

CHAPTER 3

PRODUCT CONTENT

3.1. Data Categories. The formats contain information blocks of two basic types: 1) product data set control and 2) product data.

3.1.1. Product Data Set Control. The product data set control information includes the blocks for beginning and ending the product data set, for defining parameter values and fields within the product data set, and which contain other product related information. Also, user specific internal system data control is provided for.

3.1.2. Product Data. The product data can be specified by the following categories:

- A. Formatted Binary
- B. Vector Graphic
- C. Alphanumeric
- D. Raster Scan
- E. Gridded

3.1.2.1. Formatted Binary Data. Formatted binary data consists of machine-readable decoded weather observation/forecast data.

3.1.2.2. Vector Graphic Data. Vector graphic data shall be used to describe weather maps/charts. Vector graphic data includes vectors, graphic symbols and geographic background.

3.1.2.3. Alphanumeric Data. Alphanumeric (A/N) data shall be used for man-readable messages consisting of A/N character strings and labels for display products.

3.1.2.4. Raster Scan Data. Raster scan data shall be pixel data describing visual imagery such as satellite pictures, radar pictures, gray level imagery or facsimile images. This data may be in either packed or unpacked form.

3.1.2.5. Gridded Data. Gridded data shall consist of sets of machine readable weather data located at a regular array of grid points.

3.2. Mode/Submode Designations. All format blocks are identified by mode and submode values. These values are represented in octal notation. The key to general mode/submode assignments is found in Table 3.1. In general, mode numbers

represent data categories and submode numbers represent the specific product definition, data description and data blocks within a data category. Currently defined modes and submodes are shown in Tables 3.2 and 3.3; however, new mode/submode combinations shall be added based on agency needs and committee agreement.

3.2.1. Mode Designations. The data categories in Section 3.1.2 are identified by mode numbers. Mode 1 contains control blocks, Mode 2 is for individual user internal system applications, and Modes 3 through 7 are for the product data. See Table 3.2.

3.2.2. Submode Designations. Table 3.3 presents a listing of the submodes within each mode and gives a reference to corresponding figures.

3.3. Product Format. A product data set is formed to create a product. A complete product shall consist of all information required to describe a bounded group of related data. A product data set contains the product identification, definition, data description and data blocks (the format specified in Chapter 2) as necessary to create the desired product. The product definition block identifies the type of product (e.g., alphanumeric message, graphic display, or satellite image, etc.). Data descriptions and data blocks from any data category may be included in a single product data set if that data is needed for the product (e.g., alphanumeric labels applied to a graphic product). A representative example of a vector graphic product is found in Appendix F, Example No. 1.

3.4. Mode/Submode Combinations. As a rule, the mode/submode designations for a product data category will not be mixed with designations for a different product data category. For example, vector graphic data and gridded data will not appear in the data set defining one product.

3.4.1. Required and Optional Blocks. The following shows the required and optional blocks for each of the product data categories.

3.4.1.1. Systems Data Category

A. Required Blocks

Mode 1/Submode 1
Mode 2/User defined Submode
Mode 1/Submode 2

B. Optional Blocks

Mode 1/Submode 3

3.4.1.2. Formatted Binary Product Data Category

A. Required Blocks

- Mode 1/Submode 1
- Mode 3/Submode 1
- Mode 1/Submode 2

B. Optional Blocks

- Mode 1/Submode 3
- Mode 1/Submode 6
- Mode 1/Submode 10
- Mode 3/Submode 20
- Mode 3/Submode 21
- Mode 3/Submode 22
- Mode 3/Submode 23
- Mode 3/Submode 30

C. Note: Mode 3/Submode 21 or Mode 3/Submode 22 is required if the format of the data presented in Mode 3/Submode 1 has not been specified external to the product by mutual agreement of the exchanging agencies controlling the weather information systems involved in the data exchange.

