CHAPTER 9

TELEMETRY ATTRIBUTES TRANSFER STANDARD

9.1 General

Telemetry attributes are those parameters required by the receiving/ processing system to acquire, process, and display the telemetry data received from the test item/source. The Telemetry Attributes Transfer Standard (TMATS) provides a common definition and format to facilitate the transfer of information between the user and the test range and between ranges. The telemetry attributes are defined such that the information required to set up the telemetry receiving and processing equipment is provided. The format, while not necessarily compatible with any receiving/ processing system, will allow test ranges or other receiving systems to develop a computer conversion program to extract the information and to set up data required for their unique equipment configuration. Nonstandard parameter variations are not included in the attribute listings of choices but may be included by exception in the comments section of each group.

The intent of this chapter is to cover primarily attributes and terminology included in or consistent with the other chapters in document 106. For example, PCM format attributes should comply with the PCM standards as given in chapter 4. Other attributes are included, at times, for service and utility, but should not be construed as endorsements apart from the other 106 chapters.

9.2 Scope

The TMATS provides the definition of the telemetry attributes and specifies the media and data format necessary to permit the ready transfer of the information required to set up the telemetry receiving/processing functions at a test range. The standard does not conform to nor does it define existing or planned capabilities of any given test range. Only those parameters which are defined in this document are included by specific reference. Other nonstandard parameter values/definitions may be included in the comments section of each group.

9.3 Purpose

The TMATS provides a common format for the transfer of information between the user and a test range or between ranges (see appendix H). This format will minimize the "station unique" activities that are necessary to support any test item. In addition, it is intended to relieve the labor intensive process currently required to reformat the information by providing the information on computer compatible media, thus reducing errors and requiring less preparation time for test support.

9.4 Media and Data Structure

A variety of physical and electronic media are currently available for use in exchanging attribute information. The most important factor in selecting which medium to use is that the parties involved must agree to the specific medium of choice. If any data compression (such as Backup/Restore or Zip/Unzip) will be used, both parties should agree to its use.

A cover sheet describing the system that produced the attribute medium should accompany the attribute information. A recommended format for the cover sheet is given in appendix I.

9.4.1 Physical Format. Attributes for each mission configuration are to be supplied in a single physical file with contents as 7-bit ASCII coded characters. Line feed (LF) and carriage return (CR) may be used to improve readability of the information. Nonprintable characters will be discarded by the destination agency prior to translating the attributes into telemetry system configuration information.

For disks, multiple mission configurations may be provided on a single disk; however, each configuration must be in a separate file identified in the disk directory. File names should use the file extensions .TXT to indicate a text file, or .TMT to indicate a TMATS file. A stick-on label and the accompanying cover sheet identify the file names corresponding to the mission configuration used for each mission.

On magnetic tape, physical records may be any size up to 2048 bytes. A single end-of-file (EOF) mark indicates the end of a mission configuration. Additional mission configurations can be included in sequential files on a single tape. A double EOF is used to indicate the end of the last mission configuration on the tape. A stick-on label and an accompanying cover sheet identifying the missions for each configuration are required.

9.4.2 Logical Format. Each attribute appears in the file as a unique code name and as a data item. The code name appears first, delimited by a colon. The data item follows, delimited by a semicolon. Thus an attribute is formatted as A:B;, where A is the code name and B is the data item, in accordance with the tables in paragraph 9.5. Numeric values for data items may be either integer or decimal. Scientific notation (± d.dddddE± ee) is allowed only for the specific data items defined for its use in the tables in paragraph 9.5. For alphanumeric data items, including keywords, either upper or lower case is allowed; all defined keyword values are shown as upper case and enclosed in quotes in the tables in paragraph 9.5. Semicolons are not allowed in any data item (including comment items). Any number of attributes may be supplied within a physical record subject to the maximum mentioned in subparagraph 9.4.1. Attributes may appear in any order.

There are two basic types of attribute code names: single and multiple entry. Single-entry attributes are those for which there is only one data item. Multiple-entry attributes appear once in the definition tables in paragraph 9.5 but have multiple items; these items are assigned a number. The number appears in the code name preceded by a hyphen. For example, data source identifiers might have the following entries:

G\DSI-1:Aircraft;
G\DSI-2:Missile;
G\DSI-3:Target;

The code name COMMENT may be used to interject comments to improve readability. (Note that the comment data items, such as G\COM, are intended to convey further details within the TMATS file itself.) Comments must follow the attribute logical format, as shown below:

COMMENT: This is an example of a comment;

Refer to paragraph 9.5 for detailed definition of code names and attributes and appendix J for an example application of this standard.

9.5 Telemetry Attributes

The description of the mission configuration includes all potential sources of data, RF links, pre- or post-detected analog tapes, or onboard recorded magnetic tapes. Each of these have unique characteristics which must be defined. Each source is given a unique identity and its characteristics are specifically defined in associated attributes fields. In multiplexed systems, each data stream is uniquely identified by a data link name, which, in turn, is related to the data source name.

Only the information that is essential to define the attributes of a system is required. Nonapplicable information does not need to be included in the file. However, all attribute information given is to be provided in the specified format.

The attributes defined in this section proceed from the general level to the detailed level. The groups defined, in terms of data to be entered, are described next.

- General Information - establishes the top-level program definition and identifies the data sources.

- Transmission Attributes - define an RF link. There will be one group for each RF link identified in the General Information Group.

- Tape Source Attributes - identify a tape data source.

- Multiplex/Modulation Attributes - describe the FM/FM, FM/PM, or PM/PM multiplex characteristics. Each multiplexed waveform must have a unique set of attributes. For the analog measurement, the tie to the engineering units conversion is made in this group.

- Digital Data Attributes - are divided into three groups: the PCM Format Attributes, the PCM Measurement Description, and the 1553 Bus Data Attributes.

- PCM Format Attributes - define the PCM data format characteristics, including subframes and embedded formats. Each PCM format will have a separate format attributes group.

- PCM Measurement Descriptions - define each PCM measurand that ties the PCM measurement, format, and data conversion (calibration) together.

- 1553 Bus Data Attributes - specify the PCM encoded 1553 bus format characteristics.

- PAM Attributes - contain the definition of the PAM system. It includes the PAM format characteristics and measurement attributes. The tie to the engineering unit conversion is made for the measurands contained in the PAM format.

- Data Conversion Attributes - contain the data conversion information for all measurements in this telemetry system. The calibration data and conversion definition of raw telemetry data to engineering units is included. The tie to the measurands of the telemetry systems defined in the previous groups is via the measurement name.

- Airborne Hardware Attributes - define the configuration of airborne instrumentation hardware in use on the test item.

9.5.1 Contents. The following subparagraphs discuss the organization of the attributes and their relationships with the various groups.

9.5.1.1 Organization. Attribute information is organized according to a hierarchical structure in which related items are grouped and given a common heading. The number of levels varies within the overall structure and is a function of the logical association of the attributes. At the highest level, the telemetry attributes are defined for the following groups:

Identifier	Title
G	General Information
T	Transmission Attributes
R	Tape Source Attributes
M	Multiplexing/Modulation Attributes
P	PCM Format Attributes
D	PCM Measurement Description
B	1553 Bus Data Attributes
A	PAM Attributes
C	Data Conversion Attributes
H	Airborne Hardware Attributes

Within the structure, a lower case letter, for example, n, p, or r, indicates a multiple entry item with the index being the lower case letter. The range of these counters is from one to the number indicated in another data entry, usually with the appendage \N.

Within the tables, the code name, definition, and maximum field size are given for each individual attribute. The maximum field size is intended to be a guideline indicating the intended use of the attribute, and does not imply support of the maximum by any and all ranges. For example, the fact that the Number of Data Sources attribute is 2 characters long does not mean that 99 data sources are supported. Each range should be consulted as to their specific capabilities.

9.5.1.2 Group Relationships. The interrelationships between the various groups are shown pictorially in figure 9-1.

1. Data Source ID is unique within a General Information Group (G). It ties the Transmission Group (T) or the Tape Group (R) or both to the G group and to the Multiplex/ Modulation Group (M). 2. The tie from the M group to a PCM Group (P), a PAM Group (A) or a 1553 Bus Group (B) is the Data Link Name. 3. The tie from the P group to an embedded P group is another Data Link Name. 4. The tie from the M group to the Data Conversion Group (C) for an analog measurement is the Measurement Name. 5. The tie from the P group to the PCM Measurement Description Group (D) is the Data Link Name. 6. The tie from either the A, D, or B groups to the Data Conversion group is the Measurement Name.

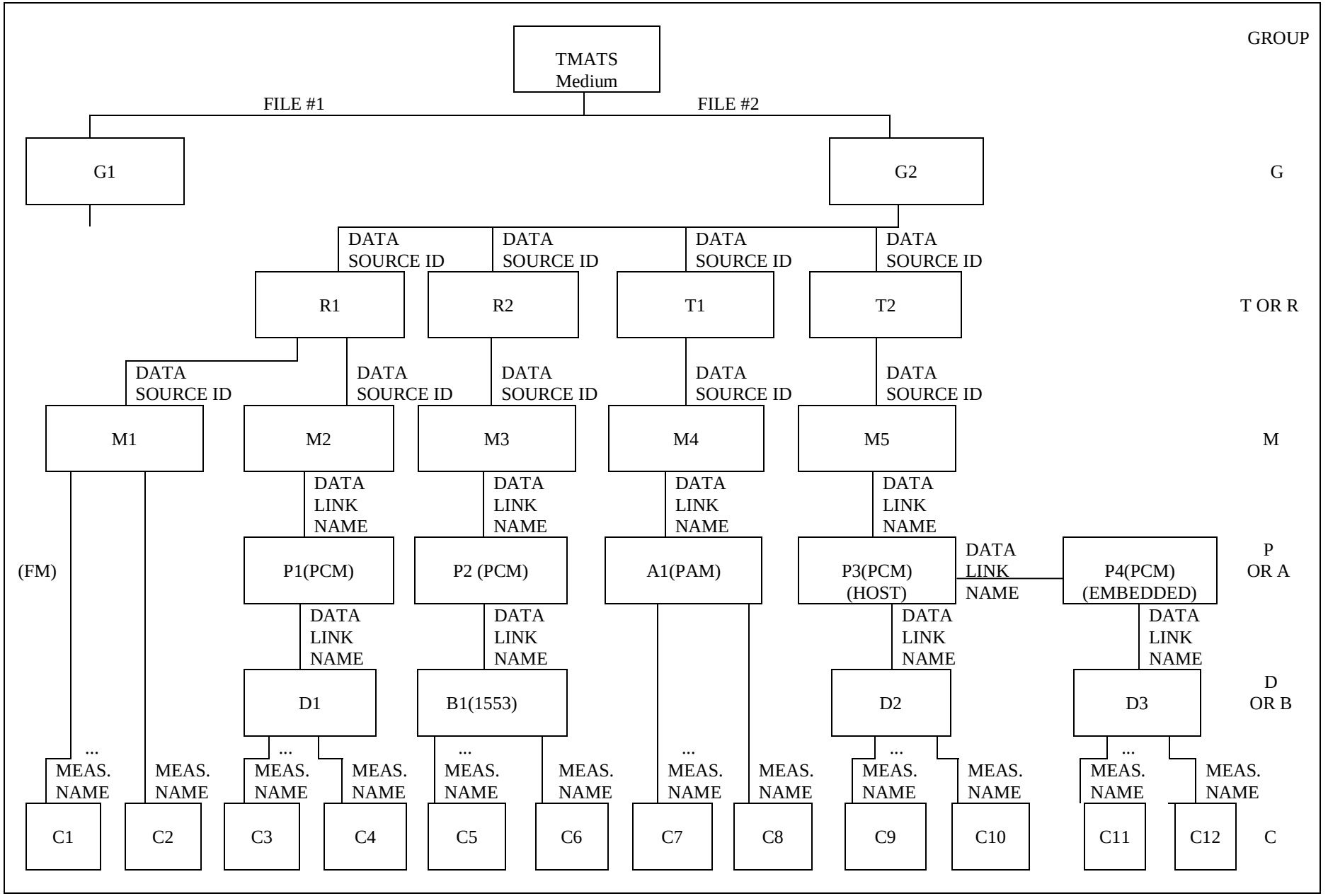

Figure 9-1. Group relationships.

9.5.2 General Information (G). The general information group provides overall program information. Figure 9-2 gives the overall information that is included in this group and Table 9-1 identifies and defines the data required including the dates associated with the detailed information. Since the identification of the data sources is an integral part of the remaining groups, each source must be identified uniquely.

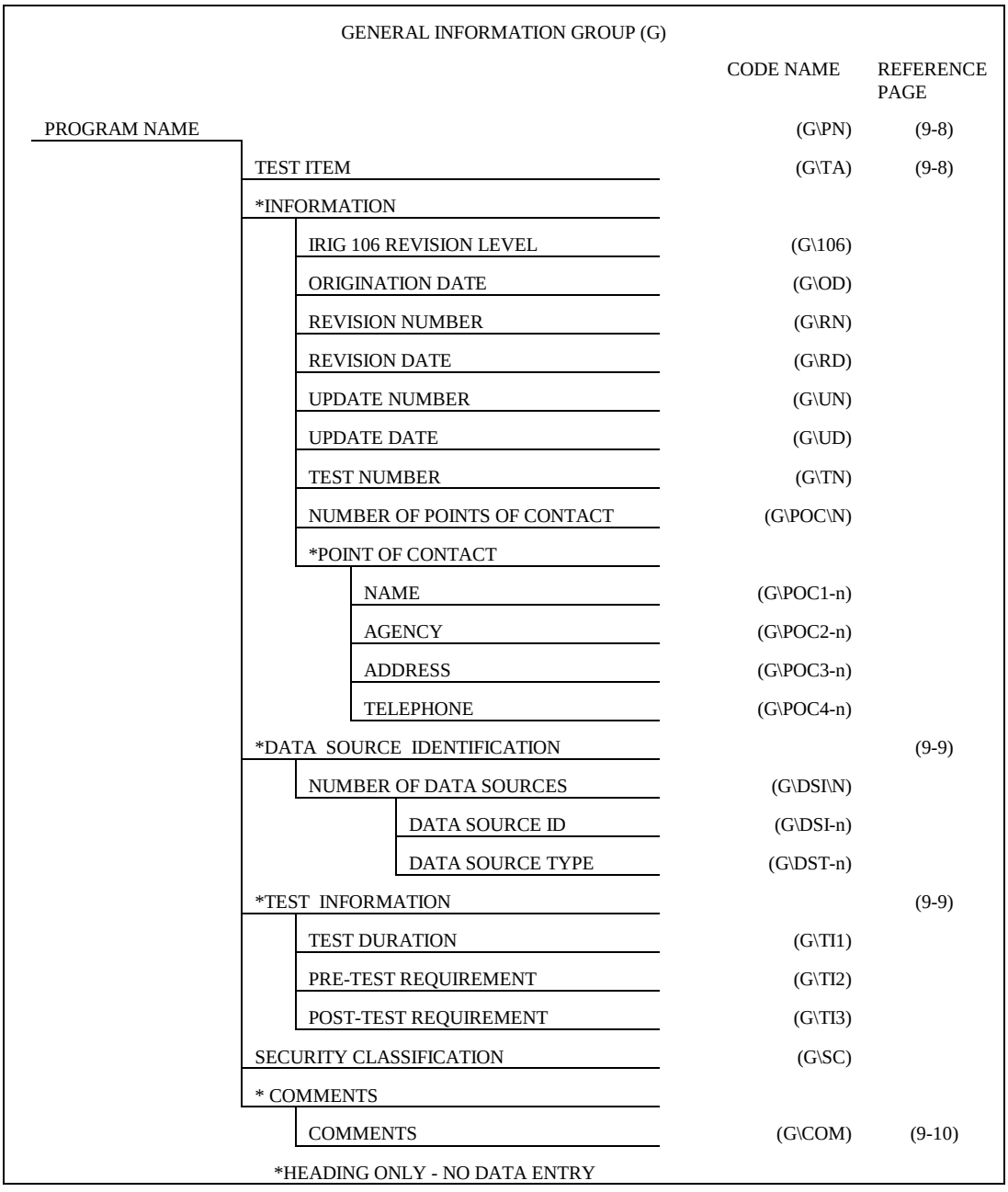

Figure 9-2. General Information Group (G).

