATURE temperature depth
The depth below ground level of the temperature reported.
MIN: 0000  MAX: 9998  UNITS: Centimeters
SCALING FACTOR: 10
DOM: A specific domain comprised of the characters in the ASCII character set.
9999 = Missing

FLD LEN: 1
SOIL-TEMPERATURE depth quality code
The code that denotes a quality status of the reported temperature depth data.
DOM: A specific domain comprised of the characters in the ASCII character set.
4 = Passed gross limits check, from NCEI Data source
5 = Passed all quality control checks, from NCEI Data source
6 = Suspect, from NCEI Data source
7 = Erroneous, from NCEI Data source
9 = Passed gross limits check if element is present
FLD LEN: 2

**SOIL-TEMPERATURE soil cover**
The type of soil cover.
MIN: 01 MAX: 99
DOM: A specific domain comprised of the characters in the ASCII character set.
   01 = Grass
   02 = Fallow
   03 = Bare Ground
   04 = Brome Grass
   05 = Sod
   06 = Straw Mulch
   07 = Grass Muck
   08 = Bare Muck
   99 = Missing

FLD LEN: 1

**SOIL-TEMPERATURE soil cover quality code**
The code that denotes a quality status of the reported soil cover data.
DOM: A specific domain comprised of the characters in the ASCII character set.
   4 = Passed gross limits check, from NCEI Data source
   5 = Passed all quality control checks, from NCEI Data source
   6 = Suspect, from NCEI Data source
   7 = Erroneous, from NCEI Data source
   9 = Passed gross limits check if element is present

FLD LEN: 1

**SOIL-TEMPERATURE sub plot**
The sub plot number for the reported temperature.
MIN: 0 MAX: 9
DOM: A specific domain comprised of the characters in the ASCII character set.
   9=Missing

FLD LEN: 1

**SOIL-TEMPERATURE sub plot quality code**
The code that denotes a quality status of the reported sub plot data.
DOM: A specific domain comprised of the characters in the ASCII character set.
   4 = Passed gross limits check, from NCEI Data source
   5 = Passed all quality control checks, from NCEI Data source
   6 = Suspect, from NCEI Data source
   7 = Erroneous, from NCEI Data source
   9 = Passed gross limits check if element is present

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**Marine Data**

FLD LEN: 3

**WAVE-MEASUREMENT identifier**
The identifier that represents the availability of a WAVE-MEASUREMENT.
DOM: A specific domain comprised of the characters in the ASCII character set.
   UA1: An indicator of the occurrence of the following data items:
   - WAVE-MEASUREMENT method code
   - WAVE-MEASUREMENT wave period quantity
   - WAVE-MEASUREMENT wave height dimension
   - WAVE-MEASUREMENT quality code
   - WAVE-MEASUREMENT sea state code
   - WAVE-MEASUREMENT sea state code quality code

FLD LEN: 1

**WAVE-MEASUREMENT method code**
A code that represents the method used to obtain a WAVE-MEASUREMENT.
DOM: A specific domain comprised of the ASCII characters
   M = Manual
   I = Instrumental
   9 = Missing
**WAVE-MEASUREMENT wave period quantity**
The quantity of time required for two successive wave crests to pass a fixed point.
MIN: 00      MAX: 30      UNITS: Seconds
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing.

**WAVE-MEASUREMENT wave height dimension**
The height of a wave measured from trough to crest.
MIN: 000      MAX: 500      UNITS: Meters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing.

**WAVE-MEASUREMENT quality code**
The code that denotes a quality status of the reported WAVE-MEASUREMENT.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check  
1 = Passed all quality control checks  
2 = Suspect  
3 = Erroneous  
9 = Passed gross limits check if element is present

**WAVE-MEASUREMENT sea state code**
The code that denotes the roughness of the surface of the sea in terms of average wave height.
DOM: A specific domain comprised of the ASCII character set.
00 = Calm, glassy - wave height = 0 meters  
01 = Calm, rippled - wave height = 0-0.1 meters  
02 = Smooth, wavelets - wave height = 0.1-0.5 meters  
03 = Slight, wave height = 0.5-1.25 meters  
04 = Moderate - wave height 1.25-2.5 meters  
05 = Rough - wave height = 2.5-4.0 meters  
06 = Very rough - wave height = 4.0-6.0 meters  
07 = High - wave height = 6.0-9.0 meters  
08 = Very high - wave height 9.0-14.0 meters  
09 = Phenomenal - wave height = over 14.0 meters  
99 = Missing

**WAVE-MEASUREMENT sea state code quality code**
The code that denotes a quality status of the reported WAVE-MEASUREMENT sea state code.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check  
1 = Passed all quality control checks  
2 = Suspect  
3 = Erroneous  
9 = Passed gross limits check if element is present

**WAVE-MEASUREMENT primary swell identifier**
The identifier that denotes the availability of primary swell data.
DOM: A specific domain comprised of the characters in the ASCII character set.
**UG1**: An indicator of the occurrence of the following data items:
WAVE-MEASUREMENT primary swell period quantity  
WAVE-MEASUREMENT primary swell height dimension  
WAVE-MEASUREMENT primary swell direction angle  
WAVE-MEASUREMENT primary swell quality code
FLD LEN: 2
WAVE-MEASUREMENT primary swell period quantity
The quantity of time required for two successive primary swell wave crests to pass a fixed point.
MIN: 00 MAX: 14 UNITS: Seconds
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 3
WAVE-MEASUREMENT primary swell height dimension
The height of a primary swell wave measured from the trough to the crest.
MIN: 000 MAX: 500 UNITS: Meters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 3
WAVE-MEASUREMENT primary swell direction angle
The angle measured clockwise from true north to the direction from which primary swell waves are coming.
MIN: 001 MAX: 360 UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

FLD LEN: 1
WAVE-MEASUREMENT primary swell quality code
The code that denotes a quality status of the reported WAVE-MEASUREMENT primary swell.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

