

**SPECIFICATIONS OF SECTIONS**

## Notes:

- (1) Each section contains one or more groups of characters separated by one separator character.
- (2) In the following, each group is numbered as group 1, group 2 and so on, from the beginning of the section.
- (3) For Master Table 0, the master table version numbers are as follows:
 

0	Experimental
1	Version implemented on 3 May 2000
2	Version implemented on 7 November 2001
3	Version implemented on 4 November 2003
4	Version implemented on 2 November 2005
5	Version implemented on 7 November 2007
6	Version implemented on 4 November 2009
7	Version implemented on 15 September 2010
8–15	Not used
16	Version implemented on 4 May 2011
17	Version implemented on 2 November 2011
18	Version implemented on 2 May 2012
19	Version implemented on 7 November 2012
20	Version implemented on 8 May 2013
21	Version implemented on 14 November 2013
22	Pre-operational to be implemented by next amendment

**Section 0 – Indicator section**

Group No.	Contents	Meaning
1	CREX	CREX: Beginning of the CREX message

**Section 1 – Data description section**

Group No.	Contents	Meaning
1	Ttteevbbww	T: Indicator for CREX tables tt: CREX Master Table used (00 for WMO standard FM 95 CREX tables) ee: CREX edition number (02) vv: CREX Master Table version number (see Note 3 above) bb: BUFR Master Table version number used (see Note 5 under section 1 of the BUFR regulations) ww: Version number of local table
2	Annnmmm	A: Indicator for CREX Table A entry nnn: Data category from CREX Table A mmm: International data sub-category from Common Code table C-13
3	Pooooopp	P: Indicator for originating centre ooooo: Originating centre from Common Code table C-11 ppp: Originating sub-centre from Common Code table C-12
4	Uuu	U: Indicator for sequence number of message uu: Update sequence number (00 for original messages and for messages containing only delayed reports; incremented for the other updates)
5	Ssss	S: Indicator for number of subsets sss: Number of subsets included in the report
6	Yyyyymdd	Y: Indicator for date yyyy: Year mm: Month dd: Day
7	Hhhnn	H: Indicator for time hh: Hour nn: Minute
8 to n	Bxyyy, Cxyyy, Dxyyy, and/or Rxyyy	B,C,D: Indicators for CREX Tables B, C, D entries xyyy: 5 digits each which indicate references from CREX Tables B, C, and/or D R: Indicator for replication xx: Number of replicated descriptors yyy: Number of replications (delayed replication if yyy = 0)
(n + 1)	(E)	E: Optional check digit indicator

Most typical time for the CREX message content (see Note below)

Note: When accuracy of the time does not define a time unit, then the value for this unit is set to zero (e.g. SYNOP observation at 09 UTC, then minute = 0).

**Section 2 – Data section**

Group No.	Contents	Meaning
1 to m	(d) Data values	d: Optional check digit Data: Data values corresponding to section 1 descriptors values

**Section 3 – Optional section**

Group No.	Contents	Meaning
1	SUPP	SUPP: The four letters SUPP indicate the presence of a supplementary optional section
2 to p	Items for local use	Additional items for local use developed by the generating centre

**Section 4 – End section**

Group No.	Contents	Meaning
1	7777	7777: End of CREX

# **VISUALIZATION OF CREX CODE FORM**

(Bold characters are fixed alphanumeric characters; features in brackets are optional)

## **CREX++**

**Tt**eevvbbww **A**nnnmmm **P**ooooopp **U**uu **S**sss **Y**yyyymmdd **H**hhnn

**R**xyyy ..... (E)++

or **B**xyyy

or **C**xyyy

or **D**xyyy

((d)Data values .....+)

.....

.....

((d)Data values .....+)

(d)Data values .....++

(**SUPP** Items for local use .....++)

7777

Note: If there is more than one subset, there shall be one "+" padded at the end of each subset, except for the last one (see Regulations 95.1.4, 95.1.5 and 95.4.1).

## CREX TABLES, CODE TABLES, FLAG TABLES AND TEMPLATE EXAMPLES

FM 95 CREX refers to three types of tables: CREX tables, code tables and flag tables.

### CREX tables

Tables containing information used to describe, classify and define the contents of a CREX message are called CREX tables. Four CREX tables are defined: Tables A, B, C and D. Entry numbering shall be the same in CREX tables and BUFR tables for the same entity represented. Table B entries shall be listed in the common BUFR/CREX Table B in Part B, Binary codes. Table D common sequences shall not be defined in both CREX Table D and BUFR Table D unless otherwise a conversion between both Tables D is not simple, that is, the conversion is not completed by simple replacement of part "F" of each descriptor. If a CREX Table D sequence is not defined in BUFR Table D, it shall be assigned a number not used by any BUFR sequence. Similarly, new BUFR Table D sequences shall be assigned a number not used by any CREX Table D sequence.

### Code tables and flag tables

CREX Table B defines some elements by means of code tables or flag tables. Within this general description are included code tables referenced by code figures and flag tables, where each bit is set to 0 or 1 to indicate a false or true value with respect to a specific criterion. Within CREX all code tables and flag tables refer to elements defined within CREX Table B; they are numbered according to the xx and yyy values of the corresponding Table B reference.

### Code tables in CREX

CREX code tables have the same code figure as BUFR code tables and are not reproduced. Values of the CREX code, which are equal to or beyond the missing value of BUFR code figure, shall not be used. A missing value in CREX for a code table shall be indicated by a set of solidi "/" covering the data width.

### Flag tables in CREX

CREX flag tables shall be the same as BUFR flag tables. However flag tables in CREX shall be expressed using octal representation in the following way: a set of three bits being represented by a figure from 0 to 7 (the leftmost bit being the first bit in the table rank), zeros being added on the left when the number of flags is not a multiple of 3:

000 = 0 (not bit set)  
 001 = 1 (bit 3 set)  
 010 = 2 (bit 2 set)  
 011 = 3 (bits 2 and 3 set)  
 100 = 4 (bit 1 set)  
 101 = 5 (bits 1 and 3 set)  
 110 = 6 (bits 1 and 2 set)  
 111 = 7 (all bits set).

For example, the seven flag table sequence "1100110" transformed with the addition on the left of two zeros to "001100110" would be translated to "146" in octal.

CREX flag tables are the same as BUFR flag tables and are not reproduced here.

In CREX, a missing value for a flag table shall be indicated by a set of solidi "/" covering the data width.

### CREX template examples

Examples of templates of some CREX messages are listed as models in the following Attachment (I.2-Att.CREX-1 to 14) to help users understand the CREX code.

**Editorial note:** click following links to respective chapters in separate files.

**CREX TABLE RELATIVE TO SECTION 1**

[CREX Table A — \*Data category\*](#)

**CREX TABLES RELATIVE TO SECTION 2**

[CREX Table B — \*Classification of elements\*](#)

[CREX Table C — \*Data description operators\*](#)

[CREX Table D — \*List of common sequences\*](#)