TABLE 9-1. GENERAL INFORMATION GROUP (G)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
PROGRAM NAME	16	G\PN	NAME OF PROGRAM
TEST ITEM	64	G\TA	TEST ITEM DESCRIPTION IN TERMS OF NAME, MODEL, PLATFORM, OR IDENTIFICATION CODE, AS APPROPRIATE.
INFORMATION			
IRIG 106 REVISION LEVEL	2	G\106	VERSION OF IRIG 106 STANDARD USED TO GENERATE THIS TMATS FILE.
ORIGINATION DATE	10	G\OD	DATE OF ORIGINATION OF THIS MISSION CONFIGURATION. DD - DAY MM – MONTH YYYY – YEAR (MM-DD-YYYY)
REVISION NUMBER	4	G\RN	REVISION NUMBER ASSOCIATED WITH THIS MISSION CONFIGURATION
REVISION DATE	10	G\RD	DATE OF REVISION. DD - DAY MM – MONTH YYYY – YEAR (MM-DD-YYYY)
UPDATE NUMBER	2	G\UN	UPDATE NUMBER OF CURRENT CHANGE WHICH HAS NOT BEEN INCORPORATED AS A REVISION
UPDATE DATE	10	G\UD	DATE OF UPDATE. DD - DAY MM – MONTH YYYY – YEAR (MM-DD-YYYY)
TEST NUMBER	16	G\TN	TEST IDENTIFICATION
NUMBER OF POINTS OF CONTACT	1	G\POC\N	NUMBER OF POINTS OF CONTACT TO BE GIVEN
POINT OF CONTACT: NAME AGENCY ADDRESS TELEPHONE	 24 48 48 20	 G\POC1-n G\POC2-n G\POC3-n G\POC4-n	LIST EACH OF THE RESPONSIBLE AGENCIES AND THEIR POINT OF CONTACT

TABLE 9-1 (Cont'd). GENERAL INFORMATION GROUP (G)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA SOURCE IDENTIFICATION			
NUMBER OF DATA SOURCES	2	G\DSI\N	SPECIFY THE NUMBER OF DATA SOURCES: FOR RF TELEMETRY SYSTEMS, GIVE THE NUMBER OF CARRIERS; FOR TAPE RECORDED DATA, IDENTIFY THE NUMBER OF TAPE SOURCES.
DATA SOURCE ID	32	G\DSI-n	PROVIDE A DESCRIPTIVE NAME FOR THIS SOURCE. EACH SOURCE IDENTIFIER MUST BE UNIQUE.
DATA SOURCE TYPE	3	G\DST-n	SPECIFY THE TYPE OF SOURCE: RF - 'RF', TAPE - 'TAP', OTHER - 'OTH' .
PROVIDE THE ABOVE TWO ITEMS FOR EACH DATA SOURCE.			
TEST INFORMATION			
TEST DURATION	4	G\TI1	APPROXIMATE DURATION OF TEST IN HOURS.
PRE-TEST REQUIREMENT	1	G\TI2	INDICATE WHETHER A PRE-TEST REQUIREMENT IS APPLICABLE. PROVIDE DETAILS IN COMMENT RECORD ('Y' OR 'N')
POST-TEST REQUIREMENT	1	G\TI3	SPECIFY WHETHER A POST-TEST REQUIREMENT IS APPLICABLE. PROVIDE DETAILS IN COMMENT RECORD ('Y' OR 'N').
SECURITY CLASSIFICATION	1	G\SC	PROVIDE THE CLASSIFICATION OF THE PROJECT DATA. PROVIDE CLASSIFICATION GUIDE DESCRIPTION IN COMMENT RECORD. UNCLASSIFIED - 'U' CONFIDENTIAL - 'C' SECRET - 'S' TOP SECRET - 'T' OTHER - 'O'

TABLE 9-1 (Cont'd). GENERAL INFORMATION GROUP (G)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
COMMENTS			
COMMENTS	1600	G\COM	INFORMATION THAT IS NEEDED TO COMPLETE DATA REQUESTED AND ANY OTHER INFORMATION DESIRED.

9.5.3 Transmission Attributes (T).

The Transmission Attributes are presented graphically in figure 9-3 and specified in table 9-2. The information contained within this group is used to set up the RF receiver through the detection and recovery of the baseband composite waveform. The format contains the information needed to configure the antenna and receiver subsystems.

Additional equipment inserted in a specific range configuration such as microwave or other relay is intended to be transparent to the user and is not described under Transmission Attributes.

Because the information is mutually exclusive, only the appropriate frequency modulation (FM) or phase modulation (PM) system data set is required for a link.

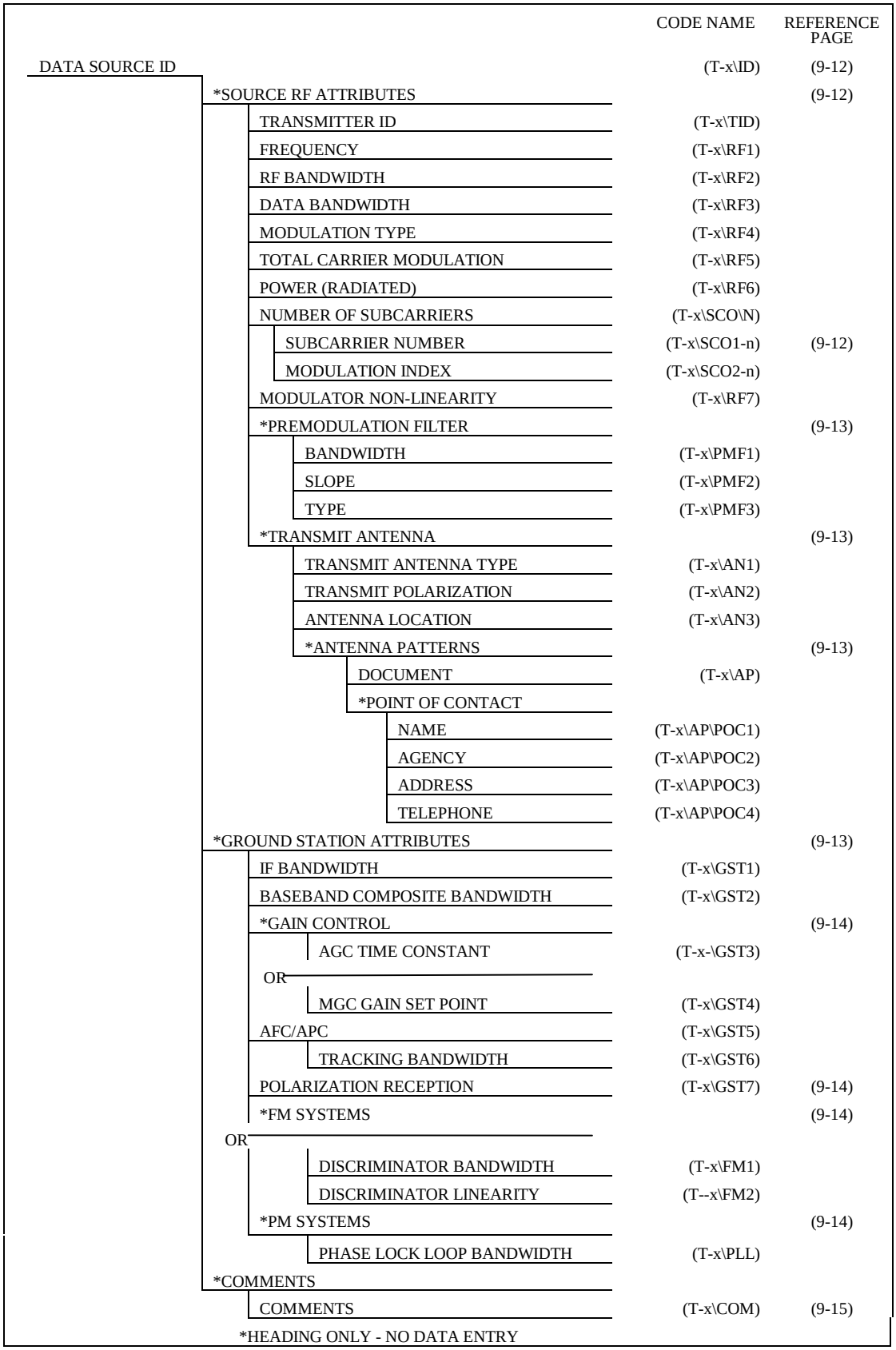

Figure 9-3. Transmission Attributes Group (T).

TABLE 9-2. TRANSMISSION ATTRIBUTES GROUP (T)

PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA SOURCE ID	32	T-x\ID	DATA SOURCE ID CONSISTENT WITH GENERAL INFORMATION GROUP.
SOURCE RF ATTRIBUTES			
TRANSMITTER ID	12	T-x\TID	TRANSMITTER IDENTIFICATION
FREQUENCY	6	T-x\RF1	CARRIER FREQUENCY, IN MHz. IF PROGRAMMABLE, ENTER 'P', AND DEFINE IN COMMENT RECORD.
RF BANDWIDTH	6	T-x\RF2	TOTAL RF BANDWITH (-60 dB) OF MODULATED SIGNAL, IN MHz.
DATA BANDWIDTH	6	T-x\RF3	COMPOSITE BASEBAND DATA BANDWIDTH (3 dB), IN kHz.
MODULATION TYPE	8	T-x\RF4	DEFINE THE MODULATION TYPE: 'FM' 'PM' 'BPSK' 'DPSK' 'QPSK' 'OTHR' 'FQPSK-B'
TOTAL CARRIER MODULATION	6	T-x\RF5	FOR FM SYSTEM DEFINE TOTAL CARRIER DEVIATION, PEAK-TO-PEAK, IN kHz. FOR PM SYSTEM DEFINE TOTAL PHASE MODULATION, PEAK-TO-PEAK, IN RADIANS.
POWER (RADIATED)	4	T-x\RF6	TOTAL TRANSMITTED POWER WHEN MODULATED, IN WATTS.
NUMBER OF SUBCARRIERS	2	T-x\ SCO\N	NUMBER OF SUBCARRIERS IN THE COMPOSITE BASEBAND WAVEFORM, n. IF NONE, ENTER 'NO'.
SUBCARRIER NUMBER	5	T-x\ SCO1-n	GIVE THE IRIG CHANNEL NUMBER FOR THE SUBCARRIER. IF NONSTANDARD SUBCARRIER, ENTER 'NO', AND ENTER FREQUENCY IN THE COMMENTS SECTION WHERE n IS AN IDENTIFICATION TAG FOR THE SUBCARRIER.
MODULATION INDEX	4	T-x\ SCO2-n	SPECIFY THE MODULATION INDEX FOR EACH SUBCARRIER IN THE COMPOSITE WAVEFORM, AS APPROPRIATE.

TABLE 9-2 (Cont'd). TRANSMISSION ATTRIBUTES GROUP (T)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
MODULATOR NONLINEARITY	4	T-x\RF7	MODULATOR NONLINEARITY, IN PERCENT.
PREMODULATION FILTER			
BANDWIDTH	6	T-x\PMF1	PRE-MODULATION COMPOSITE FILTER BANDWIDTH, 3 dB CUT-OFF FREQUENCY, IN kHz.
SLOPE	2	T-x\PMF2	PRE-MODULATION FILTER ASYMPTOTIC ROLL-OFF SLOPE, dB/OCTAVE.
TYPE	2	T-x\PMF3	SPECIFY THE FILTER TYPE: CONSTANT AMPLITUDE - 'CA' CONSTANT DELAY - 'CD' OTHER - 'OT'
TRANSMIT ANTENNA			
TRANSMIT ANTENNA TYPE	16	T-x\AN1	TRANSMIT ANTENNA TYPE.
TRANSMIT POLARIZATION	4	T-x\AN2	TRANSMIT ANTENNA POLARIZATION. 'RHCP' 'LHCP' LINEAR - 'LIN'
ANTENNA LOCATION	16	T-x\AN3	DESCRIBE THE ANTENNA LOCATION.
ANTENNA PATTERNS			
DOCUMENT	16	T-x\AP	IDENTIFY DOCUMENT HAVING ANTENNA PATTERNS.
POINT OF CONTACT: NAME AGENCY ADDRESS TELEPHONE	 24 48 48 20	 T-x\AP\POC1 T-x\AP\POC2 T-x\AP\POC3 T-x\AP\POC4	IDENTIFY THE POINT OF CONTACT FOR ADDITIONAL INFORMATION.
GROUND STATION ATTRIBUTES			
IF BANDWIDTH	6	T-x\GST1	DEFINE THE IF BANDWIDTH (3 dB) IN MHz.
BASEBAND COMPOSITE BANDWIDTH	6	T-x\GST2	DEFINE THE CUTOFF FREQUENCY (3 dB), IN kHz, OF THE OUTPUT FILTER.

TABLE 9-2 (Cont'd). TRANSMISSION ATTRIBUTES GROUP (T)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
GAIN CONTROL			
AGC TIME CONSTANT	4	T-x\GST3	SPECIFY THE AGC TIME CONSTANT DESIRED IN MILLISECONDS.
MGC GAIN SET POINT	6	T-x\GST4	PROVIDE THE MANUAL GAIN CONTROL SET POINT IN TERMS OF RECEIVED SIGNAL STRENGTH, dBm.
AFC/APC	3	T-x\GST5	SPECIFY AUTOMATIC FREQUENCY CONTROL ('AFC') OR AUTOMATIC PHASE CONTROL ('APC') OR NONE ('NON').
TRACKING BANDWIDTH	4	T-x\GST6	SPECIFY TRACKING LOOP BANDWIDTH IN Hz.
POLARIZATION RECEPTION	5	T-x\GST7	SPECIFY POLARIZATION TO BE USED: RHCP - 'RHCP' LHCP - 'LHCP' BOTH - 'BOTH' BOTH WITH DIVERSITY COMBINING: PRE-DETECTION-'B&DPR' POST-DETECTION-'B&DPO' DIVERSITY COMBINING (ONLY): PRE-DETECTION-'PRE-D' POST-DETECTION-'POS-D' OTHER - 'OTHER', SPECIFY IN COMMENTS.
FM SYSTEMS			
DISCRIMINATOR BANDWIDTH	4	T-x\FM1	SPECIFY THE DISCRIMINATOR BANDWIDTH REQUIRED IN MHz.
DISCRIMINATOR LINEARITY	4	T-x\FM2	SPECIFY THE REQUIRED LINEARITY OVER THE BANDWIDTH SPECIFIED.
PM SYSTEMS			
PHASE LOCK LOOP BANDWIDTH	4	T-x\PLL	SPECIFY THE PHASE LOCKED LOOP BANDWIDTH.

TABLE 9-2 (Cont'd). TRANSMISSION ATTRIBUTES GROUP (T)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
COMMENTS			
COMMENTS	1600	T-x\COM	PROVIDE THE ADDITIONAL INFORMATION REQUIRED TO COMPLETE THE ABOVE INFORMATION REQUESTED OR TO PROVIDE ANY OTHER INFORMATION THAT IS DESIRED.

9.5.4 Tape Source Attributes (R). This group describes the attributes required when the data source is a magnetic tape as specified in chapter 6. In the case of the tape data link identification, each data source must be identified. In some cases the data source identification may be identical, particularly when the same information has been received from different receiver sites, on different polarizations, or on different carriers for redundancy purposes. Some of the information requested will be available only from the recording site or the dubbing location.

Figure 9-4 indicates the information required. Various categories of information have been included. In the data section of the attributes, it will be necessary to repeat the items until all of the data sources have been defined, including the multiple tracks, which contain ground station data of interest. Table 9-3 defines the information required. Any nonstandard tape recordings will require explanation in the comments and may require supplemental definition.

	CODE NAME	REFERENCE PAGE
DATA SOURCE ID	(R-x\ID)	(9-17)
TAPE ID	(R-x\RID)	(9-17)
TAPE DESCRIPTION	(R-x\R1)	
*TAPE CHARACTERISTICS		
TAPE TYPE	(R-x\TC1)	
TAPE MANUFACTURER	(R-x\TC2)	
TAPE CODE	(R-x\TC3)	
TAPE WIDTH	(R-x\TC4)	
TAPE HOUSING	(R-x\TC5)	
TYPE OF TRACKS	(R-x\TT)	
NUMBER OF TRACKS	(R-x\N)	
RECORD SPEED	(R-x\TC6)	
DATA PACKING DENSITY	(R-x\TC7)	
TAPE REWOUND	(R-x\TC8)	
*RECORDER INFORMATION		(9-18)
TAPE DRIVE MANUFACTURER	(R-x\RI1)	
TAPE DRIVE MODEL	(R-x\RI2)	
ORIGINAL TAPE	(R-x\RI3)	
DATE AND TIME CREATED	(R-x\RI4)	
*CREATING ORGANIZATION POINT OF CONTACT		(9-18)
NAME	(R-x\POC1)	
AGENCY	(R-x\POC2)	
ADDRESS	(R-x\POC3)	
TELEPHONE	(R-x\POC4)	
DATE OF DUB	(R-x\RI5)	
*DUBBING ORGANIZATION POINT OF CONTACT		
NAME	(R-x\DPOC1)	
AGENCY	(R-x\DPOC2)	
ADDRESS	(R-x\DPOC3)	
TELEPHONE	(R-x\DPOC4)	
*DATA		(9-19)
TRACK NUMBER	(R-x\TK1-n)	
RECORDING TECHNIQUE	(R-x\TK2-n)	
DATA SOURCE ID	(R-x\DSI-n)	
DATA DIRECTION	(R-x\TK3-n)	
*REFERENCE TRACK		(9-20)
NUMBER OF REFERENCE TRACKS	(R-x\RT\N)	
TRACK NUMBER	(R-x\RT1-n)	
REFERENCE FREQUENCY	(R-x\RT2-n)	
*COMMENTS		
COMMENTS	(R-x\COM)	(9-20)

*HEADING ONLY - NO DATA ENTRY

Figure 9-4. Tape Source Attributes Group (R).

TABLE 9-3. TAPE SOURCE ATTRIBUTES GROUP (R)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA SOURCE ID	32	R-x\ID	DATA SOURCE ID CONSISTENT WITH GENERAL INFORMATION GROUP.
TAPE ID	32	R-x\RID	TAPE IDENTIFICATION.
TAPE DESCRIPTION	32	R-x\R1	TAPE REEL NUMBER OR OTHER DEFINITION.
TAPE CHARACTERISTICS			
TAPE TYPE	4	R-x\TC1	SPECIFY THE TAPE TYPE: ANALOG - 'ANAL' CASSETTE - 'CASS' HDDR - 'HDDR' PARALLEL - 'PARA' OTHER - 'OTHR', DEFINE IN COMMENTS RECORD.
TAPE MANUFACTURER	8	R-x\TC2	NAME OF MANUFACTURER OF THE TAPE.
TAPE CODE	8	R-x\TC3	SPECIFY MANUFACTURER'S TAPE DESIGNATION CODE.
TAPE WIDTH	4	R-x\TC4	PHYSICAL DIMENSION OF TAPE WIDTH, IN.
TAPE HOUSING	5	R-x\TC5	STATE THE REEL SIZE, INCHES: '10.5' '14.0' '15.0' '16.0' 'OTHER' STATE THE CASSETTE SIZE, MM: '12.65' '19.0' 'OTHER'
TYPE OF TRACKS	2	R-x\TT	STATE THE TYPE OF TRACKS ON THE TAPE: LONGITUDINAL - 'LO' ROTARY - 'RO'
NUMBER OF TRACKS	2	R-x\N	STATE THE NUMBER OF TRACKS ON THE TAPE.
RECORD SPEED	4	R-x\TC6	STATE RECORD SPEED IN INCHES PER SECOND.