FLD LEN: 3
WAVE-MEASUREMENT secondary swell identifier
An indicator that denotes the start of a WAVE-MEASUREMENT secondary swell group.
DOM: A specific domain comprised of the characters in the ASCII character set.
Domain Value ID: Domain Value Definition Text
UG2: An indicator of the occurrence of the following data items:
WAVE-MEASUREMENT secondary swell period quantity
WAVE-MEASUREMENT secondary swell height dimension
WAVE-MEASUREMENT secondary swell direction angle
WAVE-MEASUREMENT secondary swell quality code

FLD LEN: 2
WAVE-MEASUREMENT secondary swell period quantity
The quantity of time required for two successive secondary swell wave crests to pass a fixed point.
MIN: 00 MAX: 14 UNITS: Seconds
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
99 = Missing

FLD LEN: 3
WAVE-MEASUREMENT secondary swell height dimension
The height of a secondary swell wave measured from the trough to the crest.
MIN: 000 MAX: 500 UNITS: Meters
SCALING FACTOR: 10
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing
**FLD LEN: 3**

**WAVE-MEASUREMENT secondary swell direction angle**
The angle measured clockwise from true north to the direction from which secondary swell waves are coming.
MIN: 001 MAX: 360 UNITS: Angular Degrees
SCALING FACTOR: 1
DOM: A general domain comprised of the numeric characters (0-9).
999 = Missing

**FLD LEN: 1**

**WAVE-MEASUREMENT secondary swell quality code**
The code that denotes a quality status of the reported WAVE-MEASUREMENT secondary swell.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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**FLD LEN: 3**

**PLATFORM-ICE-ACCRETION identifier**
The identifier that denotes the availability of PLATFORM-ICE-ACCRETION data.
DOM: A specific domain comprised of the characters in the ASCII character set.
WA1: An indicator of the occurrence of the following data items:
- PLATFORM-ICE-ACCRETION source code
- PLATFORM-ICE-ACCRETION thickness dimension
- PLATFORM-ICE-ACCRETION tendency code
- PLATFORM-ICE-ACCRETION quality code

**FLD LEN: 1**

**PLATFORM-ICE-ACCRETION source code**
The code that denotes the source of the ice that builds up on a marine platform’s structure.
DOM: A specific domain composed of the following qualitative data values:
Domain Value ID: Domain Value Definition Text
1 = Icing from ocean spray
2 = Icing from fog
3 = Icing from spray and fog
4 = Icing from rain
5 = Icing from spray and rain
9 = Missing

**FLD LEN: 3**

**PLATFORM-ICE-ACCRETION thickness dimension**
The thickness of the ice that has accumulated on a marine platform.
MIN: 000 MAX: 998 UNITS: centimeters
SCALING FACTOR: 10
DOM: A specific domain composed of the integer values (0 - 9).
999 = Missing

**FLD LEN: 1**

**PLATFORM-ICE-ACCRETION tendency code**
The code that denotes the rate of change of ice thickness on a marine platform.
DOM: A specific domain composed of the following qualitative data values:
Domain Value ID: Domain Value Definition Text
0 = Ice not building up
1 = Ice building up slowly
2 = Ice building up rapidly
3 = Ice melting or breaking up slowly
4 = Ice melting or breaking up rapidly
9 = Missing

**FLD LEN: 1**

**PLATFORM-ICE-ACCRETION quality code**
The code that denotes a quality status of the reported PLATFORM-ICE-ACCRETION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
Note: If more than one ice, edge can be stated, the nearest or most important shall be reported.

FLD LEN: 2
OCEAN-ICE-OBSERVATION edge bearing code
The code that denotes the true bearing, measured from the reporting platform to the closest point of the principal ice edge.
DOM: A specific domain composed of the following qualitative data values:
  00 = Ship in shore or flaw lead
  01 = Principal ice edge towards NE
  02 = Principal ice edge towards E
  03 = Principal ice edge towards SE
  04 = Principal ice edge towards S
  05 = Principal ice edge towards SW
  06 = Principal ice edge towards W
  07 = Principal ice edge towards NW
  08 = Principal ice edge towards N
  09 = Not determined (ship in ice)
  10 = Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible.
  99 = Missing

COM: 1. If more than one ice edge can be stated, the nearest or most important shall be reported
  2. The bearing shall refer to the true and not to the magnetic north

FLD LEN: 3
WATER-SURFACE-ICE-OBSERVATION uniform concentration rate
The percent concentration (surface coverage) of ice on the water surface.
MIN: 000  MAX: 100  UNITS: percent
DOM: A general domain comprised of the ASCII characters 0-9.
999 = Missing

FLD LEN: 2
WATER-SURFACE-ICE-OBSERVATION non-uniform concentration code
The code that denotes the coverage arrangement of non-uniformly distributed ice.
DOM: A specific domain comprised of the characters in the ASCII character set.
  06 = Strips and patches of pack ice with open water between
  07 = Strips and patches of close or very close pack ice with areas of lesser concentration between
  08 = Fast ice with open water, very open or open pack ice to seaward of the ice boundary
  09 = Fast ice with close or very close pack ice to seaward of the ice boundary
  99 = Unable to report, because of darkness, lack of visibility, or because ship is more than 0.5 nautical mile away from ice edge

FLD LEN: 1
WATER-SURFACE-ICE-OBSERVATION ship relative position code
The code that denotes the relative position of the reporting ship to the ice formation.
DOM: A specific domain comprised of the ASCII characters
  0 = Ship in open water with floating ice in sight
  1 = In open lead or fast ice
2 = In ice or within 0.5 nautical miles of ice edge  
9 = Missing

**FLD LEN: 1**

**WATER-SURFACE-ICE-OBSERVATION ship penetrability code**
The code that denotes the degree of ease with which the reporting ship can proceed through the ice.
**DOM:** A specific domain comprised of the ASCII characters.
1 = Easy  
2 = Difficult  
3 = Beset (Surrounded so closely by sea ice that steering control is lost.)  
9 = Missing

**FLD LEN: 1**

**WATER-SURFACE-ICE-OBSERVATION ice trend code**
The code that denotes the trend of ice conditions.
**DOM:** A specific domain comprised of the ASCII characters.
1 = Conditions improving  
2 = Conditions static  
3 = Conditions worsening  
4 = Conditions worsening; ice forming and floes freezing together  
5 = Conditions worsening; ice under slight pressure  
6 = Conditions worsening; ice under moderate or severe pressure  
9 = Missing