3.4.1.3. Vector Graphic Product Data Category

A. Required Blocks

- Mode 1/Submode 1
- Mode 1/Submode 2

One of the following:

- Mode 4/Submode 20
- Mode 4/Submode 30

One or more of any selected one of the following:

- Mode 4/Submode 1
- Mode 4/Submode 2
- Mode 4/Submode 3
- Mode 4/Submode 5
- Mode 4/Submode 6

B. Optional Blocks

- Mode 1/Submode 3
- Mode 1/Submode 4
- Mode 1/Submode 6
- Mode 1/Submode 7
- Mode 1/Submode 10
- Mode 1/Submode 11
- Mode 1/Submode 12

Mode 4/Submode 4
Mode 4/Submode 7
Mode 4/Submode 10
Mode 4/Submode 11
Mode 4/Submode 12
Mode 5/Submode 1
Mode 5/Submode 2
Mode 5/Submode 3

3.4.1.4. Alphanumeric Product Data Category

A. Required Blocks

Mode 1/Submode 1
Mode 5/Submode 4
Mode 1/Submode 2

B. Optional Blocks

Mode 1/Submode 3
Mode 5/Submode 20

3.4.1.5. Raster Product Data Category

A. Required Blocks

Mode 1/Submode 1
One or both of the following:
Mode 6/Submode 20
Mode 6/Submode 30
Or both of the following:
Mode 6/Submode 40
Mode 6/Submode 41
Or both of the following:
Mode 6/Submode 40
Mode 6/Submode 42
Mode 6/Submode 1
Mode 1/Submode 2

B. Optional Blocks

Mode 1/Submode 3
Mode 1/Submode 5
Mode 1/Submode 10
Mode 1/Submode 12

C. Note: Mode 1/Submode 5 is required if the data presented in Mode 6/Submode 1 has not been specified external to the product as a default datawidth and fieldwidth by mutual agreement of the exchanging agencies controlling the weather information systems involved in the data exchange.

3.4.1.6. Gridded (Packed) Product Data Category

A. Required Blocks

Mode 1/Submode 1
Mode 7/Submode 20
Mode 7/Submode 1
Mode 1/Submode 2

B. Optional Blocks

Mode 1/Submode 3
Mode 1/Submode 5
Mode 1/Submode 6
Mode 1/Submode 10

C. Note: Mode 1/Submode 5 is required if the data presented in Mode 7/Submode 1 has not been specified external to the product as a default datawidth and fieldwidth by mutual agreement of the exchanging agencies controlling the weather information systems involved in the data exchange.

3.4.1.7. Gridded (Unpacked) Product Data Category

A. Required Blocks

Mode 1/Submode 1
Mode 7/Submode 20
Mode 3/Submode 1
Mode 1/Submode 2

B. Optional Blocks

Mode 1/Submode 3
Mode 1/Submode 6
Mode 1/Submode 10
Mode 3/Submode 21

3.4.2. Allowable Mode/Submode Combinations. Table 3.4 summarizes the allowable combinations of defined modes and submodes for the various mode designations.

Table 3-1 Key to Mode/Submode Designations

<u>Number (Octal)</u>	<u>Type of Information</u>
Modes 001-002	Product Control/Internal System Data
Submodes 001-012	Control or Data Blocks
Modes 003-077	Product Type (only 3-7 are currently assigned)
Submodes 001-017	Data Blocks (DB)
020, 030, ..., 070	Product Definition Blocks (PDB)
021-027, 031-037, ..., 071-077	Data Description Blocks (DDB) associated with PDB, (e.g., 21-27 => 20)
100-377	Unassigned, to be designated if the assigned ranges are exhausted.

Table 3-2. Assigned Mode Designations

<u>Mode (Octal)</u>	<u>Definition</u>
001	Product Data Set Control
002	Systems Data
003	Formatted Binary*
004	Vector Graphic
005	Alphanumeric
006	Raster Scan
007	Gridded*

*Note: Packed gridded data is accommodated under Mode 7, unpacked gridded data is accommodated under Mode 3.