TABLE 9-3 (Cont'd). TAPE SOURCE ATTRIBUTES GROUP (R)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA PACKING DENSITY	2	R-x\TC7	STATE RECORDING SYSTEM BANDWIDTH: INTERMEDIATE BAND - 'IM' WIDE BAND - 'WB' DOUBLE DENSITY - 'DD' OTHER - 'OT'
TAPE REWOUND	1	R-x\TC8	YES - 'Y' NO - 'N'
RECORDER INFORMATION			
TAPE DRIVE MANUFACTURER	8	R-x\RI1	NAME OF TAPE DRIVE MANUFACTURER
TAPE DRIVE MODEL	8	R-x\RI2	MANUFACTURER'S MODEL NUMBER OF TAPE DRIVE USED TO CREATE THE TAPE.
ORIGINAL TAPE	1	R-x\RI3	YES - 'Y' NO - 'N'
DATE AND TIME CREATED	19	R-x\RI4	DATE AND TIME TAPE WAS CREATED: DD - DAY MM - MONTH YYYY - YEAR HH - HOUR MI – MINUTE SS - SECOND (MM-DD-YYYY-HH-MI-SS)
CREATING ORGANIZATION POINT OF CONTACT:			POINT OF CONTACT AT THE FACILITY CREATING THE TAPE: NAME, ADDRESS, AND TELEPHONE.
NAME	24	R-x\POC1	
AGENCY	48	R-x\POC2	
ADDRESS	48	R-x\POC3	
TELEPHONE	20	R-x\POC4	
DATE OF DUB	10	R-x\RI5	DATE THE DUB WAS MADE: DD - DAY MM - MONTH YYYY - YEAR (MM-DD-YYYY)

TABLE 9-3 (Cont'd). TAPE SOURCE ATTRIBUTES GROUP (R)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DUBBING ORGANIZATION POINT OF CONTACT:			POINT OF CONTACT AT THE DUBBING AGENCY: NAME, ADDRESS, AND TELEPHONE
NAME	24	R-x\ DPOC1	
AGENCY	48	R-x\ DPOC2	
ADDRESS	48	R-x\ DPOC3	
TELEPHONE	20	R-x\ DPOC4	
DATA (DEFINE INFORMATION CONTAINED ON EACH TRACK OF THE TAPE.)			
TRACK NUMBER	2	R-x\TK1-n	SPECIFY THE TRACK NUMBER THAT CONTAINS THE DATA TO BE SPECIFIED.
RECORDING TECHNIQUE	6	R-x\TK2-n	SPECIFY THE RECORDING TECHNIQUE USED FOR THIS TRACK: FM/FM - 'FM/FM' HDDR - 'HDDR' PRE-DETECTION - 'PRE-D' DIRECT - 'DIRECT' FM-WIDE BAND GRP I - 'FMWBI' FM-WIDE BAND GRP II - 'FMWBII' FM-INTERMEDIATE BAND - FM-IM' FM-NARROW BAND - 'FM-NB' DOUBLE DENSITY - 'DOUDEN' ROTARY (SINGLE TRACK) - 'RO-K' ROTARY (MULTIPLEXED) - 'RO-MUX' OTHER - 'OTHER'.

TABLE 9-3 (Cont'd). TAPE SOURCE ATTRIBUTES GROUP (R)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA SOURCE ID	32	R-x\DSI-n	SPECIFY THE DATA SOURCE IDENTIFICATION. FOR A SITE RECORDED MULTIPLEXED TRACK, PROVIDE A DATA SOURCE IDENTIFICATION.
DATA DIRECTION	3	R-x\TK3-n	FORWARD - 'FWD' REVERSE - 'REV'
REFERENCE TRACK			
NUMBER OF REFERENCE TRACKS	1	R-x\RT\N	SPECIFY THE NUMBER OF REFERENCE TRACKS.
TRACK NUMBER	2	R-x\RT1-n	STATE THE TRACK LOCATION OF THE REFERENCE SIGNAL.
REFERENCE FREQUENCY	6	R-x\RT2-n	FREQUENCY OF REFERENCE SIGNAL, kHz.
THERE WILL BE ONE TAPE SOURCE ATTRIBUTES GROUP FOR EACH TAPE SOURCE.			
COMMENTS			
COMMENTS	3200	R-x\COM	THIS RECORD IS TO BE USED TO PROVIDE THE ADDITIONAL INFORMATION REQUESTED AND TO PROVIDE ANY OTHER INFORMATION DESIRED.

9.5.5 Multiplex/Modulation Attributes (M). The composite baseband waveform is received from the receiver or tape reproducer electronics and is passed to the demultiplexer/demodulator for further processing. Figure 9-5 summarizes the information that is required to continue processing the data. The composite baseband waveform may consist of any number of signals, which are modulated directly onto the RF carrier including a baseband data signal, and one or more subcarriers.

The baseband data signal may be PCM, pulse amplitude modulation (PAM), or analog data. The PCM and PAM data streams must be defined in terms of a data link name. This data link name is unique for each system that contains different data, has a different format, or has a different data rate. The analog measurand is typically converted into engineering units appropriate for the measurand. The measurement name provides the connection to the Data Conversion Attributes Group (C).

Subcarriers, both standard and nonstandard, may be part of the baseband composite waveform. These, in turn, may be modulated with PCM, PAM, or analog data. As with the baseband data signal, these data channels must be defined. Table 9-4 specifies the required information for the data signal attributes.

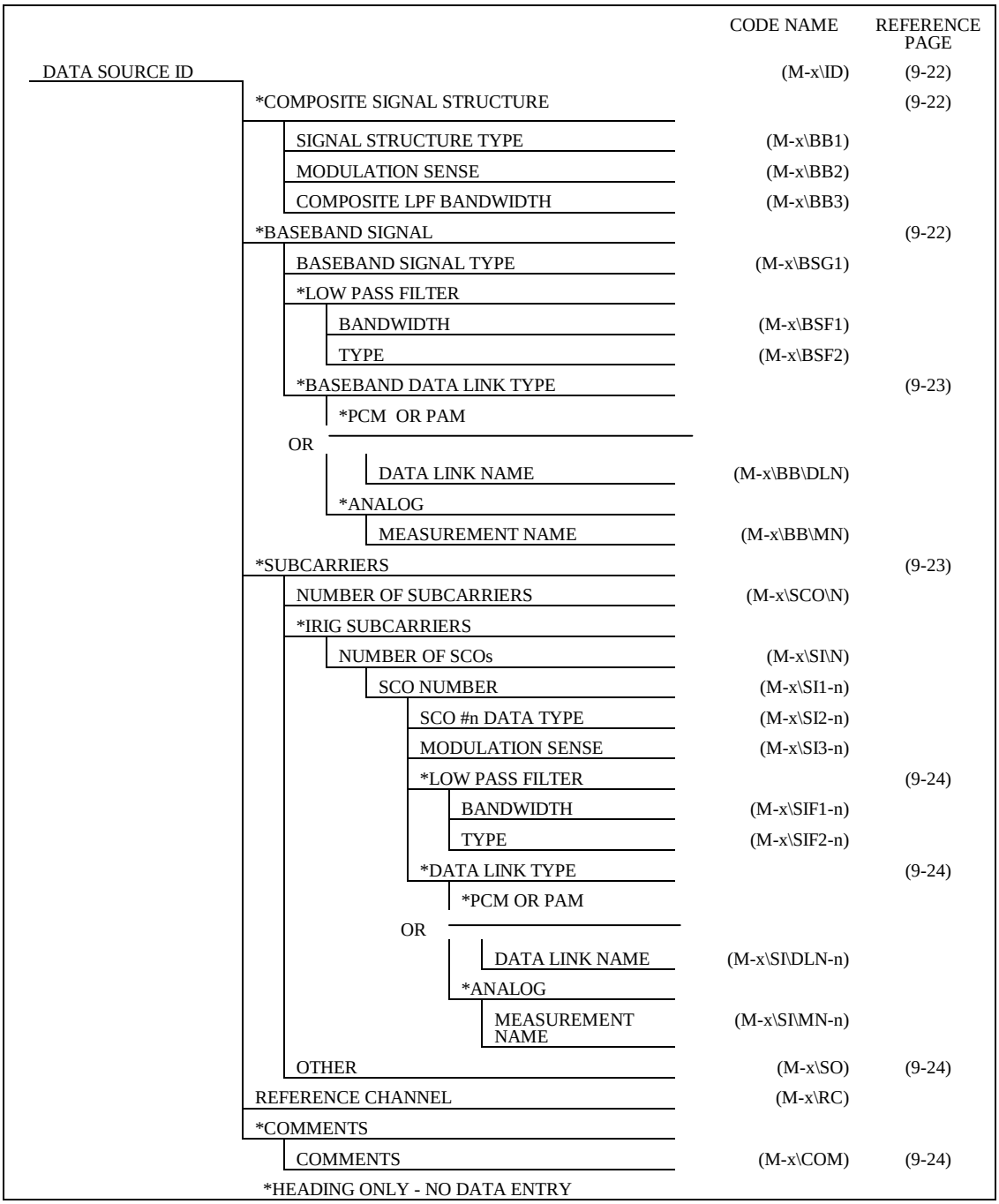

Figure 9-5. Multiplex/Modulation Attributes Group (M).

TABLE 9-4. MULTIPLEX/MODULATION GROUP (M)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA SOURCE ID	32	M-x\ID	DATA SOURCE IDENTIFICATION
COMPOSITE SIGNAL STRUCTURE			
SIGNAL STRUCTURE TYPE	7	M-x\BB1	SPECIFY THE COMPOSITE BASEBAND SIGNAL STRUCTURE: 'PCM' HYBRID: 'PAM' 'ANA/SCO' 'ANALOG' 'PAM/SCO' ' SCO's' 'PCM/SCO' 'OTHER'
MODULATION SENSE	3	M-x\BB2	SPECIFY THE MODULATION SENSE: 'POS' – INDICATES THAT AN INCREASING VOLTAGE RESULTS IN AN INCREASE IN FREQUENCY. 'NEG' – INDICATES THAT A DECREASING VOLTAGE RESULTS IN AN INCREASE IN FREQUENCY
COMPOSITE LPF BANDWIDTH	6	M-x\BB3	GIVE THE LOW PASS BANDWIDTH OF THE COMPOSITE WAVEFORM, IN kHz. (3 dB CUTOFF FREQUENCY).
BASEBAND SIGNAL			
BASEBAND SIGNAL TYPE	3	M-x\BSG1	TYPE OF BASEBAND DATA: 'PCM' 'ANA' (ANALOG) 'PAM' 'OTH' (OTHER) 'NON' (NONE).
LOW PASS FILTER			
BANDWIDTH	6	M-x\BSF1	SPECIFY LOW PASS FILTER BANDWIDTH, 3 dB, CUTOFF FREQUENCY, IN kHz.
TYPE	2	M-x\BSF2	SPECIFY THE FILTER TYPE: CONSTANT AMPLITUDE - 'CA' CONSTANT DELAY - 'CD' OTHER - 'OT', DEFINE IN THE COMMENT RECORD.

TABLE 9-4 (Cont'd). MULTIPLEX/MODULATION GROUP (M)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
BASEBAND DATA LINK TYPE			
PCM OR PAM			
DATA LINK NAME	32	M-x\BB\ DLN	SPECIFY THE DATA LINK NAME FOR PCM OR PAM DATA FORMAT.
ANALOG			
MEASUREMENT NAME	32	M-x\BB\ MN	GIVE THE MEASURAND NAME.
SUBCARRIERS			
NUMBER OF SUBCARRIERS	2	M-x\SCO\ N	SPECIFY THE NUMBER OF SUBCARRIERS ON THIS DATA LINK.
IRIG SUBCARRIERS			
NUMBER OF SCOs	2	M-x\SI\N	SPECIFY THE NUMBER OF IRIG SUBCARRIERS.
SCO NUMBER	5	M-x\SI1-n	GIVE THE IRIG CHANNEL NUMBER FOR THE SUBCARRIER.
SCO #n DATA TYPE	3	M-x\SI2-n	SPECIFY THE TYPE OF DATA ON THE SUBCARRIER: PCM - 'PCM' ANALOG - 'ANA' PAM - 'PAM' OTHER - 'OTH'.
MODULATION SENSE	3	M-x\SI3-n	SPECIFY THE MODULATION SENSE: 'POS' - INDICATES THAT AN INCREASING VOLTAGE RESULTS IN AN INCREASE IN FREQUENCY 'NEG' - INDICATES THAT A DECREASING VOLTAGE RESULTS IN AN INCREASE IN FREQUENCY.

TABLE 9-4 (Cont'd). MULTIPLEX/MODULATION GROUP (M)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
LOW PASS FILTER			
BANDWIDTH	6	M-x\ SIF1-n	SPECIFY THE LOW PASS FILTER CUTOFF FREQUENCY (3 dB), IN kHz.
TYPE	2	M-x\ SIF2-n	SPECIFY THE FILTER TYPE: CONSTANT AMPLITUDE - 'CA' CONSTANT DELAY - 'CD' OTHER - 'OT', DEFINE IN THE COMMENTS RECORD.
DATA LINK TYPE			
PCM OR PAM			
DATA LINK NAME	32	M-x\SI\ DLN-n	SPECIFY THE DATA LINK NAME FOR PCM AND PAM DATA FORMATS.
ANALOG			
MEASUREMENT NAME	32	M-x\SI\ MN-n	GIVE THE MEASURAND NAME.
REPEAT THE ABOVE FOR EACH IRIG SUBCARRIER ON THIS CARRIER.			
OTHER	1	M-x\SO	ARE THERE NONSTANDARD SUBCARRIERS? YES - 'Y', NO -'N' DEFINE IN THE COMMENTS.
REFERENCE CHANNEL	6	M-x\RC	FREQUENCY OF REFERENCE CHANNEL IN kHz, IF APPLICABLE.
COMMENTS			
COMMENTS	3200	M-x\COM	PROVIDE THE ADDITIONAL INFORMATION REQUIRED AND ANY OTHER INFORMATION DESIRED.

9.5.6 Digital Data Attributes. The digital data attributes are separated into three groups containing PCM-related attribute information. The PCM Format Attributes Group (P) is described in subparagraph 9.5.6.1. The PCM Measurement Description Attributes, contained in (D), are described in subparagraph 9.5.6.2. Subparagraph 9.5.6.3 depicts the MIL-STD-1553 Bus Data attributes (B).

9.5.6.1 PCM Format Attributes (P). The PCM Format Attributes Group contains the information required to decommutate the PCM data stream. Operations of both class I and II are included. (Limited information is incorporated for class II operation.) Figure 9-6 presents the flow and summary of the information required. In general, only standard methods of synchronization have been included except for cases where considerable application is already in place. Inclusion should not be taken to mean that the nonstandard approaches are better or desired. Table 9-5 contains the PCM Format Attributes. The group defines and specifies the frame format and the information necessary to set up the PCM decommutation. Refer to chapter 4 for the definition of terms (such as major and minor frames and subframes) and word numbering conventions.

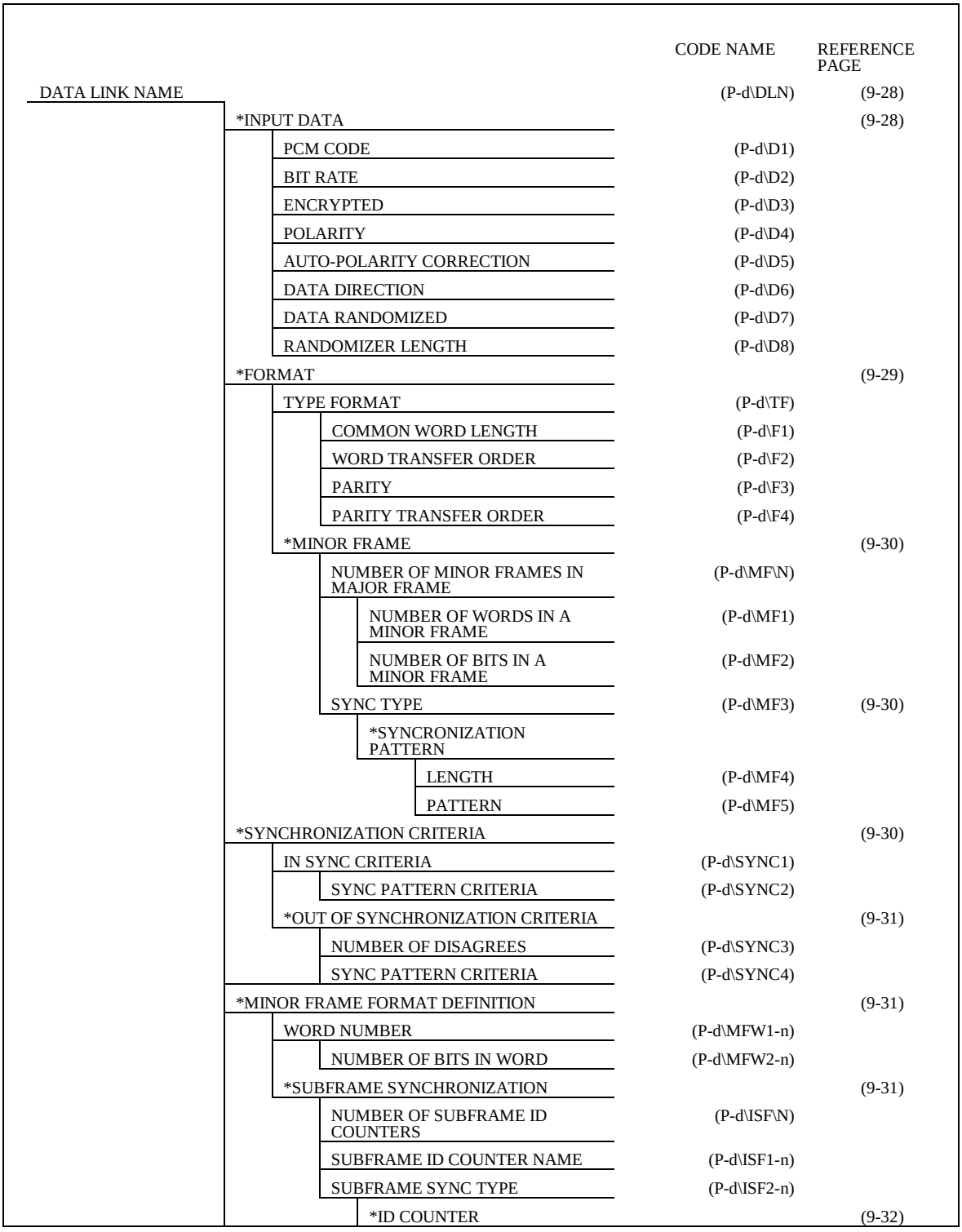

Figure 9-6. PCM Format Attributes Group (P).