**FLD LEN: 2**

**WATER-SURFACE-ICE-OBSERVATION development code**
The code that denotes the development stage of the ice.
**DOM:** A specific domain comprised of the ASCII characters
00 = New ice only (frazil ice, grease ice, slush, slugs)  
01 = Nilas or ice rind, less than 10 cm thick  
02 = Young ice (grey ice, grey-white ice), 10 - 30 cm thick  
03 = Predominantly new and/or young ice with some first year ice  
04 = Predominantly thin first year ice with some new and/or young ice  
05 = All thin first year ice (30 - 70 cm thick)  
06 = Predominantly medium first year ice (70 - 120 cm thick) and thick first year ice (> 120 cm thick) with some thinner (younger) first year ice  
07 = All medium and thick first year ice  
08 = Predominantly medium and thick first year ice with some old ice (usually more than 2 m thick)  
09 = Predominantly old ice  
99 = Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible or because ship is more than .5 NM away from ice

**FLD LEN: 1**

**WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit presence code**
The code that denotes the existence of growler and/or bergy bits.
**DOM:** A specific domain comprised of the ASCII characters
0 = Not present  
1 = Present  
2 = Unknown  
9 = Missing

**FLD LEN: 3**

**WATER-SURFACE-ICE-OBSERVATION growler-bergy-bit quantity**
The quantity of growler and bergy bits observed in the area.
**MIN:** 000  
**MAX:** 998  
**DOM:** A general domain comprised of the ASCII characters 0-9.  
999 = Missing

**FLD LEN: 3**

**WATER-SURFACE-ICE-OBSERVATION iceberg quantity**
The quantity of icebergs observed in the area.
**MIN:** 000  
**MAX:** 998  
**DOM:** A general domain comprised of the ASCII characters 0-9.  
999 = Missing

**FLD LEN: 1**

**WATER-SURFACE-ICE-OBSERVATION quality code**
The code that denotes a quality status of the reported WATER-SURFACE-ICE-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Passed gross limits check
1 = Passed all quality control checks
2 = Suspect
3 = Erroneous
9 = Passed gross limits check if element is present

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FLD LEN: 3
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION identifier
The identifier that denotes the availability of a WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
WG1: An indicator of the occurrence of the following data item:
   OCEAN-ICE-OBSERVATION edge bearing code
   WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge distance dimension
   WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge orientation code
   WATER-SURFACE-ICE-HISTORICAL-OBSERVATION formation type code
   WATER-SURFACE-ICE-HISTORICAL-OBSERVATION navigation effect code
   WATER-SURFACE-ICE-HISTORICAL-OBSERVATION quality code

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FLD LEN: 2
OCEAN-ICE-OBSERVATION edge bearing code
The code that denotes the true bearing, measured from the reporting platform to the closest point of the principle ice edge.
DOM: A specific domain composed of the following qualitative data values:
   00: Ship in shore or flaw lead
   01: Principal ice edge towards NE
   02: Principal ice edge towards E
   03: Principal ice edge towards SE
   04: Principal ice edge towards S
   05: Principal ice edge towards SW
   06: Principal ice edge towards W
   07: Principal ice edge towards NW
   08: Principal ice edge towards N
   09: Not determined (ship in ice)
   10: Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible
   99: Missing

COM: 1. If more than one ice edge can be stated, the nearest or most important shall be reported
2. The bearing shall refer to the true and not to the magnetic north

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FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge distance dimension
The distance from the reporting ship=s location to the nearest point on the ice edge.
MIN: 00  MAX: 98  UNITS: Kilometers
DOM: A general domain comprised of the ASCII characters 0-9
99 = Missing

-------------------

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION edge orientation code
The code that denotes the orientation of the principal ice edge and the direction relative to which the ice lies.
DOM: A specific domain comprised of the ASCII characters
   00: Orientation of ice edge impossible to estimate--ship outside the ice
   01: Ice edge lying in a direction NE to SW with ice situated to the NW
   02: Ice edge lying in a direction E to W with ice situated to the N
   03: Ice edge lying in a direction SE to NW with ice situated to the NE
   04: Ice edge lying in a direction S to N with ice situated to the E
   05: Ice edge lying in a direction SW to NE with ice situated to the SE
06: Ice edge lying in a direction W to E with ice situated to the S
07: Ice edge lying in a direction NW to SE with ice situated to the SW
08: Ice edge lying in a direction N to S with ice situated to the W
09: Orientation of ice edge impossible to estimate--ship inside the ice
99: Missing

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION formation type code
The code that denotes the type of ice formation reported in the
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.
DOM: A specific domain comprised of the ASCII characters
  00: No ice (0 may be used to report ice blink and then a direction must be reported)
  01: New ice
  02: Fast ice
  03: Pack-ice/drift-ice
  04: Packed (compact) slush or sludge
  05: Shore lead
  06: Heavy fast ice
  07: Heavy pack-ice/drift-ice
  08: Hummocked ice
  09: Icebergs-icebergs can be reported in plain language
  99: Missing

FLD LEN: 2
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION navigation effect code
The code that denotes the effect of ice on navigation.
DOM: A specific domain comprised of the ASCII characters
  00: Navigation unobstructed
  01: Navigation unobstructed for steamers, difficult for sailing ships
  02: Navigation difficult for low-powered steamers, closed to sailing
      ships
  03: Navigation possible only for powerful steamers
  04: Navigation possible only for steamers constructed to withstand ice pressure
  05: Navigation possible with the assistance of ice-breakers
  06: Channel open in the solid ice
  07: Navigation temporarily closed
  08: Navigation closed
  09: Navigation conditions unknown, e.g., owing to bad weather
  99: Missing

FLD LEN: 1
WATER-SURFACE-ICE-HISTORICAL-OBSERVATION quality code
The code that denotes a quality status of the reported WATER-SURFACE-ICE-HISTORICAL-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
  0 = Passed gross limits check
  1 = Passed all quality control checks
  2 = Suspect
  3 = Erroneous
  9 = Passed gross limits check if element is present

FLD LEN: 3
WATER-LEVEL-OBSERVATION identifier.
The identifier that denotes the availability of a WATER-LEVEL-OBSERVATION.
DOM: A specific domain comprised of the characters in the ASCII character set.
WJ1: An indicator of the occurrence of the following data item:
  WATER-LEVEL-OBSERVATION ice thickness
  WATER-LEVEL-OBSERVATION discharge rate
  WATER-LEVEL-OBSERVATION primary ice phenomena
  WATER-LEVEL-OBSERVATION secondary ice phenomena
  WATER-LEVEL-OBSERVATION stage height
  WATER-LEVEL-OBSERVATION under ice slush condition
  WATER-LEVEL-OBSERVATION water level code
**WATER-LEVEL-OBSERVATION ice thickness**
Thickness of ice on water.