Table 3-3. Assigned Submode Designations

<u>Description</u>	<u>Submode (Octal)</u>	<u>Figure No.</u>
Mode 1 Product Data Set Control		
Product Identification Block	1	4-1
End of Product Block	2	4-2
Classification Block	3	4-3
Define Plot Parameters Block	4	4-4
Define Datawidth/Fieldwidth Block	5	4-5
Product Information Block	6	4-6
Line Information Block	7	4-7
Map Background Definition Block	10	4-8
Set Active Font Block	11	4-9
Define Color Palette Block	12	4-10
Mode 2 Systems Data		
Binary Data Blocks	User Definable	5-1
Mode 3 Formatted Binary		
Formatted Binary Product Definition Block	20	6-1
Formatted Binary Data Description Block, Option 1	21	6-2
Formatted Binary Data Description Block, Option 2	22	6-3
Formatted Binary Data Block	1	6-4
Formatted Binary Sequence Block	23	6-5
Satellite Product definition Block	30	6-6
Mode 4 Vector Graphic		
Graphics Product Definition Block	20	7-1
Define Graphics Parameters Block	30	7-2
Absolute Vectors	1	7-3
Relative Vectors	2	7-4
CPC Vectors Block	3	7-5
Variable Exception Vectors (VEV) Block	4	7-6
Long/Short Relative Vectors Block	5	7-7
Point/Slope Vectors Block	6	7-8
Wind Barbs Vectors Block	7	7-9
Vector (Arrow) Plot Block	10	7-10
Center Radius Arc Vectors Block	11	7-11
Curve Vectors Block	12	7-12

Table 3-3. (Cont.) Assigned Submode Designations

<u>Description</u>	<u>Submode</u> (Octal)	<u>Figure No.</u>
Mode 5 Alphanumeric		
Alphanumeric Product Definition Block	20	8-1
Alphanumeric Character Block	1	8-2
Data Plot Block	2	8-3
Wind Barbs Data Block	3	8-4
Alphanumeric Data Block	4	8-5
Mode 6 Raster Scan		
Satellite Product Definition Block	20	9-1
Pixel Product Definition Block	30	9-2
Raster Scan Data Block	1	9-3
Polar/Geosynchronous Image Product Definition Block	40	9-4
Geosynchronous Image Data Description Block	41	9-5
Polar Image Data Description Block	42	9-6
Mode 7 Gridded		
Gridded Product Definition Block	20	10-1
Band Index Data Block*	1	10-3

*Packed gridded products. See Chapter 10.

Table 3-4. Allowable Mode/Submode Combinations

<u>Mode</u> <u>Submode</u>	<u>Product Data Category</u>					
	<u>Systems</u>	<u>Formatted</u> <u>Binary</u>	<u>Vector</u> <u>Graphic</u>	<u>A/N</u>	<u>Raster</u>	<u>Gridded</u>
Product Data Set Control						
1/1	r	r	r	r	r	r
1/2	r	r	r	r	r	r
1/3	o	o	o	o	o	o
1/4					o	
1/5					o	o (1)
1/6		o	o			o
1/7			o			
1/10		o	o		o	o
1/11			o			
1/12			o		o	
Systems Data						
2/User Defined	r					
Formatted Binary						
3/1		r				r (2)
3/20		o				
3/21		o				o (2)
3/22		o (4)				
3/23		o				
3/30		o				
Vector Graphic						
4/1			r (3)			
4/2			r (3)			
4/3			r (3)			
4/4			o			
4/5			r (3)			
4/6			r (3)			
4/7			o			
4/10			o			
4/11			o			
4/12			o			
4/20			r (3)			
4/30			r (3)			

Table 3-4. (Cont.) Allowable Mode/Submode Combinations

<u>Mode Submode</u>	<u>Product Data Category</u>			
	<u>Systems</u>	<u>Formatted Binary</u>	<u>Vector Graphic</u>	<u>A/N Raster Gridded</u>
Alphanumeric				
5/1			o	
5/2			o	
5/3			o	
5/4				r
5/20				o
Raster Scan				
6/1				r
6/20				r (5)
6/30				r (5)
6/40				r (5)
6/41				r (5)
6/42				r (5)
Gridded (Packed)				
7/1				r (1)
7/20				r
Gridded (Unpacked)				
3/1				r (2)
7/20				r
3/21				o (2)

NOTES:

- r - Mode/submode is required
- o - Mode/submode is optional

- (1) - Used in packed gridded products.
- (2) - Used in unpacked gridded products.
- (3) - Only one of these mode/submodes will be used.
- (4) - Used in formatted mixed products.
- (5) - For a non-satellite image, only 6/30 shall be used.
For a satellite image, either; 6/20 or 6/30 or both,
or 6/40 and 6/41, or 6/40 and 6/42 shall be used.