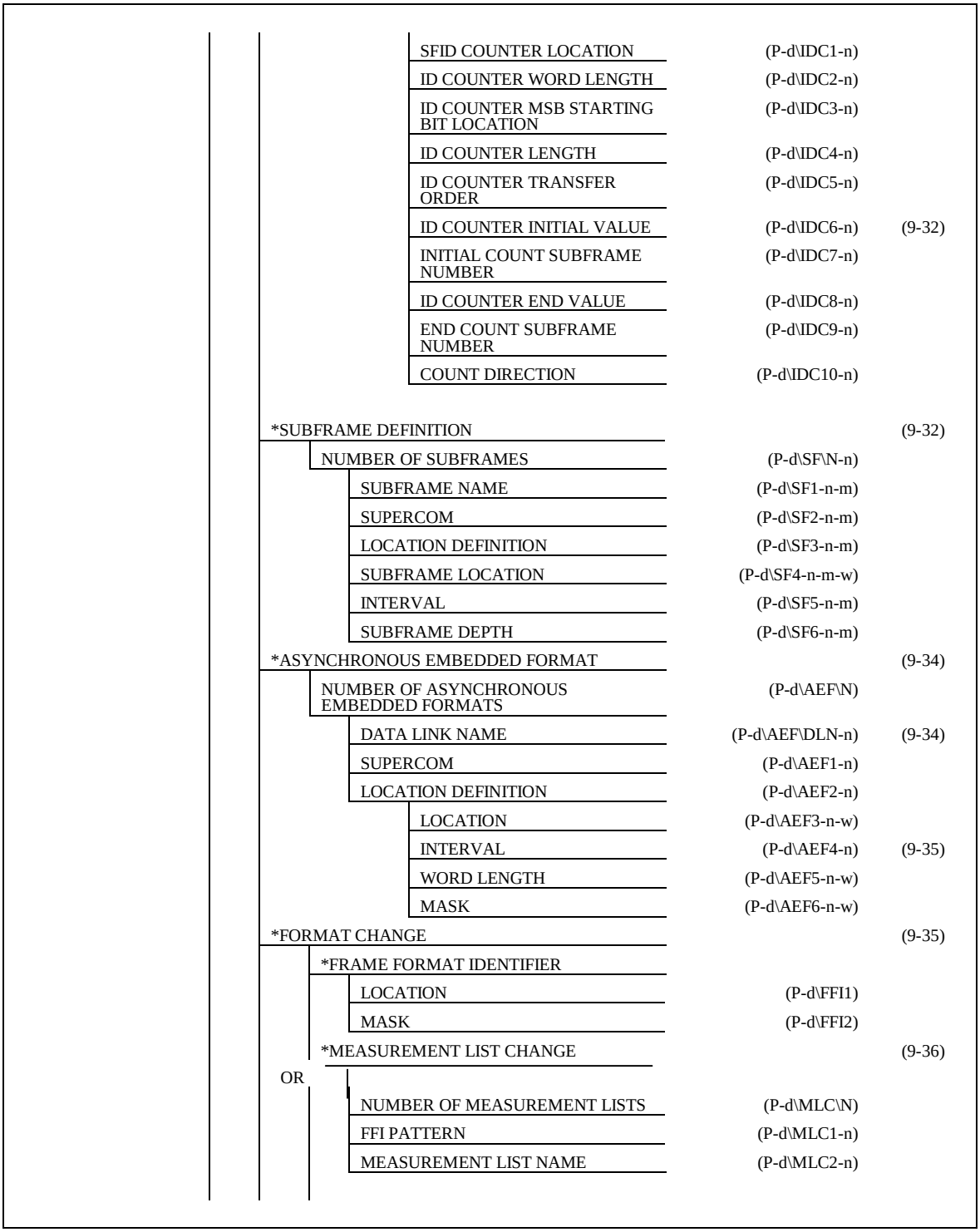

Figure 9-6 (Cont'd). PCM Format Attributes Group (P).

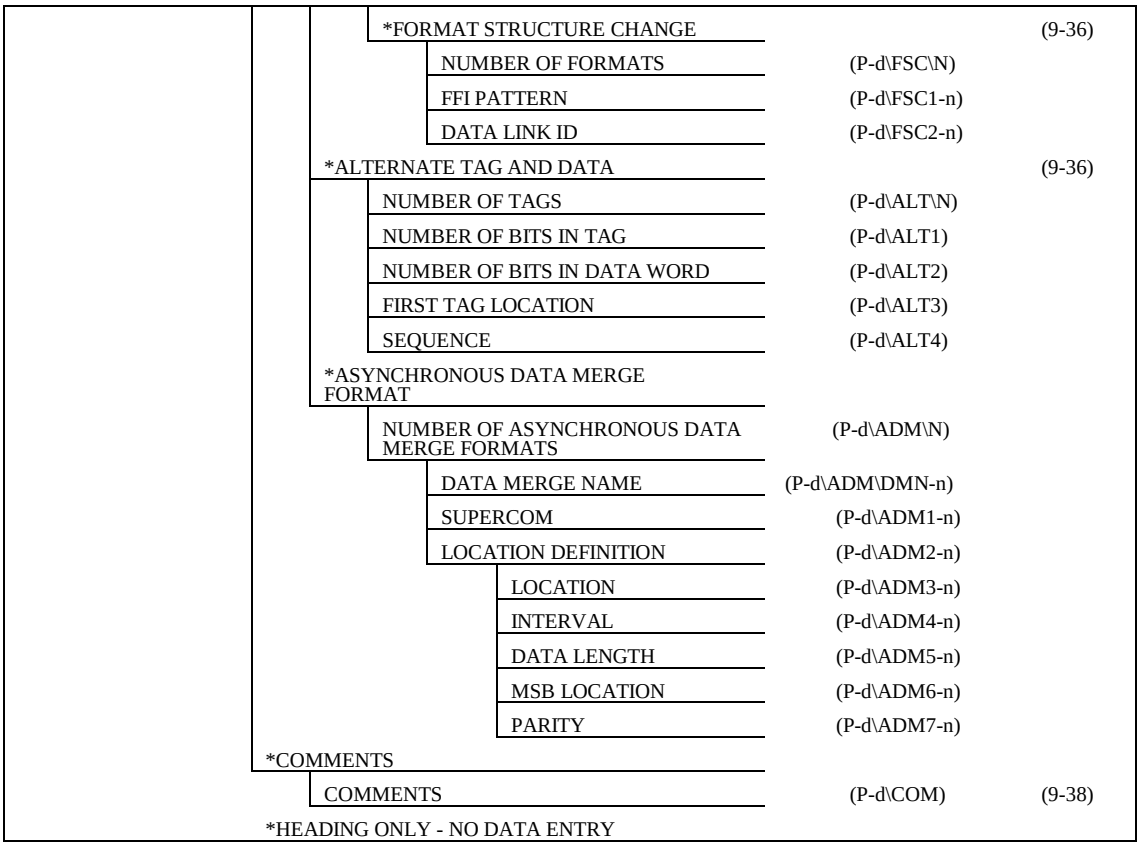

Figure 9-6 (Cont'd). PCM Format Attributes Group (P).

TABLE 9-5. PCM FORMAT ATTRIBUTES GROUP (P)

PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA LINK NAME	32	P-d\DLN	IDENTIFY THE DATA LINK NAME CONSISTENT WITH THE MUX/MOD GROUP.
INPUT DATA			
PCM CODE	6	P-d\D1	DEFINE THE DATA FORMAT CODE: 'NRZ-L' 'BIO-L' 'RNRZ-L' 'NRZ-M' 'BIO-M' 'OTHER' 'NRZ-S' 'BIO-S'
BIT RATE	9	P-d\D2	DATA RATE IN BITS PER SECOND. SCIENTIFIC NOTATION MAY BE USED.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)

PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
ENCRYPTED	1	P-d\D3	DATA IS ENCRYPTED -'E' DATA IS UNENCRYPTED - 'U' IF THE DATA IS ENCRYPTED, PROVIDE DETAILS IN COMMENT RECORD.
POLARITY	1	P-d\D4	DATA POLARITY: NORMAL - 'N' INVERTED - 'I'.
AUTO-POLARITY CORRECTION	1	P-d\D5	IS AUTOMATIC POLARITY CORRECTION TO BE USED? YES - 'Y' NO - 'N'
DATA DIRECTION	1	P-d\D6	TIME SEQUENCE OF DATA: NORMAL - 'N' REVERSED - 'R'.
DATA RANDOMIZED	1	P-d\D7	YES - 'Y' OR NO - 'N'.
RANDOMIZER LENGTH	3	P-d\D8	SPECIFY THE RANDOMIZER LENGTH: STANDARD (15 BITS) - 'STD' OTHER - 'OTH', DEFINE IN COMMENTS RECORD. NOT APPLICABLE - 'N/A'.
FORMAT			
TYPE FORMAT	4	P-d\TF	TYPE OF PCM FORMAT: CLASS I - 'ONE' 1553 BUS - '1553' ALTERNATE TAG AND DATA - 'ALTD' OTHER - 'OTHR', DESCRIBE IN COMMENTS RECORD.
COMMON WORD LENGTH	2	P-d\F1	NUMBER OF BITS IN COMMON WORD LENGTH.
WORD TRANSFER ORDER	1	P-d\F2	DEFINE THE DEFAULT FOR THE FIRST BIT TRANSFERRED IN NORMAL TIME SEQUENCE: MOST SIGNIFICANT BIT - 'M' LEAST SIGNIFICANT BIT - 'L'.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
PARITY	2	P-d\F3	NORMAL WORD PARITY EVEN - 'EV' ODD - 'OD' NONE - 'NO'
PARITY TRANSFER ORDER	1	P-d\F4	PARITY BIT LOCATION LEADS WORD - 'L' TRAILS WORD - 'T'.
MINOR FRAME			
NUMBER OF MINOR FRAMES IN MAJOR FRAME	3	P-d\MF\N	NUMBER OF MINOR FRAMES IN A MAJOR FRAME.
NUMBER OF WORDS IN A MINOR FRAME	4	P-d\MF1	SPECIFY THE NUMBER OF WORDS IN A MINOR FRAME, AS DEFINED IN PARAGRAPH 4.3.
NUMBER OF BITS IN A MINOR FRAME	5	P-d\MF2	NUMBER OF BITS IN A MINOR FRAME INCLUDING MINOR FRAME SYNCHRONIZATION PATTERN.
SYNC TYPE	3	P-d\MF3	DEFINE MINOR FRAME SYNCHRONIZATION TYPE: FIXED PATTERN - 'FPT' OTHER - 'OTH'.
SYNCHRONIZATION PATTERN			
LENGTH	2	P-d\MF4	SPECIFY THE MINOR FRAME SYNCHRONIZATION PATTERN LENGTH IN NUMBER OF BITS.
PATTERN	33	P-d\MF5	DEFINE MINOR FRAME SYNCHRONIZATION PATTERN IN BITS ("1"s and "0"s) WITH THE LEFT MOST BIT AS THE "FIRST BIT TRANSMITTED."
SYNCHRONIZATION CRITERIA			
IN SYNC CRITERIA	2	P-d\SYNC1	THIS SPECIFIES THE DESIRED CRITERIA FOR DECLARING THE SYSTEM TO BE IN SYNC: FIRST GOOD SYNC – 0 CHECK - NUMBER OF AGREES (1 OR GREATER) NOT SPECIFIED - 'NS'.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
SYNC PATTERN CRITERIA	2	P-d\SYNC2	NUMBER OF BITS THAT MAY BE IN ERROR IN THE SYNCHRONIZATION PATTERN.
OUT OF SYNCHRONIZATION CRITERIA			
NUMBER OF DISAGREES	2	P-d\SYNC3	SPECIFIES THE DESIRED CRITERIA FOR DECLARING THE SYSTEM OUT OF SYNC: NUMBER OF DISAGREES, NOT SPECIFIED - 'NS'.
SYNC PATTERN CRITERIA	2	P-d\SYNC4	NUMBER OF BITS THAT MAY BE IN ERROR IN THE SYNCHRONIZATION PATTERN.
MINOR FRAME FORMAT DEFINITION			
WORD NUMBER	4	P-d\MFW1-n	WORD POSITION (#n) IN A MINOR FRAME, OR FOR CLASS II SYSTEMS, THE POSITION IN THE DEFINED FRAME. WORD POSITION 1 FOLLOWS THE SYNCHRONIZATION PATTERN.
NUMBER OF BITS IN WORD	2	P-d\MFW2-n	THE NUMBER OF BITS IN WORD POSITION #n. IF DEFAULT VALUE, DO NOT INCLUDE.
THE ABOVE PAIR SET MUST BE DEFINED FOR ALL WORDS THAT HAVE A LENGTH OTHER THAN THE COMMON WORD LENGTH. THEREFORE, ALL WORD POSITIONS NOT INCLUDED IN THE ABOVE WILL HAVE THE COMMON WORD LENGTH AS A DEFAULT VALUE.			
SUBFRAME SYNCHRONIZATION			
NUMBER OF SUBFRAME ID COUNTERS	2	P-d\ISF\N	SPECIFY THE NUMBER OF SUBFRAME ID COUNTERS DEFINED WITHIN THE MINOR FRAME.
SUBFRAME ID COUNTER NAME	32	P-d\ISF1-n	SPECIFY THE SUBFRAME ID COUNTER NAME.
SUBFRAME SYNC TYPE	2	P-d\ISF2-n	DEFINE THE SUBFRAME SYNCHRONIZATION TYPE: ID COUNTER - 'ID' OTHER - 'OT', DEFINE IN COMMENTS.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
ID COUNTER			
SUBFRAME ID COUNTER LOCATION	4	P-d\IDC1-n	IF ID COUNTER IS DESIGNATED AS THE SUBFRAME SYNC TYPE, GIVE THE MINOR FRAME WORD POSITION OF THE COUNTER.
ID COUNTER WORD LENGTH	2	P-d\IDC2-n	SPECIFY THE MINOR FRAME WORD LENGTH OF THE WORD CONTAINING THE ID COUNTER, NUMBER OF BITS.
ID COUNTER MSB STARTING BIT LOCATION	2	P-d\IDC3-n	SPECIFY THE BIT LOCATION OF THE ID COUNTER MSB WITHIN THE WORD.
ID COUNTER LENGTH	2	P-d\IDC4-n	SPECIFY THE SUBFRAME ID COUNTER LENGTH. NUMBER OF BITS.
ID COUNTER TRANSFER ORDER	1	P-d\IDC5-n	SPECIFY WHETHER THE MOST OR LEAST SIGNIFICANT BIT IS TRANSFERRED FIRST: MOST SIGNIFICANT - 'M' LEAST SIGNIFICANT - 'L'.
ID COUNTER INITIAL VALUE	3	P-d\IDC6-n	SPECIFY THE INITIAL VALUE OF THE ID COUNTER.
INITIAL COUNT SUBFRAME NUMBER	3	P-d\IDC7-n	SPECIFY THE MINOR FRAME NUMBER ASSOCIATED WITH THE INITIAL COUNT VALUE.
ID COUNTER END VALUE	3	P-d\IDC8-n	SPECIFY THE END VALUE OF THE ID COUNTER.
END COUNT SUBFRAME NUMBER	3	P-d\IDC9-n	SPECIFY THE MINOR FRAME NUMBER ASSOCIATED WITH THE END COUNT VALUE.
COUNT DIRECTION	3	P-d\ IDC10-n	SPECIFY THE DIRECTION OF THE COUNT INCREMENT: INCREASING - 'INC' DECREASING - 'DEC'
SUBFRAME DEFINITION			
NUMBER OF SUBFRAMES	4	P-d\SF\ N-n	SPECIFY THE NUMBER OF SUBFRAMES ASSOCIATED WITH THE SUBFRAME ID COUNTER NAMED ABOVE.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
SUBFRAME NAME	32	P-d\SF1-n-m	SPECIFY THE SUBFRAME NAME.
SUPERCOM	2	P-d\SF2-n-m	IF NOT SUPERCOMMUTATED, ENTER - 'NO'. OTHERWISE, ENTER THE NUMBER OF WORD POSITIONS.
LOCATION DEFINITION	2	P-d\SF3-n-m	IF SUPERCOMMUTATED, SPECIFY HOW THE WORD LOCATIONS ARE DEFINED: FIRST WORD AND INTERVAL - 'FI' EVERY LOCATION - 'EL' NOT APPLICABLE - 'NA'
SUBFRAME LOCATION	4	P-d\SF4-n-m-w	SPECIFY THE FIRST WORD WITHIN THE MINOR FRAME THAT CONTAINS THE SUBFRAME IDENTIFIED. FOR THE CASE WHEN EVERY WORD LOCATION IS DEFINED, REPEAT THIS ENTRY FOR EACH WORD POSITION APPLICABLE. FOR THE FIRST WORD AND INTERVAL, INCLUDE THE NEXT ENTRY TO DEFINE THE INTERVAL.
INTERVAL	4	P-d\SF5-n-m	SPECIFY THE INTERVAL TO BE USED TO DEFINE THE SUBFRAME LOCATION.
SUBFRAME DEPTH	3	P-d\SF6-n-m	SPECIFY THE SUBFRAME DEPTH. IF NO ENTRY, THEN THE SUBFRAME ID COUNTER DEPTH WILL BE USED AS THE DEFAULT VALUE.
REPEAT THE ABOVE FOR EACH SUBFRAME IN THE MINOR FRAME FORMAT.			