- **MIN:** 00  
  **MAX:** 998  
  **UNITS:** centimeters

**DOM:** A general domain comprised of the ASCII characters 0-9

- 9999 = Missing

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**WATER-LEVEL-OBSERVATION discharge rate**
The rate of water discharge.

- **MIN:** 0000  
  **MAX:** 99999  
  **UNITS:** cubic meters per second

**DOM:** A general domain comprised of the ASCII characters 0-9

- 99999 = Missing

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**WATER-LEVEL-OBSERVATION primary ice phenomena**
The code that denotes the primary type of ice phenomena on a river, lake or reservoir.

**DOM:** A specific domain comprised of the ASCII characters

- 00 = Water surface free of ice
- 01 = Ice along banks
- 02 = Ice crystals
- 03 = Ice slush
- 04 = Ice flows from tributaries entering near the river, lake or reservoir station
- 10 = Floating slush ice covering approximately 1/3 (up to 30%) of the water surface
- 11 = Floating slush ice covering about half (40% - 60%) of the water surface
- 12 = Floating slush ice covering more than half (70% - 100%) of the water surface
- 20 = Floating ice covering 10% of the water surface
- 21 = Floating ice covering 20% of the water surface
- 22 = Floating ice covering 30% of the water surface
- 23 = Floating ice covering 40% of the water surface
- 24 = Floating ice covering 50% of the water surface
- 25 = Floating ice covering 60% of the water surface
- 26 = Floating ice covering 70% of the water surface
- 27 = Floating ice covering 80% of the water surface
- 28 = Floating ice covering 90% of the water surface
- 29 = Floating ice covering 100% of the water surface
- 30 = Water surface frozen at station, free upstream
- 31 = Water surface frozen at station, free downstream
- 32 = Water surface free at station, free upstream
- 33 = Water surface free at station, free downstream
- 34 = Ice floes near the station, water surface frozen downstream
- 35 = Water surface frozen with breaks
- 36 = Water surface completely frozen over
- 37 = Water surface frozen over with pile-ups
- 40 = Ice melting along the banks
- 41 = Some water on the ice
- 42 = Ice waterlogged
- 43 = Water holes in the ice cover
- 44 = Ice moving
- 45 = Open water in breaks
- 46 = Break up (first day of movement of ice on the entire water surface)
- 47 = Ice broken artificially
- 50 = Ice jam below the station
- 51 = Ice jam at the station
- 52 = Ice jam above the station
- 53 = Scale and position of jam unchanged
- 54 = Jam has frozen solid in the same place
- 55 = Jam has solidified and expanded upstream
- 56 = Jam has solidified and moved downstream
- 57 = Jam is weakening
- 58 = Jam broken up by explosives or other methods
- 59 = Jam broken
- 60 = Fractured ice
- 61 = Ice piling up against the bank
- 62 = Ice carried towards the bank
- 63 = Band of ice less than 100 meters wide fixed to banks
- 64 = Band of ice less than 100 to 500 meters wide fixed to banks
- 65 = Band of ice wider than 500 meters fixed to banks
70 = Cracks in the ice, mainly across the line of flow
71 = Cracks along the flow line
72 = Smooth sheet of ice
73 = Ice sheet with pile-ups
99 = Missing

FLD LEN: 2

WATER-LEVEL-OBSERVATION secondary ice phenomena
The code that denotes the secondary type of ice phenomena on a river, lake or reservoir.

DOM: A specific domain comprised of the ASCII characters

00 = Water surface free of ice
01 = Ice along banks
02 = Ice crystals
03 = Ice slush
04 = Ice flows from tributaries entering near the river, lake or reservoir station
10 = Floating slush ice covering approximately 1/3 (up to 30%) of the water surface
11 = Floating slush ice covering about half (40% - 60%) of the water surface
12 = Floating slush ice covering more than half (70% - 100%) of the water surface
20 = Floating ice covering 10% of the water surface
21 = Floating ice covering 20% of the water surface
22 = Floating ice covering 30% of the water surface
23 = Floating ice covering 40% of the water surface
24 = Floating ice covering 50% of the water surface
25 = Floating ice covering 60% of the water surface
26 = Floating ice covering 70% of the water surface
27 = Floating ice covering 80% of the water surface
28 = Floating ice covering 90% of the water surface
29 = Floating ice covering 100% of the water surface
30 = Water surface frozen at station, free upstream
31 = Water surface frozen at station, free downstream
32 = Water surface free at station, free upstream
33 = Water surface free at station, free downstream
34 = Ice floes near the station, water surface frozen downstream
35 = Water surface frozen with breaks
36 = Water surface completely frozen over
37 = Water surface frozen over with pile-ups
40 = Ice melting along the banks
41 = Some water on the ice
42 = Ice waterlogged
43 = Water holes in the ice cover
44 = Ice moving
45 = Open water in breaks
46 = Break up (first day of movement of ice on the entire water surface)
47 = Ice broken artificially
50 = Ice jam below the station
51 = Ice jam at the station
52 = Ice jam above the station
53 = Scale and position of jam unchanged
54 = Jam has frozen solid in the same place
55 = Jam has solidified and expanded upstream
56 = Jam has solidified and moved downstream
57 = Jam is weakening
58 = Jam broken up by explosives or other methods
59 = Jam broken
60 = Fractured ice
61 = Ice piling up against the bank
62 = Ice carried towards the bank
63 = Band of ice less than 100 meters wide fixed to banks
64 = Band of ice less than 100 to 500 meters wide fixed to banks
65 = Band of ice wider than 500 meters fixed to banks
70 = Cracks in the ice, mainly across the line of flow
71 = Cracks along the flow line
72 = Smooth sheet of ice
73 = Ice sheet with pile-ups
99 = Missing
FLD LEN: 5
WATER-LEVEL-OBSERVATION stage height
The height of the stage above zero.
MIN: -999    MAX: +9998    UNITS: centimeters
+9999 = Missing

