

CHAPTER 3

USING DATA REPLICATION

3.1 Introduction. When encoding a series of parameters a fixed number of times for all reports represented in Section 4, it may be possible to choose from one of several methods for using Section 3 descriptors.

3.2 Data Replication Examples. If there were 4 elements of cloud information that were described by the Table B descriptors 0 08 002, 0 20 011, 0 20 012, 0 20 013, and these elements were to be repeated 4 times, these 16 total elements of data in Section 4 may be described in the following ways:

1. Long and cumbersome method, each element described individually:

```
0 08 002    0 20 011    0 20 012    0 20 013
0 08 002    0 20 011    0 20 012    0 20 013
0 08 002    0 20 011    0 20 012    0 20 013
0 08 002    0 20 011    0 20 012    0 20 013
```

2. Using the replication operator:

```
1 04 004    0 08 002    0 20 011    0 20 012    0 20 013
```

The meaning of the descriptor 1 04 004 is that the F portion (1) is indicating this is a replication operator, the X portion (04) means the following 4 descriptors are to be repeated Y (004) times.

3. Combine replication operator and Table D descriptor:

```
1 01 004    3 02 005
```

In this particular example of Table B descriptors there is defined a Table D descriptor 3 02 005 which expands to the 4 descriptors 0 08 002 0 20 011 0 20 012 0 20 013. The replication operator 1 01 004 followed by 3 02 005 means the data in Section 4, defined by the Table D descriptor 3 02 005, is repeated 4 times.

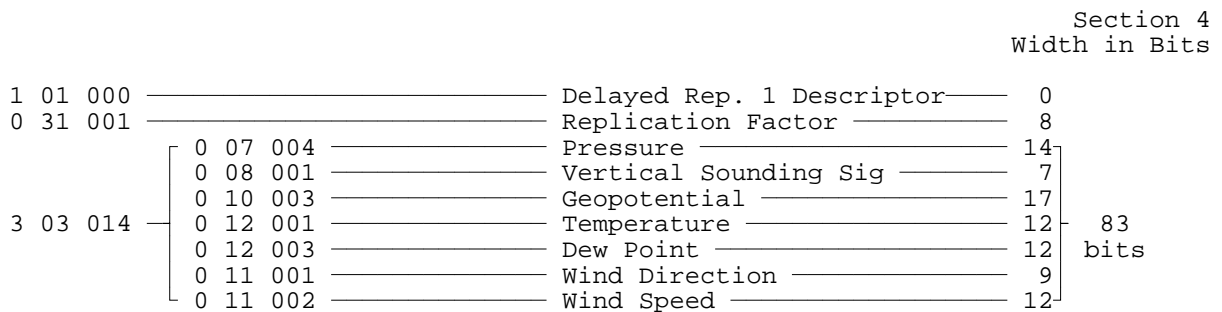
Using either a replication operator followed by a Table B descriptor or a replication operator followed by a Table D descriptor, if it exists, produces the same definition of data as repeating Table B descriptors. Note, in example 3, that the count of the number of descriptors to be replicated (X, 01) applies to the single Table D

descriptor that is actually in the message, and NOT to the set of possibly very many descriptors that the single type 3 descriptor represents.

A special form of the replication operator allows the replication factor to be stored with the data in Section 4, rather than with the descriptor in Section 3. This is particularly useful when describing data such as TEMP or BATHY observations where the number of levels differs from observation to observation. The delayed replication operator is of the form F X Y where F = 1, X indicates how many descriptors are to be replicated, and Y = 000. This operator is to be followed by a Table B descriptor from Class 31. The Class 31 descriptor is not included in the count (X) of the number of following descriptors to be replicated. Thus, if the following sequence of descriptors appeared in Section 3: 1 01 000 0 31 001 0 03 014, the meaning of these descriptors is:

1 01 000	F = 1	replication operator
	X = 01	1 descriptor is replicated, not counting, i.e., skipping over, the 0 31 001 descriptor
	Y = 000	delayed replication
0 31 001	F = 0	Table B descriptor
	X = 31	Class 31 - data description operator qualifiers
	Y = 001	delayed descriptor replication factor occupying 8 bits in Section 4 (Table B, Class 31 definition)
3 03 014	F = 3	Table D descriptor
	X = 03	Category 03 - meteorological sequences common to vertical sounding data
	Y = 014	entry 14 of Category 03

The Table D descriptor 3 03 014 expands into seven descriptors. The Section 4 data width for the expansion of 3 03 014 is 83 bits.



For each observation encoded into Section 4 the 8 bits preceding the pressure data indicates how many times the following 7 elements are replicated.

Figure 3-1 is an example of TEMP observations sequence using a single Table D descriptor which expands to include delayed replication. In this example, the replication factor indicates how many levels are contained within the observation. The bit count of 245 bits is for 1 level, each additional level would require 83 bits.

		SECTION 4 WIDTH IN BITS	
	3 01 001	0 01 001 — WMO BLOCK NO. ————— 7	
		0 01 002 — WMO STATION NO. ————— 10	
	0 02 011	RADIOSONDE TYPE ————— 8	
	0 02 012	RADIOSONDE COMP METHOD ————— 4	
3 01 038	3 01 011	0 04 001 — YEAR ————— 12	
		0 04 002 — MONTH ————— 4	
		0 04 003 — DAY ————— 6	
	3 01 012	0 04 004 — HOUR ————— 5	
		0 04 005 — MINUTE ————— 6	
	3 01 024	0 05 002 — LATITUDE (COARSE ACCURACY) — 15	
		0 06 002 — LONGITUDE (COARSE ACCURACY) — 16	
		0 07 001 — HEIGHT OF STATION ————— 15	
	3 09 008	0 20 010	CLOUD COVER (TOTAL) ————— 7
		0 08 002	VERTICAL SIGNIFICANCE ————— 6
		0 20 011	CLOUD AMOUNT ————— 4
		0 20 013	HEIGHT OF BASE OF CLOUD ————— 11
0 20 012		CLOUD TYPE C1 ————— 6	
0 20 012		CLOUD TYPE Cm ————— 6	
0 20 012		CLOUD TYPE Ch ————— 6	
1 01 000	DELAYED REP. 1 DESCRIPTOR ————— 0		
0 31 001	REPLICATION COUNT ————— 8		
3 03 014	0 07 004	PRESSURE ————— 14	
	0 08 001	VERTICAL SOUNDING SIG ————— 7	
	0 10 003	GEOPOTENTIAL ————— 17	
	0 12 001	TEMPERATURE ————— 12	
	0 12 003	DEW POINT ————— 12	
	0 11 001	WIND DIRECTION ————— 9	
	0 11 002	WIND SPEED ————— 12	
TOTAL BITS ONE REPLICATION		245	
TOTAL BITS IF REPLICATION COUNT WERE 11:		1075	

Figure 3-1. Example of TEMP observations sequence using delayed replication