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
ASYNCHRONOUS EMBEDDED FORMAT			
NUMBER OF ASYNCHRONOUS EMBEDDED FORMATS	1	P-d\AEF\N	SPECIFY THE NUMBER OF ASYNCHRONOUS EMBEDDED FORMATS: ONE - '1' TWO -'2' NONE - '0'
DATA LINK NAME	32	P-d\AEF\ DLN-n	PROVIDE THE DATA LINK NAME FOR THIS ASYNCHRONOUS EMBEDDED FORMAT. REPEAT NAME AND THE FOLLOWING ENTRIES FOR THE SECOND FORMAT, AS APPROPRIATE. (A SEPARATE DATA LINK DEFINITION MUST BE PROVIDED FOR EACH ASYNCHRONOUS EMBEDDED FORMAT.)
SUPERCOM	3	P-d\AEF1-n	IF THE ASYNCHRONOUS FORMAT IS NOT SUPERCOMMUTATED, ENTER - 'NO' . OTHERWISE, ENTER THE NUMBER OF HOST MINOR FRAME WORDS THAT ARE USED.
LOCATION DEFINITION	2	P-d\AEF2-n	IF SUPERCOMMUTATED, SPECIFY HOW THE WORD LOCATIONS ARE DEFINED: FIRST WORD AND INTERVAL - 'FI' EVERY LOCATION - 'EL' CONTIGUOUS WORDS - 'CW' NOT APPLICABLE - 'NA'

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
LOCATION	4	P-d\AEF3-n-w	SPECIFY THE FIRST WORD WITHIN THE MINOR FRAME THAT CONTAINS THE ASYNCHRONOUS EMBEDDED FORMAT IDENTIFIED. FOR THE METHOD WHEN EVERY WORD LOCATION IS DEFINED, REPEAT THIS ENTRY FOR EACH WORD POSITION APPLICABLE. FOR THE FIRST WORD AND INTERVAL METHOD, INCLUDE THE NEXT ENTRY TO DEFINE THE INTERVAL.
INTERVAL	4	P-d\AEF4-n	SPECIFY THE INTERVAL TO BE USED TO DEFINE THE ASYNCHRONOUS EMBEDDED FORMAT LOCATION.
WORD LENGTH	2	P-d\AEF5-n-w	SPECIFY THE NUMBER OF EMBEDDED BITS IN THIS HOST WORD LOCATION.
MASK	64	P-d\AEF6-n-w	IF THE ASYNCHRONOUS PORTION OF THE WORD IS SHORTER THAN THE WORD LENGTH, THEN PROVIDE THE BINARY MASK REQUIRED TO INDICATE WHICH BITS ARE USED (1s USED, 0s NOT USED). LEFTMOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
FORMAT CHANGE			
FRAME FORMAT IDENTIFIER			
LOCATION	4	P-d\FFI1	SPECIFY THE POSITION IN THE MINOR FRAME THAT CONTAINS THE FRAME FORMAT IDENTIFICATION (FFI) WORD. IF MORE THAN ONE WORD LOCATION, PROVIDE THE DETAILS IN THE COMMENTS RECORD.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
MASK	64	P-d\FFI2	IF THE FFI IS SHORTER THAN THE WORD LENGTH, THEN PROVIDE THE BINARY MASK REQUIRED TO INDICATE WHICH BITS ARE USED. LEFTMOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
MEASUREMENT LIST CHANGE			
NUMBER OF MEASUREMENT LISTS	2	P-d\MLC\N	SPECIFY THE NUMBER OF MEASUREMENT LISTS THAT ARE REQUIRED TO BE SELECTED. IF NONE, ENTER 'NO'. OTHERWISE, ENTER THE NUMBER, n.
FFI PATTERN	16	P-d/MLC1-n	SPECIFY THE FFI PATTERN THAT CORRESPONDS TO THE MEASUREMENT LIST (1s and 0s). THIS ENTRY AND THE NEXT ARE AN ORDERED PAIR.
MEASUREMENT LIST NAME	32	P-d\MLC2-n	SPECIFY THE MEASUREMENT LIST NAME.
FORMAT STRUCTURE CHANGE			
NUMBER OF FORMATS	2	P-d\FSC\N	SPECIFY NUMBER OF FORMATS THAT ARE TO BE DEFINED.
FFI PATTERN	16	P-d\FSC1-n	SPECIFY THE FFI PATTERN THAT CORRESPONDS TO THE FORMAT THAT IS DEFINED. THIS ENTRY AND THE FOLLOWING ARE AN ORDERED PAIR.
DATA LINK ID	32	P-d\FSC2-n	IDENTIFY THE FORMAT THAT CORRESPONDS TO THIS FFI CODE.
ALTERNATE TAG AND DATA			
NUMBER OF TAGS	3	P-d\ALT\N	SPECIFY THE NUMBER OF PARAMETERS THAT ARE INCLUDED WITHIN THIS CATEGORY, THAT IS, THE NUMBER OF TAGS.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
NUMBER OF BITS IN TAG	2	P-d\ALT1	SPECIFY THE NUMBER OF BITS THAT ARE IN THIS TAG.
NUMBER OF BITS IN DATA WORD	2	P-d\ALT2	SPECIFY THE NUMBER OF BITS THAT ARE IN THE COMMON DATA WORD.
FIRST TAG LOCATION	2	P-d\ALT3	IDENTIFY THE LOCATION OF THE START OF THE FIRST TAG LOCATION IN TERMS OF BITS, WITH THE FIRST BIT POSITION AFTER THE SYNCHRONIZATION PATTERN BEING NUMBER 1.
SEQUENCE	1	P-d\ALT4	IF THE TAG/DATA WORD SEQUENCE IS TAG, THEN DATA ENTER 'N' FOR NORMAL. IF THE DATA PRECEDES THE TAG, ENTER 'R' FOR REVERSED.
ASYNCHRONOUS DATA MERGE FORMAT			
NUMBER OF ASYNCHRONOUS DATA MERGE FORMATS	1	P-d\ADM\N	SPECIFY THE NUMBER OF ASYNCHRONOUS DATA MERGE FORMATS.
ASYNCHRONOUS DATA MERGE NAME	32	P-d\ADM\DMN-n	PROVIDE THE DATA MERGE NAME FOR THIS ASYNCHRONOUS DATA MERGE FORMAT. THIS CAN BE USED TO IDENTIFY THE SOURCE OF THE DATA MERGE FORMAT, AS APPROPRIATE. (USE THE COMMENTS FIELD TO DESCRIBE THIS DATA SOURCE FOR THE ASYNCHRONOUS DATA MERGE FORMAT.)
SUPERCOM	3	P-d\ADM1-n	IF THE ASYNCHRONOUS DATA MERGE FORMAT IS NOT SUPERCOMMUTATED, ENTER - 'NO'. OTHERWISE, ENTER THE NUMBER OF HOST MINOR FRAME WORDS THAT ARE USED.

TABLE 9-5 (Cont'd). PCM FORMAT ATTRIBUTES GROUP (P)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
LOCATION DEFINITION	2	P-d\ADM2-n	IF SUPERCOMMUTATED, SPECIFY HOW THE WORD LOCATIONS ARE DEFINED: FIRST WORD AND INTERVAL - 'FI' EVERY LOCATION - 'EL' CONTIGUOUS WORDS - 'CW' NOT APPLICABLE - 'NA'
LOCATION	4	P-d\ADM3-n-w	SPECIFY THE FIRST WORD WITHIN THE MINOR FRAME THAT CONTAINS THE ASYNCHRONOUS DATA MERGE FORMAT IDENTIFIED. FOR THE METHOD WHEN EVERY WORD LOCATION IS DEFINED, REPEAT THIS ENTRY FOR EACH WORD POSITION APPLICABLE. FOR THE FIRST WORD AND INTERVAL METHOD, INCLUDE THE NEXT ENTRY TO DEFINE THE INTERVAL.
INTERVAL	4	P-d\ADM4-n	SPECIFY THE INTERVAL TO BE USED TO DEFINE THE ASYNCHRONOUS DATA MERGE FORMAT LOCATION.
DATA LENGTH	2	P-d\ADM5-n	SPECIFY THE NUMBER OF DATA BITS USED IN THIS DATA MERGE FORMAT.
MSB LOCATION	2	P-d\ADM6-n	PROVIDE THE MOST SIGNIFICANT BIT (MSB) POSITION WITHIN THE HOST MINOR FRAME LOCATION.
PARITY	2	P-d\ADM7-n	IF USED, SPECIFY THE PARITY INFORMATION: EVEN - 'EV' , ODD - 'OD' , NONE - 'NO' .
COMMENTS			
COMMENTS	6400	P-d\COM	PROVIDE ANY ADDITIONAL REQUIRED OR DESIRED INFORMATION.

9.5.6.2 PCM Measurement Description (D). Table 9-6 and figure 9-7 contain the PCM Measurement Descriptions. The descriptions define each measurand or data item of interest within the frame format specified in the PCM attributes. Table 9-6 includes the measurement name, which links the measurement to the Data Conversion Attributes Group.

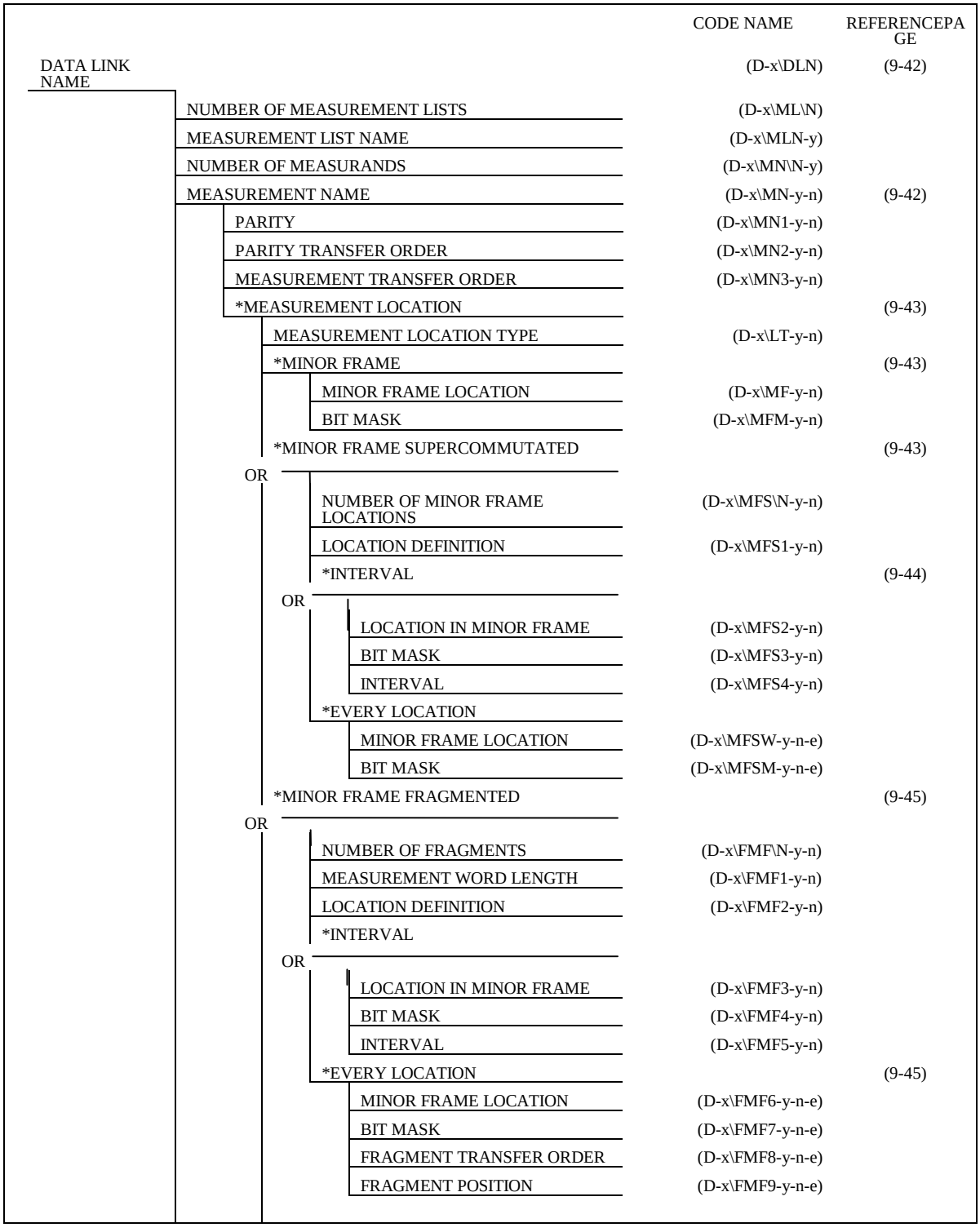

Figure 9-7. PCM Measurement Description Group (D).

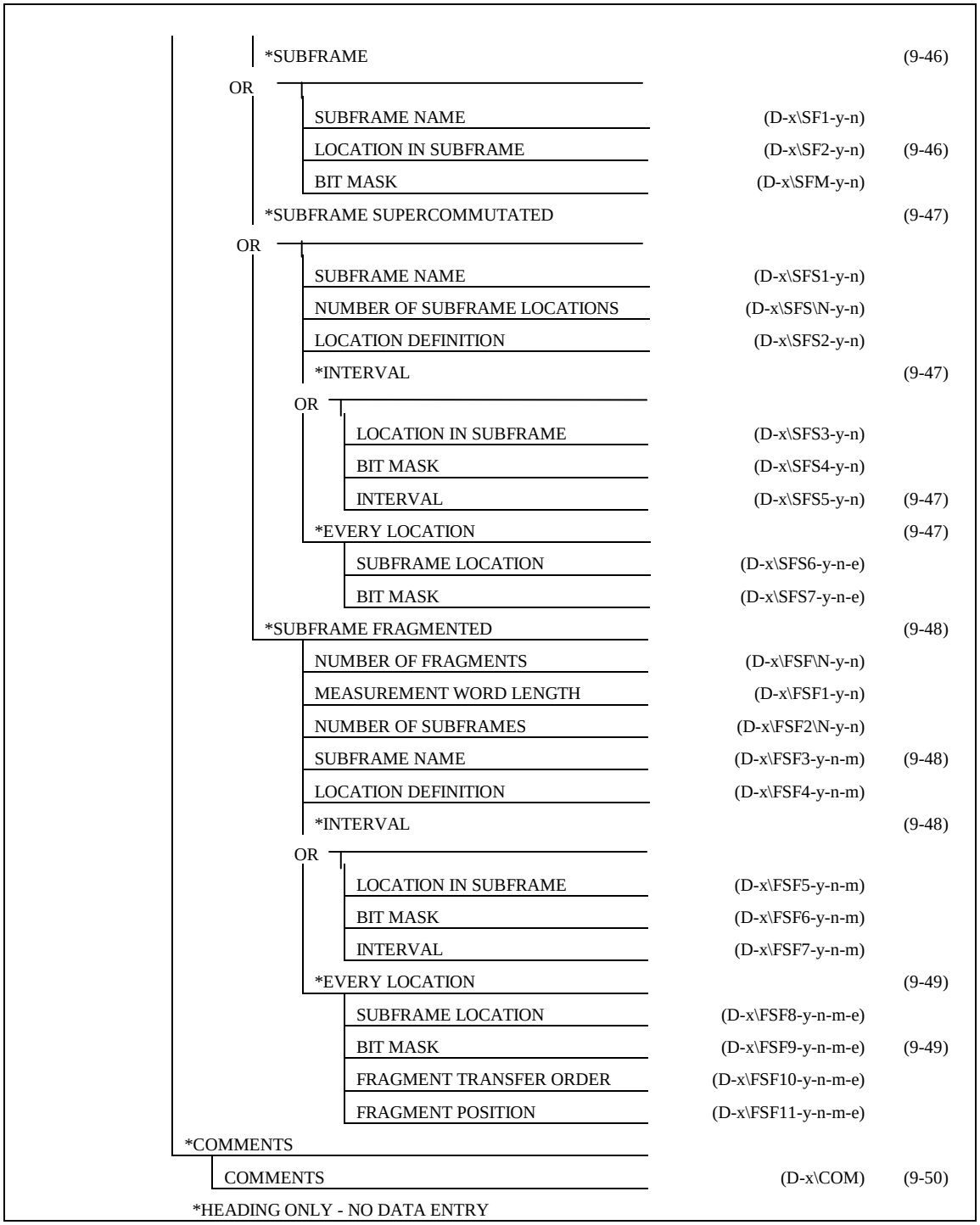

Figure 9-7 (Cont'd). PCM Measurement Description Group (D).

TABLE 9-6. PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA LINK NAME	32	D-x\DLN	PROVIDE THE DATA LINK NAME.
NUMBER OF MEASUREMENTS LISTS	2	D-x\ML\N	SPECIFY THE NUMBER OF MEASUREMENTS LISTS TO BE PROVIDED.
MEASUREMENT LIST NAME	32	D-x\MLN-y	PROVIDE THE MEASUREMENT LIST NAME ASSOCIATED WITH THE FOLLOWING ATTRIBUTES. THE FOLLOWING INFORMATION WILL HAVE TO BE REPEATED FOR EACH MEASUREMENT LIST IDENTIFIED IN THE PCM FORMAT ATTRIBUTES GROUP.
NUMBER OF MEASURANDS	4	D-x\MN\ N-y	SPECIFY THE NUMBER OF MEASURANDS INCLUDED WITHIN THIS MEASUREMENT LIST.
MEASUREMENT NAME	32	D-x\MN-y-n	MEASURAND NAME.
PARITY	2	D-x\MN1-y-n	SPECIFY PARITY: EVEN - 'EV' ODD - 'OD' NONE - 'NO' DEFAULT TO MINOR FRAME DEFINITION - 'DE'.
PARITY TRANSFER ORDER	1	D-x\MN2-y-n	PARITY BIT LOCATION LEADS WORD - 'L' TRAILS WORD - 'T' MINOR FRAME DEFAULT - 'D'.
MEASUREMENT TRANSFER ORDER	1	D-x\MN3-y-n	MOST SIGNIFICANT BIT FIRST - M' LEAST SIGNIFICANT BIT FIRST - 'L' DEFAULT - 'D'.