FLD LEN: 1
WATER-LEVEL-OBSERVATION under ice slush condition
The code that denotes the slush condition under an ice layer.
DOM: A specific domain comprised of the ASCII characters 0-9
0 = No slush ice
1 = Slush ice to approximately 1/3 of depth of the river, lake or reservoir
2 = Slush ice from 1/3 to 2/3 of depth of the river, lake or reservoir
3 = Slush ice to depth of the river, lake or reservoir greater than 2/3.
9 = Missing

FLD LEN: 1
WATER-LEVEL-OBSERVATION water level code
The code that denotes the state of the water level.
DOM: A specific domain comprised of the ASCII characters
B = much below normal
H = high but not overflowing
N = normal
O = banks overflowing
9 = missing

Remarks Data Section

FLD LEN: 3
GEOPHYSICAL-POINT-OBSERVATION remarks identifier
The identifier that denotes the beginning of the remarks data section.
DOM: A specific domain comprised of the ASCII character set.
REM = Remarks Data Section

FLD LEN: 3
GEOPHYSICAL-POINT-OBSERVATION remark identifier
An indicator of the type of surface remarks data contained in the GEOPHYSICAL-POINT-OBSERVATION-REMARK text
DOM: A specific domain composed of the following qualitative data values.
Domain Value ID = Domain Value Definition Text
SYN = Synoptic Remarks
AWY = Airways Remarks
MET = METAR Remarks
SOD = Summary of Day Remarks
SOM = Summary of Month Remarks
HPD = Hourly Precipitation Data Remarks

Indicate the occurrence of the following data items:
GEOPHYSICAL-POINT-OBSERVATION remark length quantity
GEOPHYSICAL-POINT-OBSERVATION remark text

FLD LEN: 3
GEOPHYSICAL-POINT-OBSERVATION remark length quantity
A quantity that indicates the length of an individual GEOPHYSICAL-POINT-OBSERVATION-REMARK text.
MIN: 001           MAX: 999
DOM: A general domain composed of the ASCII characters (001-999).

FLD LEN: 999 (maximum)
GEOPHYSICAL-POINT-OBSERVATION remark text
The text of a GEOPHYSICAL-POINT-OBSERVATION-REMARK.
DOM: A general domain comprised of the characters in the ASCII character set.
Element Quality Data Section

FLD LEN: 3
GEOPHYSICAL-POINT-OBSERVATION quality data identifier
The identifier that denotes the beginning of the element quality data section.
DOM: A specific domain comprised of the ASCII character set.
EQD = Element Quality Data

FLD LEN: 3
ORIGINAL-OBSERVATION-ELEMENT-QUALITY identifier
The identifier that denotes the existence of ORIGINAL-OBSERVATION-ELEMENT-QUALITY data.
DOM: A specific domain comprised of the ASCII character set.
Q01 – Q99: The following may be occur from 0 to 99 times, for AFAW USAF SURFACE HOURLY and for ISD Version 2, and
P01 – P99: The following may be occur from 0 to 99 times, for ISD Version 2 (P denotes data originated from historical NCEI HOURLY PRECIPITATION or NCEI SURFACE HOURLY data), and
R01 – R99: The following may be occur from 0 to 99 times, for ISD Version 2 and 3 (R denotes data originated from an NCEI data source from 2006 forward)
C01 – C99: The original value failed due to a table constraint
D01 – D99: The original value was replaced using a temporary quality control process after the data was originally loaded to the table
N01 – N99: (see subsection below for details)
ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text
ORIGINAL-OBSERVATION-ELEMENT-QUALITY reason code
ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code

FLD LEN: 6
ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text
The original value text for elements which was rejected or recomputed during validation.
DOM: A general domain comprised of the characters in the ASCII character set

FLD LEN: 1
ORIGINAL-OBSERVATION-ELEMENT-QUALITY reason code
The code that denotes the reason an element was identified as suspect, erroneous or recomputed, or in the case of data originating from NCEI SURFACE HOURLY, the units code for the data are stored in this position, and the data quality flag is stored with the parameter code.
DOM: A specific domain comprised of the characters in the ASCII character set.
0 = Original value missing or corrupted
1 = Gross error checks (range and/or domain check)
2 = Geophysical checks (checking the validity against other parameters)
3 = Consistency checks (checking the validity against the same type of parameter)
4 = Gross error checks and geophysical checks
5 = Gross error checks and consistency checks
6 = Geophysical checks and consistency checks
7 = Gross error checks and geophysical checks and consistency checks

FLD LEN: 6
ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code
The code that denotes the type of parameter that the supplemental-level-element-quality applies to.
DOM: A specific domain comprised of the characters in the ASCII character set.
Comment Text:
APC3 = ATMOSPHERIC-PRESSURE-CHANGE THREE HOUR CHANGE QUANTITY
ATOLD = AIR-Temperature-OBSERVATION-LEVEL DEWPOINT TEMPERATURE
WOSPD = WIND-OBSERVATION SPEED RATE
WOLSPD = WIND-OBSERVATION-LEVEL SPEED RATE
WOLDIR = WIND-OBSERVATION-LEVEL DIRECTION ANGLE
WODIR = WIND-OBSERVATION DIRECTION ANGLE
ATOLDS = AIR-Temperature-OBSERVATION-LEVEL DENSITY RATE
ATOLT = AIR-Temperature-OBSERVATION-LEVEL AIR TEMPERATURE
ATOD = AIR-Temperature-OBSERVATION DEW POINT TEMPERATURE
ATOT = AIR-Temperature-OBSERVATION AIR TEMPERATURE
APOSP = ATMOSPHERIC-PRESSURE-OBSERVATION STATION PRESSURE RATE
The following parameter codes may occur with the R01 identifier. They pertain to QC of the Max Short Duration Precipitation fields AH1 - AH6 and AI1 – AI6. The 6 character field will be represented as follows:

First 3 characters:
A01 – A12 -- indicates this pertains to a precipitation amount, which is stored as the EQD original value
D01 – D12 -- indicates this pertains to the ending day field, which is stored as the EQD original value
T01 – T12 -- indicates this pertains to the ending time field, which is stored as the EQD original value

Note: Values of 01-06 indicate that AH1 – AH6, respectively, are flagged. Values of 07-12 indicate that AI1 – AI6, respectively, are flagged.

These codes will be followed by the 3 character flag description number to complete the 6 character definition. These codes are as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>INVALID MSDP 5 MIN AMT</td>
</tr>
<tr>
<td>002</td>
<td>MSDP 5 MIN AMT OUT OF RANGE</td>
</tr>
<tr>
<td>003</td>
<td>INVALID MSDP 5 MIN DATE</td>
</tr>
<tr>
<td>004</td>
<td>MSDP 5 MIN DATE OUT OF RANGE</td>
</tr>
<tr>
<td>005</td>
<td>INVALID MSDP 5 MIN TIME</td>
</tr>
<tr>
<td>006</td>
<td>MSDP 5 MIN TIME OUT OF RANGE</td>
</tr>
<tr>
<td>007</td>
<td>INVALID MSDP 10 MIN AMT</td>
</tr>
<tr>
<td>008</td>
<td>MSDP 10 MIN AMT &gt; 2 X 5 MIN AMT</td>
</tr>
<tr>
<td>009</td>
<td>INVALID MSDP 10 MIN AMT</td>
</tr>
<tr>
<td>010</td>
<td>MSDP 10 MIN DATE OUT OF RANGE</td>
</tr>
<tr>
<td>011</td>
<td>INVALID MSDP 10 MIN DATE</td>
</tr>
<tr>
<td>012</td>
<td>MSDP 10 MIN TIME OUT OF RANGE</td>
</tr>
<tr>
<td>013</td>
<td>INVALID MSDP 15 MIN AMT</td>
</tr>
<tr>
<td>014</td>
<td>MSDP 15 MIN AMT &gt; 5 + 10 MIN AMT</td>
</tr>
<tr>
<td>015</td>
<td>INVALID MSDP 15 MIN AMT</td>
</tr>
<tr>
<td>016</td>
<td>MSDP 15 MIN DATE OUT OF RANGE</td>
</tr>
<tr>
<td>017</td>
<td>INVALID MSDP 15 MIN TIME</td>
</tr>
</tbody>
</table>
018  MSDP 15 MIN TIME OUT OF RANGE
019  INVALID MSDP 20 MIN AMT
020  MSDP 20 MIN AMT > 5 + 15 MIN AMT
021  MSDP 20 MIN AMT > 2 X 10 MIN AMT
022  INVALID MSDP 20 MIN DATE
023  MSDP 20 MIN DATE OUT OF RANGE
024  INVALID MSDP 20 MIN TIME
025  MSDP 20 MIN TIME OUT OF RANGE
026  INVALID MSDP 30 MIN AMT
027  MSDP 30 MIN AMT > 10 + 20 MIN AMT
028  MSDP 30 MIN AMT > 2 X 15 MIN AMT
029  INVALID MSDP 30 MIN DATE
030  MSDP 30 MIN DATE OUT OF RANGE
031  INVALID MSDP 30 MIN TIME
032  MSDP 30 MIN TIME OUT OF RANGE
033  INVALID MSDP 45 MIN AMT
034  MSDP 45 MIN AMT > 15 + 30 MIN AMT
035  INVALID MSDP 45 MIN DATE
036  MSDP 45 MIN DATE OUT OF RANGE
037  INVALID MSDP 45 MIN TIME
038  MSDP 45 MIN TIME OUT OF RANGE
039  INVALID MSDP 60 MIN AMT
040  MSDP 60 MIN AMT > 15 + 45 MIN AMT
041  MSDP 60 MIN AMT > 2 X 30 MIN AMT
042  INVALID MSDP 60 MIN DATE
043  MSDP 60 MIN DATE OUT OF RANGE
044  INVALID MSDP 60 MIN TIME
045  MSDP 60 MIN TIME OUT OF RANGE
046  INVALID MSDP 80 MIN AMT
047  MSDP 80 MIN AMT > 20 + 60 MIN AMT
048  INVALID MSDP 80 MIN DATE
049  MSDP 80 MIN DATE OUT OF RANGE
050  INVALID MSDP 80 MIN TIME
051  MSDP 80 MIN TIME OUT OF RANGE
052  INVALID MSDP 100 MIN AMT
053  MSDP 100 MIN AMT > 20 + 80 MIN AMT
054  INVALID MSDP 100 MIN DATE
055  MSDP 100 MIN DATE OUT OF RANGE
056  INVALID MSDP 100 MIN TIME
057  MSDP 100 MIN TIME OUT OF RANGE
058  INVALID MSDP 120 MIN AMT
059  MSDP 120 MIN AMT > 20 + 100 MIN AMT
060  MSDP 120 MIN AMT > 2 X 60 MIN AMT
061  INVALID MSDP 120 MIN DATE
062  MSDP 120 MIN DATE OUT OF RANGE
063  INVALID MSDP 120 MIN TIME
064  MSDP 120 MIN TIME OUT OF RANGE
065  INVALID MSDP 150 MIN AMT
066  MSDP 150 MIN AMT > 30 + 120 MIN AMT
067  INVALID MSDP 150 MIN DATE
068  MSDP 150 MIN DATE OUT OF RANGE
069  INVALID MSDP 150 MIN TIME
070  MSDP 150 MIN TIME OUT OF RANGE
071  INVALID MSDP 180 MIN AMT
072  MSDP 180 MIN AMT > 60 + 120 MIN AMT
073  INVALID MSDP 180 MIN DATE
074  MSDP 180 MIN DATE OUT OF RANGE
075  INVALID MSDP 180 MIN TIME
076  MSDP 180 MIN TIME OUT OF RANGE
077  MSDP 60 MIN VAL DISAGREES W/HR
078  MSDP 120 MIN VAL DISAGREES W/HR
079  MSDP 180 MIN VAL DISAGREES W/HR

FLD LEN: 3
ORIGINAL-OBSERVATION-ELEMENT-QUALITY identifier
The identifier that denotes the existence of ORIGINAL-OBSERVATION-ELEMENT-QUALITY data. These data will appear after the Q## data described above.