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
MEASUREMENT LOCATION			
MEASUREMENT LOCATION TYPE	4	D-x\LT-y-n	SPECIFY THE NATURE OF THE LOCATION OF THIS MEASURAND. MINOR FRAME - 'MF' MINOR FRAME SUPERCOMMUTATED - MFSC' MINOR FRAME FRAGMENTED - 'MFFR' SUBFRAME - 'SF' SUBFRAME SUPERCOMMUTATED - 'SFSC' SUBFRAME FRAGMENTED –'SFFR'.
MINOR FRAME			
MINOR FRAME LOCATION	4	D-x\MF-y-n	THE MINOR FRAME WORD POSITION OF THE MEASUREMENT.
BIT MASK	64	D-x\MFM-y-n	BINARY STRING OF 1s and 0s TO IDENTIFY THE BITS IN A WORD LOCATION THAT ARE ASSIGNED TO THIS MEASUREMENT. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER - 'FW'. LEFTMOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
MINOR FRAME SUPERCOMMUTATED			
NUMBER OF MINOR FRAME LOCATIONS	4	D-x\MFS\N-y-n	NUMBER OF WORD POSITIONS THAT THE SUPERCOMMUTATED CHANNEL OCCUPIES, N.
LOCATION DEFINITION	1	D-x\MFS1-y-n	TO SPECIFY THE INTERVAL, ENTER - 'I'. TO SPECIFY EVERY WORD LOCATION, ENTER - 'E'.

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
INTERVAL			
LOCATION IN MINOR FRAME	4	D-x\MFS2-y-n	SPECIFY THE FIRST WORD LOCATION IN THE MINOR FRAME.
BIT MASK	64	D-x\MFS3-y-n	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BITS IN A WORD LOCATION THAT ARE ASSIGNED TO THIS SUPERCOMMUTATED MEASUREMENT. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER - 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
INTERVAL	3	D-x\MFS4-y-n	SPECIFY THE INTERVAL COUNT THAT IS THE OFFSET FROM THE FIRST WORD LOCATION AND EACH SUBSEQUENT LOCATION.
EVERY LOCATION			
MINOR FRAME LOCATION	4	D-x\MFSW-y-n-e	ENTER THE MINOR FRAME WORD POSITION OF THE MEASUREMENT.
BIT MASK	64	D-x\MFSM-y-n-e	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BITS IN A WORD LOCATION THAT ARE ASSIGNED TO THIS SUPERCOMMUTATED MEASUREMENT. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER - 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
ENTER THE MINOR FRAME LOCATION AND BIT MASK FOR EACH OF THE WORD POSITIONS THAT THE SUPERCOMMUTATED CHANNEL OCCUPIES, (N) LOCATIONS.			

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
MINOR FRAME FRAGMENTED			
NUMBER OF FRAGMENTS	1	D-x\FMF\ N-y-n	NUMBER OF MINOR FRAME WORD POSITIONS THAT THE FRAGMENTED CHANNEL OCCUPIES, N.
MEASUREMENT WORD LENGTH	3	D-x\FMF1-y-n	TOTAL LENGTH OF THE RECONSTRUCTED BINARY DATA WORD.
LOCATION DEFINITION	1	D-x\FMF2-y-n	TO SPECIFY THE INTERVAL, ENTER - 'I'. TO SPECIFY EVERY WORD LOCATION, ENTER - 'E'.
INTERVAL			
LOCATION IN MINOR FRAME	4	D-x\FMF3-y-n	SPECIFY THE FIRST WORD POSITION THAT THE FRAGMENTED WORD OCCUPIES IN THE MINOR FRAME.
BIT MASK	64	D-x\FMF4-y-n	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BITS IN A WORD POSITION THAT ARE ASSIGNED TO THIS FRAGMENTED CHANNEL. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
INTERVAL	4	D-x\FMF5-y-n	SPECIFY THE INTERVAL THAT IS THE OFFSET FROM THE FIRST WORD LOCATION AND EACH SUBSEQUENT LOCATION.
EVERY LOCATION			
MINOR FRAME LOCATION	4	D-x\FMF6-y-n-e	ENTER THE MINOR FRAME WORD POSITION OF THE MEASUREMENT.

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
BIT MASK	64	D-x\FMF7-y-n-e	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BITS IN A WORD POSITION THAT ARE ASSIGNED TO THIS FRAGMENTED MEASUREMENT. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER - 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
FRAGMENT TRANSFER ORDER	1	D-x\FMF8-y-n-e	MOST SIGNIFICANT BIT FIRST - 'M' LEAST SIGNIFICANT BIT FIRST - 'L' DEFAULT - 'D'.
FRAGMENT POSITION	1	D-x\FMF9-y-n-e	A NUMBER FROM 1 TO N SPECIFYING POSITION OF THE FRAGMENT WITHIN THE RECONSTRUCTED BINARY DATA WORD. (1 CORRESPONDS TO MOST SIGNIFICANT FRAGMENT).
ENTER THE MINOR FRAME LOCATION AND BIT MASK FOR EACH OF THE WORD POSITIONS THAT THE FRAGMENTED CHANNEL OCCUPIES, (N) LOCATIONS.			
SUBFRAME			
SUBFRAME NAME	32	D-x\SF1-y-n	ENTER THE SUBFRAME NAME.
LOCATION IN SUBFRAME	3	D-x\SF2-y-n	SPECIFY THE WORD NUMBER IN THE SUBFRAME.
BIT MASK	64	D-x\SFM-y-n	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BITS IN A WORD LOCATION THAT ARE ASSIGNED TO THIS MEASUREMENT. IF THE FULL WORD IS USED FOR THE MEASUREMENT, ENTER - 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
SUBFRAME SUPERCOMMUTATED			
SUBFRAME NAME	32	D-x\SFS1-y-n	ENTER THE SUBFRAME NAME.
NUMBER OF SUBFRAME LOCATIONS	3	D-x\SFS\N-y-n	NUMBER OF SUBFRAME WORD POSITIONS THAT THE SUPERCOMMUTATED CHANNEL OCCUPIES.
LOCATION DEFINITION	1	D-x\SFS2-y-n	TO SPECIFY: INTERVAL ENTER - 'I' EVERY WORD ENTER - 'E'.
INTERVAL			
LOCATION IN SUBFRAME	3	D-x\SFS3-y-n	SPECIFY THE FIRST WORD POSITION THAT THE SUPERCOMMUTATED WORD OCCUPIES IN THE SUBFRAME.
BIT MASK	64	D-x\SFS4-y-n	BINARY STRING OF 1s and 0s TO IDENTIFY THE BIT LOCATIONS IN A WORD POSITION THAT ARE ASSIGNED TO THIS SUPER-COMMUTATED CHANNEL. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER - 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
INTERVAL	3	D-x\SFS5-y-n	SPECIFY THE INTERVAL THAT IS THE OFFSET FROM THE FIRST WORD LOCATION AND EACH SUBSEQUENT LOCATION.
EVERY LOCATION			
SUBFRAME LOCATION	3	D-x\SFS6-y-n-e	ENTER THE SUBFRAME WORD POSITION OF THE MEASUREMENT.

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
BIT MASK	64	D-x\SFS7-y-n-e	BINARY STRING OF 1s and 0s TO IDENTIFY THE BIT LOCATIONS IN A WORD POSITION THAT ARE ASSIGNED TO THIS SUPER-COMMUTATED MEASUREMENT. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
ENTER THE SUBFRAME LOCATION AND BIT MASK FOR EACH OF THE WORD POSITIONS THAT THE SUPERCOMMUTATED CHANNEL OCCUPIES, (N) LOCATIONS.			
SUBFRAME FRAGMENTED			
NUMBER OF FRAGMENTS	1	D-x\FSF\N-y-n	NUMBER OF SUBFRAME WORD POSITIONS THAT THE FRAGMENTED CHANNEL OCCUPIES, N.
MEASUREMENT WORD LENGTH	3	D-x\FSF1-y-n	TOTAL LENGTH OF THE RECONSTRUCTED BINARY DATA WORD.
NUMBER OF SUBFRAMES	1	D-x\FSF2\N-y-n	NUMBER OF SUBFRAMES CONTAINING THE FRAGMENTS.
SUBFRAME NAME	32	D-x\FSF3-y-n-m	ENTER THE SUBFRAME NAME.
LOCATION DEFINITION	1	D-x\FSF4-y-n-m	TO SPECIFY: INTERVAL - 'I' EVERY WORD - 'E'.
INTERVAL			
LOCATION IN SUBFRAME	3	D-x\FSF5-y-n-m	SPECIFY THE FIRST WORD POSITION THAT THE FRAGMENTED WORD OCCUPIES IN THE SUBFRAME.

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
BIT MASK	64	D-x\FSF6-y-n-m	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BIT LOCATIONS IN A WORD POSITION THAT ARE ASSIGNED TO THIS FRAGMENTED CHANNEL. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER - 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
INTERVAL	3	D-x\FSF7-y-n-m	SPECIFY THE INTERVAL THAT IS THE OFFSET FROM THE FIRST WORD LOCATION AND EACH SUBSEQUENT LOCATION.
EVERY LOCATION			
SUBFRAME LOCATION	3	D-x\FSF8-y-n-m-e	ENTER THE SUBFRAME WORD POSITION OF THE MEASUREMENT.
BIT MASK	64	D-x\FSF9-y-n-m-e	BINARY STRING OF 1s and 0s TO IDENTIFY THE BIT LOCATIONS IN A WORD POSITION THAT ARE ASSIGNED TO THIS FRAGMENTED MEASUREMENT. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
FRAGMENT TRANSFER ORDER	1	D-x\ FSF10-y-n-m-e	MOST SIGNIFICANT BIT FIRST - 'M' LEAST SIGNIFICANT BIT FIRST - 'L' DEFAULT - 'D'

TABLE 9-6 (Cont'd). PCM MEASUREMENT DESCRIPTION GROUP (D)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
FRAGMENT POSITION	1	D-x\ FSF11-y-n-m-e	A NUMBER FROM 1 TO N SPECIFYING POSITION OF THIS FRAGMENT WITHIN THE RECONSTRUCTED BINARY DATA WORD. (1 CORRESPONDS TO MOST SIGNIFICANT FRAGMENT).
ENTER THE SUBFRAME LOCATION AND BIT MASK FOR EACH OF THE WORD POSITIONS THAT THE FRAGMENTED CHANNEL OCCUPIES, (N) LOCATIONS.			
REPEAT THE ABOVE ENTRIES, AS APPROPRIATE FOR EACH SUBFRAME THAT CONTAINS THE COMPONENTS OF THE FRAGMENTED WORD.			
COMMENTS			
COMMENTS	3200	D-x\COM	PROVIDE ANY ADDITIONAL INFORMATION REQUIRED OR DESIRED.
THIS GROUP WILL CONTAIN A REPETITION OF THE ABOVE INFORMATION UNTIL EACH MEASUREMENT HAS BEEN DEFINED. ANY WORD POSITION NOT INCLUDED WILL BE TREATED AS A SPARE CHANNEL OR A "DON'T CARE" CHANNEL. INFORMATION WILL NOT BE PROCESSED FOR THESE "SPARE" CHANNELS. NOTE THAT MEASUREMENT LIST CHANGES AND FORMAT CHANGES THAT ARE A PART OF CLASS II SYSTEMS ARE INCLUDED IN THE ABOVE, SINCE THE KEY TO THE MEASUREMENT DEFINITION IS THE DATA LINK NAME (FORMAT) AND THE MEASUREMENT LIST.			

9.5.6.3 1553 Bus Data Attributes (B). Figure 9-8 and table 9-7 describes the 1553 bus-originated data formats. The 1553 Bus Data Attributes Group defines the attributes of a data acquisition system that is compliant with chapter 8. The primary components of this group are the recording description and message content definition. The former defines the method by which the data were recorded on the tape such as track spread versus composite. The latter consists of the message identification information and the measurement description set. The message identification information defines the contents of the control word that identifies each 1553 message. The measurement description set describes the measurement attributes and contains the measurement name which links the measurand to the Data Conversion Attributes Group (C).

Mode codes are described in the message identification information. If the Subterminal Address (STA) field contains 00000 or 11111, the information in the Data Word Count/Mode Code field is a mode code and identifies the function of the mode code. If the mode code has associated data words, they are described in this section of the attributes. If the 1553 message is a remote terminal to remote terminal transfer, both the transmit command and the receive command are used to identify the message.

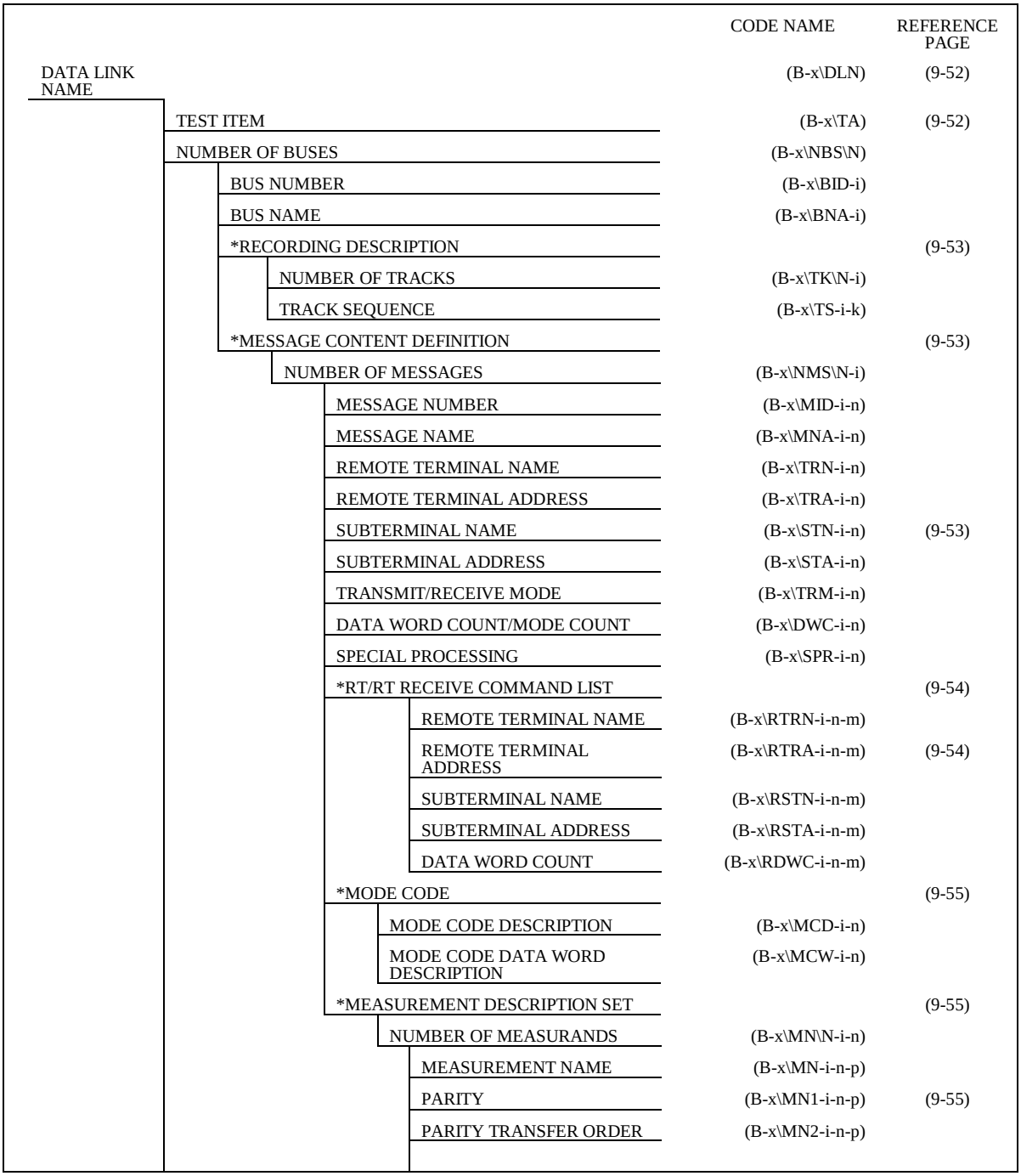

Figure 9-8. 1553 Bus Data Attributes Group (B).

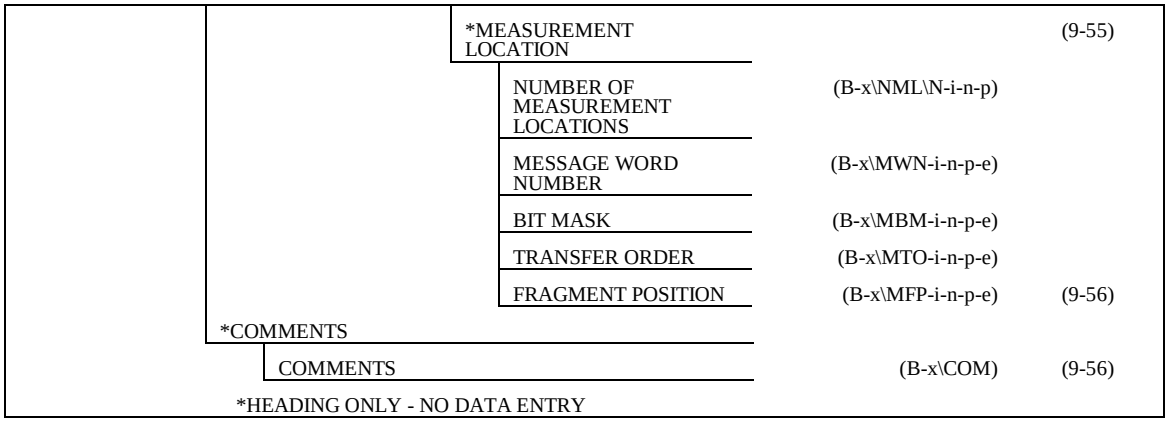

Figure 9-8 (Cont'd). 1553 Bus Data Attributes Group (B).