**DOM:** A specific domain comprised of the ASCII character set.

**N01 - N99:** The following may be occur from 0 to 99 times, for NCEI NCEI SURFACE HOURLY:
- ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text
- ORIGINAL-OBSERVATION-ELEMENT-QUALITY units code
- ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code

### FLD LEN: 6

**ORIGINAL-OBSERVATION-ELEMENT-QUALITY original value text**

The original value text for elements which were rejected or recomputed during validation.

**DOM:** A general domain comprised of the characters in the ASCII character set

### FLD LEN: 1

**ORIGINAL-OBSERVATION-ELEMENT-QUALITY units code**

The code that denotes the units code for the data are stored in this position, and the data quality flag is stored with the parameter code below.

**DOM:** A specific domain comprised of the characters in the ASCII character set

### ELEMENT-UNITS TABLE

<table>
<thead>
<tr>
<th>Value</th>
<th>Equates to this value from original NCEI SURFACE HOURLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DT Wind direction in tens of degrees</td>
</tr>
<tr>
<td>B</td>
<td>F  Whole degrees Fahrenheit</td>
</tr>
<tr>
<td>C</td>
<td>HF Hundreds of feet</td>
</tr>
<tr>
<td>D</td>
<td>HM Miles and hundredths</td>
</tr>
<tr>
<td>E</td>
<td>IH Inches and hundredths of mercury</td>
</tr>
<tr>
<td>F</td>
<td>IT Inches and thousandths of mercury</td>
</tr>
<tr>
<td>G</td>
<td>KD knots and direction in tens of degrees</td>
</tr>
<tr>
<td>H</td>
<td>KS Knots and direction in 16 point WBAN Code</td>
</tr>
<tr>
<td>I</td>
<td>MT Millibars and tenths</td>
</tr>
<tr>
<td>J</td>
<td>NA No units applicable (non-dimensional)</td>
</tr>
<tr>
<td>K</td>
<td>N1 No units applicable - element to tenths</td>
</tr>
<tr>
<td>L</td>
<td>N2 No units applicable - element to hundredths</td>
</tr>
<tr>
<td>M</td>
<td>P  Whole percent</td>
</tr>
<tr>
<td>O</td>
<td>TC Degrees Celsius in tenths</td>
</tr>
<tr>
<td>P</td>
<td>TF Degrees Fahrenheit in tenths</td>
</tr>
<tr>
<td>Q</td>
<td>IS Miles per hour and sixteen-point wind compass</td>
</tr>
<tr>
<td>R</td>
<td>MS Meters per second and sixteen-point wind compass</td>
</tr>
</tbody>
</table>

### FLD LEN: 6

**ORIGINAL-OBSERVATION-ELEMENT-QUALITY parameter code**

The code that denotes the type of parameter that the supplemental-level-element-quality applies to.

**DOM:** A specific domain comprised of the characters in the ASCII character set.

First 4 characters = the element name as defined below.
Position 5 = the Flag 1 value as defined below.
Position 6 = Flag 2 value as defined below.

Element names and definitions:

- **ALC:** Sky condition in tenths from ASOS
- **ALM:** Sky condition in eighths from ASOS
- **ALTP:** Altimeter setting
- **CC51:** Sky condition prior to 1951
- **CLC:** Sky condition in tenths
- **CLM:** Sky condition in eighths
- **CLHT:** Ceiling height
- **CLT:** Cloud type and height by layer
- **C2C3:** Total cloud cover by first 2 and first 3 layers
- **DPTC:** Dew point temperature in celsius
- **DPTP:** Dew point temperature in fahrenheit
- **HZVS:** Horizontal visibility
- **PRES:** Station pressure
- **PWTH:** Present weather
- **PWVC:** Present weather in vicinity
- **RHUM:** Relative humidity
- **SCH:** Sky condition (amount and modifier, e.g., thin broken) and height by layer
- **SLVP:** Sea level pressure
TMCD  Dry bulb temperature in celsius
TMPD  Dry bulb temperature in fahrenheit
TMPW  Wet bulb temperature in fahrenheit
TSCE  Total sky cover in eighths
TSKC  Total sky cover in tenths
TSKY  Same as TSKC but expressed in terms of amount and modifier, e.g., thin broken.
WD16  Wind direction and speed in 16 point code
WIND  Wind direction and speed
WND2  Wind direction and speed from ASOS

FLAG-1 (Measurement Value):

A  Wind speed expressed in Beaufort scale, different from the day's given units
C  Ceiling of cirroform clouds at unknown height (Sep 56 - Mar 70)
D  Derived value
E  Estimated value
G  Visibility > or = 100 miles (data value = 10000)
H  Hundredths precision only is indicated in the original observation (except as when found in SLVP with units code MT; this flag means original value is expressed in inches to hundredths, not hundredths of millibars)
I  Wind speed in miles per hour, different from the day's given units
K  Wind speed in knots, different from the day's given units
M  Visibility missing (data value = 99999)
N  Unlimited visibility (data value = 99999)
P  Wind speed in pounds per square foot perpendicular to the wind
R  Dew Point and/or Relative Humidity, originally calculated with respect to ice have been recomputed with respect to water. (DPTP, RHUM)
S  Wind speed in meters per second, different from the day's given units
U  Unlimited ceiling height (DATA-VALUE = 99999). (CLHT)
b  (blank) Flag not needed. (All elements except CC51)

FLAG-2 (Data Quality Flag Value):