TABLE 9-7. 1553 BUS DATA ATTRIBUTES GROUP (B)

PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA LINK NAME	32	B-x\DLN	IDENTIFY THE DATA LINK CONSISTENT WITH THE MULTIPLEX/MODULATION GROUP. THE PCM FORMAT OF THE DATA STREAM SHALL BE DEFINED IN THE PCM FORMAT ATTRIBUTES GROUP.
TEST ITEM	16	B-x\TA	TEST ITEM DESCRIPTION IN TERMS OF NAME, MODEL, PLATFORM, OR IDENTIFICATION CODE THAT CONTAINS THE DATA ACQUISITION SYSTEM.
NUMBER OF BUSES	1	B-x\NBS\N	SPECIFY THE NUMBER OF BUSES INCLUDED WITHIN THIS DATA LINK.
BUS NUMBER	3	B-x\BID-i	ENTER THE BUS NUMBER AS A BINARY STRING.
BUS NAME	32	B-x\BNA-i	SPECIFY THE BUS NAME

TABLE 9-7 (Cont'd). 1553 BUS DATA ATTRIBUTES GROUP (B)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
RECORDING DESCRIPTION			
NUMBER OF TRACKS	2	B-x\TK\N-i	ENTER THE NUMBER OF TAPE TRACKS USED TO RECORD DATA. ANY ENTRY GREATER THAN ONE INDICATES THAT THE DATA HAS BEEN SPREAD ACROSS MULTIPLE TRACKS.
TRACK SEQUENCE	3	B-x\TS-i-k	IN THE FOLLOWING ENTRIES GIVE THE SEQUENCE ORDER OF TAPE TRACKS THAT SHOULD BE USED TO RECOVER THE DATA STREAM IN THE CORRECT ORDER. (THE ORDER GIVEN SHOULD CORRESPOND TO THE ACTUAL SKEW OF THE DATA ON THE TAPE.)
MESSAGE CONTENT DEFINITION			
NUMBER OF MESSAGES	8	B-x\NMS\N-i	THE NUMBER OF MESSAGES TO BE DEFINED.
MESSAGE NUMBER	8	B-x\MID-i-n	THE MESSAGE NUMBER THAT CONTAINS THE FOLLOWING DATA.
MESSAGE NAME	32	B-x\MNA-i-n	SPECIFY THE MESSAGE NAME.
REMOTE TERMINAL NAME	32	B-x\TRN-i-n	ENTER THE NAME OF THE REMOTE TERMINAL THAT IS SENDING OR RECEIVING THIS MESSAGE. FOR RT/RT, SPECIFY THE SENDING REMOTE TERMINAL NAME.
REMOTE TERMINAL ADDRESS	5	B-x\TRA-i-n	SPECIFY THE FIVE BIT REMOTE TERMINAL ADDRESS FOR THIS MESSAGE.
SUBTERMINAL NAME	32	B-x\STN-i-n	ENTER THE NAME OF THE SUBTERMINAL THAT IS SENDING OR RECEIVING THIS MESSAGE.

TABLE 9-7 (Cont'd). 1553 BUS DATA ATTRIBUTES GROUP (B)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
SUBTERMINAL ADDRESS	5	B-x\STA-i-n	SPECIFY THE FIVE BIT SUBTERMINAL ADDRESS FOR THIS MESSAGE.
TRANSMIT/ RECEIVE MODE	1	B-x\TRM-i-n	INDICATE IF THIS COMMAND WORD IS A TRANSMIT OR RECEIVE COMMAND. FOR RT/RT, SPECIFY TRANSMIT. TRANSMIT - '1' RECEIVE - '0'
DATA WORD COUNT/MODE CODE	5	B-x\DWC-i-n	ENTER THE NUMBER OF DATA WORDS AS A BINARY STRING, USING X TO INDICATE A "DON'T CARE" VALUE. IF THE SUBTERMINAL ADDRESS INDICATES A MODE CODE, ENTER THE MODE CODE VALUE AS A BINARY STRING.
SPECIAL PROCESSING	200	B-x\SPR-i-n	PROVIDE ANY SPECIAL PROCESSING REQUIREMENTS PERTAINING TO THIS MESSAGE.
RT/RT RECEIVE COMMAND LIST			
REMOTE TERMINAL NAME	32	B-x\RTRN-i-n-m	ENTER THE NAME OF THE REMOTE TERMINAL THAT IS RECEIVING THIS RT/RT MESSAGE.
REMOTE TERMINAL ADDRESS	5	B-x\RTRA-i-n-m	SPECIFY THE FIVE BIT REMOTE TERMINAL ADDRESS FOR THIS RT/RT MESSAGE.
SUBTERMINAL NAME	32	B-x\RSTN-i-n-m	ENTER THE NAME OF THE SUB-TERMINAL THAT IS RECEIVING THIS RT/RT MESSAGE.
SUBTERMINAL ADDRESS	5	B-x\RSTA-i-n-m	SPECIFY THE FIVE BIT SUBTERMINAL ADDRESS FOR THIS RT/RT MESSAGE.

TABLE 9-7 (Cont'd). 1553 BUS DATA ATTRIBUTES GROUP (B)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA WORD COUNT	5	B-x\RDWC-i-n-m	ENTER THE NUMBER OF DATA WORDS AS A BINARY STRING, USING X TO INDICATE A "DON'T CARE" VALUE. EXCLUDE STATUS AND TIME WORDS. (AN RT/RT MESSAGE CANNOT CONTAIN A MODE CODE.)
MODE CODE			
MODE CODE DESCRIPTION	200	B-x\MCD-i-n	DESCRIBE THE FUNCTION OR ACTION ASSOCIATED WITH THIS MODE CODE.
MODE CODE DATA WORD DESCRIPTION	200	B-x\MCW-i-n	IF THE MODE CODE HAS AN ASSOCIATED DATA WORD FOLLOWING THE MODE CODE COMMAND, PROVIDE A COMPLETE DESCRIPTION OF THE DATA WORD.
MEASUREMENT DESCRIPTION SET			
NUMBER OF MEASURANDS	4	B-x\MN\N-i-n	SPECIFY THE NUMBER OF MEASURANDS.
MEASUREMENT NAME	32	B-x\MN-i-n-p	MEASURAND NAME.
PARITY	2	B-x\MN1-i-n-p	NORMAL WORD PARITY. EVEN - 'EV' ODD - 'OD' NONE - 'NO'.
PARITY TRANSFER ORDER	1	B-x\MN2-i-n-p	PARITY BIT LOCATION LEADS WORD - 'L' TRAILS WORD - 'T'.
MEASUREMENT LOCATION			
NUMBER OF MEASUREMENT LOCATIONS	2	B-x\NML\N-i-n-p	IF THIS MEASUREMENT IS CONTAINED IN ONE WORD, ENTER '1'. IF THIS MEASUREMENT IS FRAG-MENTED, ENTER THE NUMBER OF FRAGMENTS.

TABLE 9-7 (Cont'd). 1553 BUS DATA ATTRIBUTES GROUP (B)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
MESSAGE WORD NUMBER	3	B-x\MWN-i-n-p-e	ENTER THE NUMBER CORRESPONDING TO THE DATA WORD COUNT WITHIN A MESSAGE THAT CONTAINS THE MEASUREMENT OR THE FRAGMENTED MEASURAND.
BIT MASK	64	B-x\MBM-i-n-p-e	BINARY STRING OF 1s AND 0s TO IDENTIFY THE BIT LOCATIONS THAT ARE ASSIGNED TO THIS MEASURE-MENT IN THE WORD IDENTIFIED ABOVE. IF THE FULL WORD IS USED FOR THIS MEASUREMENT, ENTER 'FW'. LEFT MOST BIT CORRESPONDS TO FIRST BIT TRANSMITTED.
TRANSFER ORDER	3	B-x\MTO-i-n-p-e	SPECIFY IF THE START BIT IS MOST SIGNIFICANT - 'MSB' LEAST SIGNIFICANT - 'LSB'
FRAGMENT POSITION	1	B-x\MFP-i-n-p-e	A NUMBER FROM 1 TO N THAT SPECIFIES THE POSITION OF THE FRAGMENT WITHIN THE RECONSTRUCTED BINARY DATA WORD. (1 CORRESPONDS TO THE MOST SIGNIFICANT FRAGMENT)
REPEAT THE ABOVE TO DESCRIBE EACH FRAGMENT OF A FRAGMENTED WORD. THE TRANSFER ORDER INDICATES WHETHER TO TRANSPOSE THE ORDER OF THE BIT SEQUENCE OR NOT (LSB INDICATES TO TRANSPOSE THE BIT SEQUENCE).			
COMMENTS			
COMMENTS	3200	B-x\COM	PROVIDE ANY ADDITIONAL INFORMATION REQUIRED OR DESIRED.

9.5.7 PAM Attributes (A). This group provides the information necessary to define the channelization and measurand definition for a PAM waveform. As with the PCM signal, the tie to the calibration data is with the measurement name. Figure 9-9 summarizes the types of inputs required. Table 9-8 specifies the details required. The information that defines the measurand for each channel is required for the channels of interest.

	CODE NAME	REFERENCE PAGE
DATA LINK NAME	(A-x\DLN)	(9-58)
INPUT CODE	(A-x\A1)	(9-58)
POLARITY	(A-x\A2)	
SYNC PATTERN TYPE	(A-x\A3)	
SYNC PATTERN (OTHER)	(A-x\A4)	
CHANNEL RATE	(A-x\A5)	
CHANNELS PER FRAME	(A-x\A\N)	
NUMBER OF MEASURANDS	(A-x\A\MN\N)	
*REFERENCE CHANNELS		(9-58)
0% SCALE CHANNEL NUMBER	(A-x\RC1)	
50% SCALE CHANNEL NUMBER	(A-x\RC2)	
FULL SCALE CHANNEL NUMBER	(A-x\RC3)	
*SUBFRAME DEFINITION		(9-59)
NUMBER OF SUBFRAMES	(A-x\SF\N)	
SUBFRAME n LOCATION	(A-x\SF1-n)	
SUBFRAME n SYNCHRONIZATION	(A-x\SF2-n)	
SUBFRAME n SYNCHRONIZATION PATTERN	(A-x\SF3-n)	
*CHANNEL ASSIGNMENT		(9-59)
MEASUREMENT NAME	(A-x\MN1-n)	
SUBCOM	(A-x\MN2-n)	
SUPERCOM	(A-x\MN3-n)	
*LOCATION		(9-60)
CHANNEL NUMBER	(A-x\LCW-n-s)	
SUBFRAME CHANNEL NUMBER	(A-x\LCN-n-s-r)	
*COMMENTS		
COMMENTS	(A-x\COM)	(9-60)

*HEADING ONLY - NO DATA ENTRY

Figure 9-9. PAM Attributes Group (A).

TABLE 9-8. PAM ATTRIBUTES GROUP (A)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA LINK NAME	32	A-x\DLN	IDENTIFY THE DATA LINK NAME.
INPUT CODE	2	A-x\A1	DEFINE THE INPUT CODE: 50% DUTY CYCLE - 'RZ' 100% DUTY CYCLE (NRZ) - 'NR'
POLARITY	1	A-x\A2	NORMAL - 'N' INVERTED - 'I'
SYNC PATTERN TYPE	3	A-x\A3	SPECIFY THE SYNCHRO-NIZATION PATTERN IRIG 106 - 'STD' OTHER - 'OTH'.
SYNC PATTERN (OTHER)	5	A-x\A4	DEFINE THE OTHER (NONSTANDARD) SYNCHRONI-ZATION PATTERN IN TERMS OF 0 – ZERO SCALE H – HALF SCALE F – FULL SCALE X – DON'T CARE.
CHANNEL RATE	6	A-x\A5	SPECIFY THE CHANNEL RATE IN CHANNELS PER SECOND.
CHANNELS PER FRAME	3	A-x\A\N	SPECIFY THE NUMBER OF CHANNELS PER FRAME INCLUDING THE SYNC PATTERN AND CALIBRATION CHANNELS. MAXIMUM ALLOWED IS 128.
NUMBER OF MEASURANDS	4	A-x\A\MN\N	INDICATE THE NUMBER OF MEASURANDS ASSOCIATED WITH THIS DATA LINK (SOURCE).
REFERENCE CHANNELS			
0% SCALE CHANNEL NUMBER	3	A-x\RC1	CHANNEL NUMBER OF 0% SCALE REFERENCE. IF NOT USED, ENTER 'NON' (NONE).
50% SCALE CHANNEL NUMBER	3	A-x\RC2	CHANNEL NUMBER OF 50% SCALE REFERENCE. IF NOT USED, ENTER 'NON' (NONE).

TABLE 9-8 (Cont'd). PAM ATTRIBUTES GROUP (A)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
FULL SCALE CHANNEL NUMBER	3	A-x\RC3	CHANNEL NUMBER OF FULL SCALE REFERENCE. IF NOT USED, ENTER 'NON' (NONE).
SUBFRAME DEFINITION			
NUMBER OF SUBFRAMES	1	A-x\SF\N	SPECIFY THE NUMBER OF SUBMULTIPLEXED CHANNELS IN THE FRAME.
SUBFRAME n LOCATION	3	A-x\SF1-n	CHANNEL NUMBER OF THE SUBFRAME (REPEAT THIS ENTRY AND THE FOLLOWING TWO ENTRIES FOR EACH SUBFRAME AS A SET).
SUBFRAME n SYNCHRONIZATION	3	A-x\SF2-n	SPECIFY THE SYNCHRONIZATION PATTERN FOR THE SUBFRAME: IRIG 106 - 'STD' OTHER - 'OTH'.
SUBFRAME n SYNCHRONIZATION PATTERN	5	A-x\SF3-n	DEFINE THE OTHER (NONSTANDARD) SYNCHRONIZATION PATTERN IN TERMS OF: 0 - ZERO SCALE H – HALF SCALE F - FULL SCALE X – DON'T CARE OTH – OTHER
CHANNEL ASSIGNMENT			
MEASUREMENT NAME	32	A-x\MN1-n	GIVE THE MEASUREMENT NAME.
SUBCOM	1	A-x\MN2-n	IS THIS A SUBCOMMUTATED CHANNEL? 'Y' OR 'N'.
SUPERCOM	1	A-x\MN3-n	IS THIS A SUPERCOMMUTATED CHANNEL? IF YES, ENTER THE NUMBER OF POSITIONS IT OCCUPIES – n. IF NO, ENTER - 'N'. A SUPERCOMMUTATED SUBCOMMUTATED PARAMETER IS ALLOWABLE AND WILL HAVE ENTRIES IN THIS AND THE PREVIOUS RECORD.

TABLE 9-8 (Cont'd). PAM ATTRIBUTES GROUP (A)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
LOCATION			
CHANNEL NUMBER	3	A-x\LCW-n-s	NUMBER OF THE CHANNEL THAT CONTAINS THIS MEASURAND. IF THIS IS A SUBCOMMUTATED CHANNEL, ENTER THE CHANNEL THAT CONTAINS THE SUBCOM-MUTATED CHANNEL.
SUBFRAME CHANNEL NUMBER	3	A-x\LCN-n-s-r	CHANNEL NUMBER IN THE SUBFRAME, IF APPROPRIATE.
COMMENTS			
COMMENTS	3200	A-x\COM	PROVIDE ANY ADDITIONAL INFORMATION REQUIRED OR DESIRED.

9.5.8 Data Conversion Attributes (C). The Data Conversion Attributes Group includes a definition of the method by which the raw telemetry data is to be converted to meaningful information. The sensor calibration is contained in the group for each type of sensor that uses a standard calibration curve or for each sensor or parameter that has a unique calibration requirement. The calibration information can be entered in several different formats. Provision is made to permit a test organization to convert data set entries to coefficients of an appropriate curve fit and record the derived coefficients. Figure 9-10 shows the structure of the data conversion attributes. Table 9-9 contains the detailed information required.

For reference purposes, the following telemetry unit definitions apply:
PCM - natural binary range as indicated by binary format entry
PAM - 0 to full scale (100)
FM (Analog) - lower band edge (-100) to upper band edge (+100).

		CODE NAME	REF. PAGE
MEASUREMENT NAME		(C-d\DCN)	(9-63)
	*TRANSDUCER INFORMATION		(9-63)
	TYPE	(C-d\TRD1)	
	MODEL NUMBER	(C-d\TRD2)	
	SERIAL NUMBER	(C-d\TRD3)	
	SECURITY CLASSIFICATION	(C-d\TRD4)	
	ORIGINATION DATE	(C-d\TRD5)	
	REVISION NUMBER	(C-d\TRD6)	
	ORIENTATION	(C-d\TRD7)	
	*POINT OF CONTACT		(9-64)
	NAME	(C-d\POC1)	
	AGENCY	(C-d\POC2)	
	ADDRESS	(C-d\POC3)	
	TELEPHONE	(C-d\POC4)	
	*MEASURAND		(9-64)
	DESCRIPTION	(C-d\MN1)	
	MEASUREMENT ALIAS	(C-d\MNA)	
	EXCITATION VOLTAGE	(C-d\MN2)	
	ENGINEERING UNITS	(C-d\MN3)	
	LINK TYPE	(C-d\MN4)	
	*TELEMETRY VALUE DEFINITION		(9-64)
	BINARY FORMAT		
	FLOATING POINT FORMAT	(C-d\FPF)	
	*INFLIGHT CALIBRATION		(9-65)
	NUMBER OF POINTS	(C-d\MC\N)	
	STIMULUS	(C-d\MC1-n)	
	TELEMETRY VALUE	(C-d\MC2-n)	
	DATA VALUE	(C-d\MC3-n)	
	*AMBIENT VALUE		(9-65)
	NUMBER OF AMBIENT CONDITIONS	(C-d\MA\N)	
	STIMULUS	(C-d\MA1-n)	
	TELEMETRY VALUE	(C-d\MA2-n)	
	DATA VALUE	(C-d\MA3-n)	
	*OTHER INFORMATION		(9-66)
	HIGH MEASUREMENT VALUE	(C-d\MOT1)	
	LOW MEASUREMENT VALUE	(C-d\MOT2)	
	HIGH ALERT LIMIT VALUE	(C-d\MOT3)	
	LOW ALERT LIMIT VALUE	(C-d\MOT4)	
	HIGH WARNING LIMIT VALUE	(C-d\MOT5)	
	LOW WARNING LIMIT VALUE	(C-d\MOT6)	
	SAMPLE RATE	(C-d\SR)	

Figure 9-10. Data Conversion Attributes Group (C).