0  Observed data has passed all internal consistency checks.
1  Validity indeterminable (primarily for pre-1984 data).
2  Observed data has failed an internal consistency check - subsequent edited value follows observed value.
3  Data beginning January 1,1984 - observed data has failed a consistency check - No edited value follows. Data prior to 1 Jan 84 - observed data exceeded preselected climatological limits during conversion from historic TD-1440 files. No edited value follows.
4  Observed data value invalid - no edited value follows.
5  Data converted from historic TD-1440 exceeded known climatological extremes - no edited value follows.
6  Complex QA indicates data are erroneous, and an edited value follows.
E  Edited data value passes all system checks - no observed value present.
M  Manually edited data value added to data set after original archival. Automated edit not performed on this item.
S  Manually edited data passes all system checks.
Original Observation Data Section

FLD LEN: 3
ORIGINAL-OBSERVATION-NCEI SURFACE HOURLY identifier
The identifier that denotes the existence of ORIGINAL-OBSERVATION-NCEI SURFACE HOURLY information. This is used in specific instances where the original data from a previous format is stored for quality control purposes. In most cases, this section is not included, since original input data sources are always maintained/archived at NCEI.
DOM: A specific domain comprised of the ASCII character set.
QNN: The following may be occur from 0 to 99 times, for NCEI NCEI SURFACE HOURLY:

FLD LEN: 5
ORIGINAL-OBSERVATION-NCEI SURFACE HOURLY source codes and flags
The original source codes and flags from NCEI SURFACE HOURLY, for possible future use in ISD dataset quality control.
DOM: A specific domain comprised of the ASCII character set.
For each original NCEI SURFACE HOURLY data record, the source code 1 and 2, and flag 1 and 2 original values are stored as follows:

QNN@1234@1234@1234 where:
QNN = indicator for section
@ = element identifier (see below)
1234 = source code 1, source code 2, flag 1, and flag 2 sequentially, for each element as defined in original DSI-3280.

Element Identifiers (@) as mentioned above, with the original DS3280 element that it refers to (eg, A = element ALC):
A ALC
B ALM
C ALC
D CC51
E CLC
F CLM
G CLHT
H CLT
I C2C3
J DPTC
K DPTP
L HZVS
M PRES
N PWTH
O PWVC
P RHUM
Q SLVP
R TMCD
S TMPD
T TMPW
U TSCE
V TSKC
W WD16
X WIND
Y WND2

FLD LEN: 6
ORIGINAL-OBSERVATION-NCEI SURFACE HOURLY data value
The original data value from NCEI SURFACE HOURLY, as defined for the element above, for possible future use in ISD dataset quality control.
DOM: A specific domain comprised of the ASCII character set.
7. **Start Date:**

   1900, but the date will vary greatly by station.

8. **Stop Date:** Present

9. **Coverage:**

   a. Southernmost Latitude: 9000S
   b. Northernmost Latitude: 9000N
   c. Westernmost Longitude: 18000W
   d. Easternmost Longitude: 18000E

10. **Location:** Global

11. **Keywords:**

   a. Temperature
   b. Dew Point
   c. Wind Speed
   d. Wind Gust
   e. Wind Direction
   f. Ceiling
   g. Sky Cover
   h. Cloud Layer Data
   i. Visibility
   j. Present Weather
   k. Past Weather
   l. Sea Level Pressure
   m. Altimeter Setting
   n. Station Pressure
   o. 3-hour Pressure Change
   p. Precipitation Amount
   q. Snowfall
   r. Snow Depth
   s. Maximum Temperature
   t. Minimum Temperature
   u. US Air Force
   v. Clouds
   w. Surface

12. **How to Order Data:**

    Order from:
    National Centers for Environmental Information
    Federal Building
    151 Patton Avenue
    Asheville, NC 28801-5001
    phone: (828) 271-4800
    email: NCEI.orders@noaa.gov

13. **Archiving Data Centers:**

    Air Force Combat Climatology Center (AFCCC)
    Federal Building
14. **Technical Contact:**

National Centers for Environmental Information  
Climate Access Branch  
Federal Building  
151 Patton Avenue  
Asheville, NC 28801-5001  
phone: (828) 271-4800  
email: ncei.orders@noaa.gov

15. **Known Uncorrected Problems:**

Minimal number of random errors, decode errors, and reporting errors (by station)--less than .1% of observations affected overall. Most errors corrected/eliminated by quality control software.

16. **Quality Statement:**


17. **Revision Date:** N/A

18. **Source Data Sets:**

AFCCC USAF SURFACE HOURLY Surface Hourly, NCEI DS3280 Surface Hourly, NCEI DS3240  
Hourly Precipitation. AFCCC USAF SURFACE HOURLY includes over 100 source datasets, while NCEI DS3280 includes several original input sources; so over 100 original input sources are included in the current ISD archive.  
Beginning in 2006, additional data sources are being added, and will be documented here as they become available online.

19. **Essential Companion Data Sets:** N/A

20. **Derived Data Sets:** Global summary of day for 1929-present

21. **References:** N/A

22. **Summary:**

The Integrated Surface Data (ISD) is composed of worldwide surface weather observations from over 20,000 stations, collected and stored from sources such as the Automated Weather Network (AWN), the Global Telecommunications System (GTS), the Automated Surface Observing System (ASOS), and data keyed from paper forms. Most digital observations are decoded either at operational centers and forwarded to the Federal Climate Complex (FCC) in Asheville, NC, or decoded at the FCC. NOAA’s National Centers for Environmental Information (NCEI) and the US Air Force’s 14th Weather Squadron (14WS) make up the FCC in Asheville, NC. Each agency is responsible for data ingest, quality control, and customer support for surface climatological data. All data are now stored in a single ASCII format. The dataset is used in climatological applications by numerous DOD and civilian customers.
ISD (formerly known as ISH) refers to the digital dataset and format in which hourly, synoptic (3-hourly), daily, monthly, and various other weather/climate observations are stored. The format conforms to Federal Information Processing Standards (FIPS). The dataset includes data originating from various codes such as synoptic, airways, METAR (Meteorological Routine Weather Report), and SMARS (Supplementary Marine Reporting Station), as well as observations from automatic weather stations. The data are sorted by station, year-month-day-hour-minute, report type, and data source flag. This document provides complete documentation for the dataset and its format.