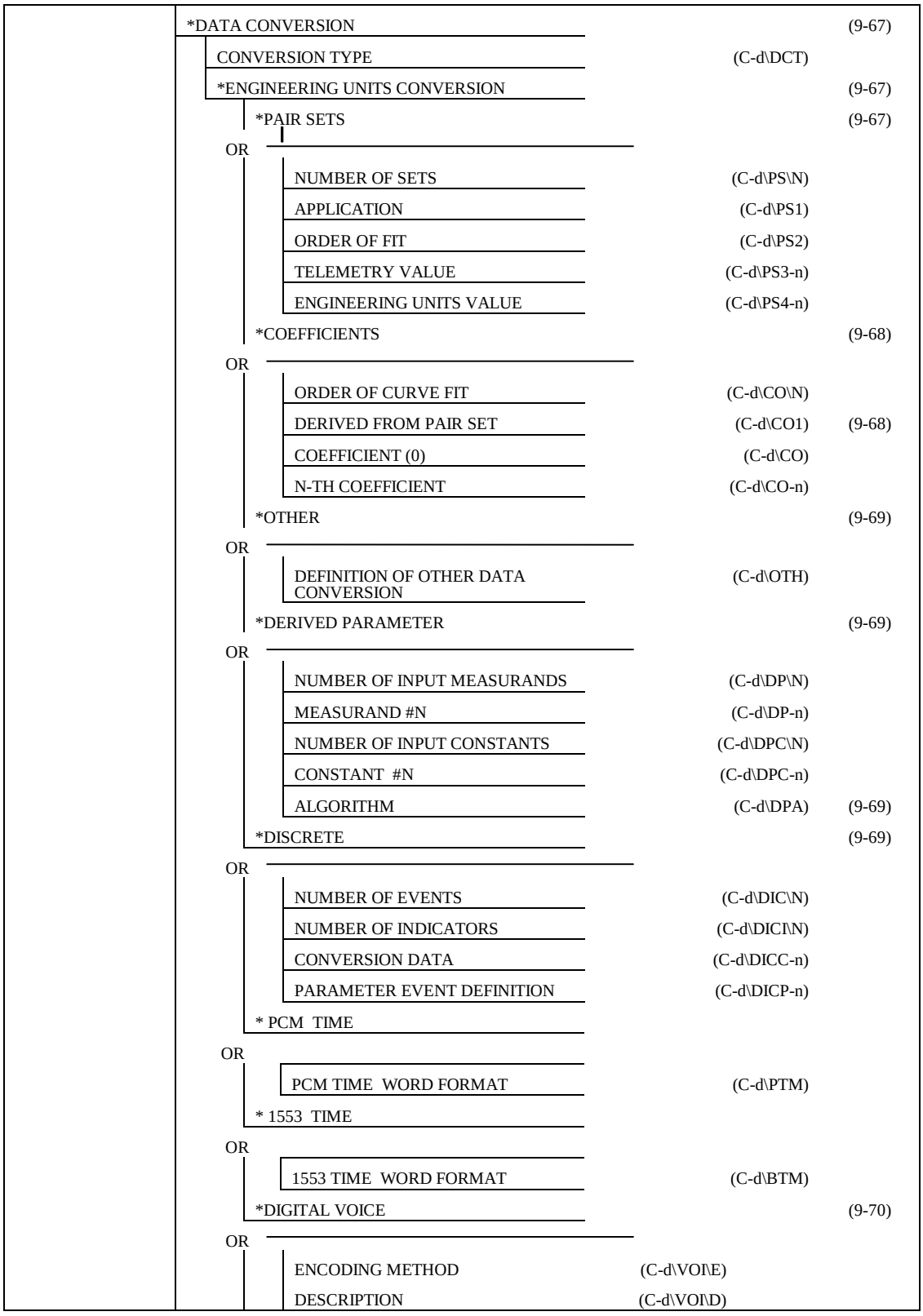

Figure 9-10 (Cont'd). Data Conversion Attributes Group (C).

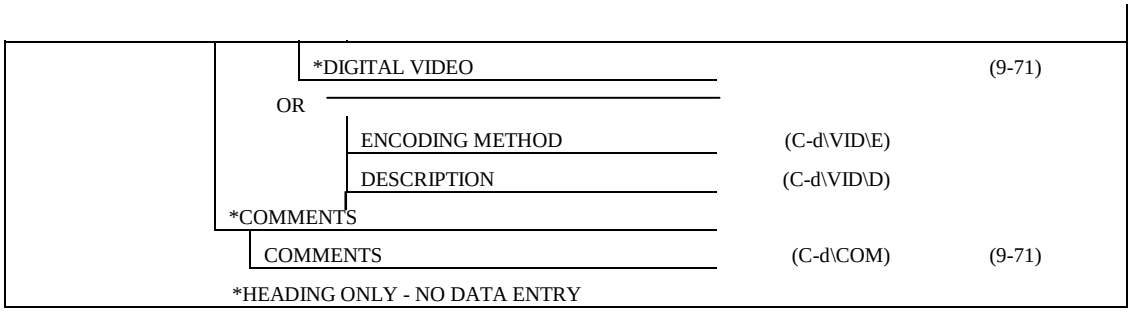

Figure 9-10 (Cont'd). Data Conversion Attributes Group (C).

TABLE 9-9. DATA CONVERSION ATTRIBUTES GROUP (C)

PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
MEASUREMENT NAME	32	C-d\DCN	GIVE THE MEASUREMENT NAME.
TRANSDUCER INFORMATION			
TYPE	32	C-d\TRD1	TYPE OF SENSOR, IF APPROPRIATE.
MODEL NUMBER	32	C-d\TRD2	IF APPROPRIATE.
SERIAL NUMBER	32	C-d\TRD3	IF APPLICABLE.
SECURITY CLASSIFICATION	2	C-d\TRD4	ENTER THE SECURITY CLASSIFICATION OF THIS MEASURAND. UNCLASSIFIED - 'U' CONFIDENTIAL - 'C' SECRET - 'S' TOP SECRET - 'T' OTHER - 'O'. APPEND THE FOLLOWING: IF RECEIVED TELEMETRY SIGNAL (COUNTS) IS CLASSIFIED, ADD 'R'. IF EXPRESSED IN ENGINEERING UNITS, THE MEASURAND VALUE IS CLASSIFIED, ADD 'E'. IF BOTH ARE CLASSIFIED, ADD 'B'.
ORIGINATION DATE	10	C-d\TRD5	DATE OF ORIGINATION OF THIS DATA FILE. DD – DAY MM – MONTH YYYY – YEAR (MM-DD-YYYY)

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
REVISION NUMBER	4	C-d\TRD6	SPECIFY THE REVISION NUMBER OF THE DATA PROVIDED.
ORIENTATION	32	C-d\TRD7	DESCRIBE THE PHYSICAL ORIENTATION OF THE SENSOR.
POINT OF CONTACT: NAME AGENCY ADDRESS TELEPHONE	 24 48 48 20	 C-d\POC1 C-d\POC2 C-d\POC3 C-d\POC4	POINT OF CONTACT WITH THE ORGANIZATION THAT PROVIDED THE CALIBRATION DATA.
MEASURAND			
DESCRIPTION	64	C-d\MN1	DESCRIBE THE PARAMETER BEING MEASURED.
MEASUREMENT ALIAS	32	C-d\MNA	ALTERNATE MEASURAND NAME.
EXCITATION VOLTAGE	10	C-d\MN2	SENSOR REFERENCE VOLTAGE IN VOLTS.
ENGINEERING UNITS	16	C-d\MN3	DEFINE THE ENGINEERING UNITS APPLICABLE TO THE OUTPUT DATA.
LINK TYPE	3	C-d\MN4	DEFINE THE SOURCE DATA LINK TYPE: FM (ANALOG) - 'ANA' PCM - 'PCM' PAM - 'PAM' OTHER - 'OTH'.
TELEMETRY VALUE DEFINITION			
BINARY FORMAT	3	C-d\BFM	FORMAT OF THE BINARY INFORMATION: INTEGER - 'INT' UNSIGNED INTEGER BINARY - 'UNS' SIGN AND MAGNITUDE BINARY (+=0) – 'SIG' SIGN AND MAGNITUDE BINARY (+=1) – 'SIM' ONE'S COMPLEMENT - 'ONE' TWO'S COMPLEMENT - 'TWO' OFFSET BINARY - 'OFF' FLOATING POINT - 'FPT' BINARY CODED DECIMAL -'BCD' OTHER - 'OTH', DEFINE IN COMMENTS.
FLOATING POINT FORMAT	8	C-d\FPF	IF BINARY FORMAT IS 'FPT', SPECIFY WHICH FLOATING POINT FORMAT WILL BE USED.

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
INFLIGHT CALIBRATION			
NUMBER OF POINTS	1	C-d\MC\N	IS INFLIGHT CALIBRATION REQUIRED? 'N' FOR NO OR A NUMBER BETWEEN 1 AND 5, IF IT IS REQUIRED. A MAXIMUM OF FIVE CALIBRATION POINTS MAY BE INCLUDED.
STIMULUS	32	C-d\MC1-n	PROVIDE THE STIMULUS FOR THIS CALIBRATION POINT.
TELEMETRY VALUE	16	C-d\MC2-n	TELEMETRY UNITS VALUE.
DATA VALUE	32	C-d\MC3-n	ENGINEERING UNITS VALUE. SCIENTIFIC NOTATION MAY BE USED.
THE ABOVE SET OF THREE ENTRIES MUST BE REPEATED FOR EACH INFLIGHT CALIBRATION POINT.			
AMBIENT VALUE			
NUMBER OF AMBIENT CONDITIONS	1	C-d\MA\N	NUMBER OF STATIC OR SIMULATED CONDITIONS.
TIMULUS	32	C-d\MA1-n	DESCRIPTION OF THE STATIC ENVIRONMENT IN WHICH A NONTEST STIMULUS OR SIMULATOR IS THE DATA SOURCE.
TELEMETRY VALUE	16	C-d\MA2-n	TELEMETRY UNITS VALUE FOR THE STATIC STIMULUS.
DATA VALUE	32	C-d\MA3-n	ENGINEERING UNITS VALUE FOR THE STATIC OR SIMULATED CONDITION. SCIENTIFIC NOTATION MAY BE USED.

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
OTHER INFORMATION			
HIGH MEASUREMENT VALUE	32	C-d\MOT1	HIGHEST ENGINEERING UNIT VALUE DEFINED BY THE CALIBRATION DATA. SCIENTIFIC NOTATION MAY BE USED.
LOW MEASUREMENT VALUE	32	C-d\MOT2	LOWEST ENGINEERING UNIT VALUE DEFINED IN THE CALIBRATION DATA. SCIENTIFIC NOTATION MAY BE USED.
HIGH ALERT LIMIT VALUE	32	C-d\MOT3	HIGHEST ENGINEERING UNIT VALUE EXPECTED OR SAFE OPERATING VALUE OF THE PARAMETER. ("RED") SCIENTIFIC NOTATION MAY BE USED.
LOW ALERT LIMIT VALUE	32	C-d\MOT4	LOWEST ENGINEERING UNIT VALUE EXPECTED OR THE SAFE OPERATING VALUE OF THE PARAMETER. ("RED") SCIENTIFIC NOTATION MAY BE USED.
HIGH WARNING LIMIT VALUE	32	C-d\MOT5	HIGHEST ENGINEERING UNIT VALUE EXPECTED OR SAFE OPERATING VALUE OF THE PARAMETER. ("YELLOW") SCIENTIFIC NOTATION MAY BE USED.
LOW WARNING LIMIT VALUE	32	C-d\MOT6	LOWEST ENGINEERING UNIT VALUE EXPECTED OR THE SAFE OPERATING VALUE OF THE PARAMETER. ("YELLOW") SCIENTIFIC NOTATION MAY BE USED.
SAMPLE RATE	6	C-d\SR	ENTER THE SAMPLE RATE IN TERMS OF SAMPLES/ SECOND.

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DATA CONVERSION			
CONVERSION TYPE	3	C-d\DCT	DEFINE THE CHARACTERISTICS OF THE DATA CONVERSION: NONE - 'NON' ENGINEERING UNITS: PAIR SETS - 'PRS' COEFFICIENTS - 'COE' DERIVED - 'DER' DISCRETE - 'DIS' PCM TIME - 'PTM' 1553 TIME - 'BTM' DIGITAL VOICE - 'VOI' DIGITAL VIDEO - 'VID' SPECIAL PROCESSING - 'SP' (ENTER IN COMMENTS). OTHER - 'OTH'
ENGINEERING UNITS CONVERSION			
PAIR SETS			
NUMBER OF SETS	2	C-d\PS\N	SPECIFY THE NUMBER OF PAIR SETS PROVIDED, n.
APPLICATION	1	C-d\PS1	ARE THE PAIR SETS TO BE USED TO DEFINE A POLYNOMINAL CURVE FIT? 'Y' (YES) OR 'N' (NO). IF THE ANSWER IS NO, THEN THE PAIR SETS ARE TO BE USED AS A "TABLE LOOKUP" WITH LINEAR INTERPOLATION BETWEEN THE DEFINED POINTS.

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
ORDER OF FIT	2	C-d\PS2	SPECIFY THE ORDER OF THE CURVE FIT TO BE PERFORMED, m. AT LEAST 2 PAIR SETS MUST BE PROVIDED, AND A MAXIMUM OF 32 PAIR SETS MAY BE INCLUDED. TWELVE OR MORE PAIR SETS ARE RECOMMENDED FOR A FIFTH ORDER FIT.
TELEMETRY VALUE	16	C-d\PS3-n	TELEMETRY UNITS VALUE.
ENGINEERING UNITS VALUE	32	C-d\PS4-n	ENGINEERING UNITS VALUE. SCIENTIFIC NOTATION MAY BE USED.
REPEAT THE ABOVE FOR THE n DATA SETS.			
COEFFICIENTS			
ORDER OF CURVE FIT	2	C-d\CO\N	SPECIFY THE ORDER OF THE POLYNOMINAL CURVE FIT, n.
DERIVED FROM PAIR SET	1	C-d\CO1	WERE THE COEFFICIENTS DERIVED FROM THE PAIR SET CALIBRATION DATA PROVIDED ('Y' OR 'N')? IF YES, PROVIDE A POINT OF CONTACT IN THE COMMENTS RECORD.
COEFFICIENT (0)	32	C-d\CO	VALUE OF THE ZERO ORDER TERM (OFFSET). SCIENTIFIC NOTATION MAY BE USED.
N-TH COEFFICIENT	32	C-d\CO-n	VALUE OF THE COEFFICIENT OF THE N-TH POWER OF X (FIRST ORDER COEFFICIENT IS THE EQUIVALENT OF BIT WEIGHT). SCIENTIFIC NOTATION MAY BE USED.
REPEAT UNTIL ALL N+1 COEFFICIENTS ARE DEFINED.			

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
OTHER			
DEFINITION OF OTHER DATA CONVERSION	1000	C-d\OTH	DEFINE OTHER DATA CONVERSION TECHNIQUE OR SPECIAL PROCESSING REQUIREMENT.
DERIVED PARAMETER			
NUMBER OF INPUT MEASURANDS	2	C-d\DP\N	SPECIFY THE NUMBER OF INPUT MEASURANDS USED TO DERIVE THIS PARAMETER.
MEASURAND #N	32	C-d\DP-n	SPECIFY THE NAME OF THE N-TH INPUT MEASURAND.
CONTINUE UNTIL ALL n MEASURANDS ARE DEFINED.			
NUMBER OF INPUT CONSTANTS	2	C-d\DPC \N	SPECIFY THE NUMBER OF INPUT CONSTANTS USED TO DERIVE THIS PARAMETER
CONSTANT #N	32	C-d\DPC-n	SPECIFY THE VALUE FOR THE N-TH CONSTANT. SCIENTIFIC NOTATION MAY BE USED.
CONTINUE UNTIL ALL n CONSTANTS ARE DEFINED.			
ALGORITHM	240	C-d\DPA	DEFINE THE ALGORITHM TO BE USED IN DERIVING THE PARAMETER.
DISCRETE			
NUMBER OF EVENTS	2	C-d\DIC\N	HOW MANY EVENTS ARE ASSOCIATED WITH THIS DISCRETE FIELD, n?
NUMBER OF INDICATORS	2	C-d\DICI\ N	NUMBER OF INDICATORS: FOR A PCM SYSTEM, PROVIDE THE NUMBER OF BITS USED FOR THIS DISCRETE SET. FOR A PAM OR ANALOG CHANNEL, PROVIDE THE NUMBER OF LEVELS USED TO DEFINE THIS DISCRETE SET.

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
CONVERSION DATA	16	C-d\DICC-n	TELEMETRY VALUE, COUNTS FOR PCM, PERCENT OF FULL SCALE FOR PAM OR ANALOG.
PARAMETER EVENT DEFINITION	240	C-d\DICP-n	DEFINE THE EVENT FOR THE BIT OR BIT FIELD IN A WORD THAT CORRESPONDS TO A DISCRETE EVENT OR THE PERCENT FULL SCALE VALUE SUCH AS SWITCH ON OR OFF.
CONTINUE TO DEFINE THE EVENTS FOR EACH BIT PATTERN OR VALUE OF THE DISCRETE MEASURAND.			
PCM TIME			
PCM TIME WORD FORMAT	1	C-d\PTM	SPECIFY THE PCM TIME WORD FORMAT USED, AS DEFINED IN PARAGRAPH 4.7. HIGH ORDER TIME - 'H' LOW ORDER TIME - 'L' MICROSECOND TIME - 'M'
1553 TIME			
1553 TIME WORD FORMAT	1	C-d\BTM	SPECIFY THE 1553 TIME WORD FORMAT USED, AS DEFINED IN PARAGRAPHS 4.7 AND 8.5. HIGH ORDER TIME - 'H' LOW ORDER TIME - 'L' MICROSECOND TIME - 'M' RESPONSE TIME - 'R'
DIGITAL VOICE			
ENCODING METHOD	4	C-d\VOI\E	SPECIFY THE VOICE ENCODING METHOD USED. CVSD - 'CVSD' OTHER - 'OTHR'
DESCRIPTION	640	C-d\VOI\D	SPECIFY THE DECODING ALGORITHM TO BE USED.

TABLE 9-9 (Cont'd). DATA CONVERSION ATTRIBUTES GROUP (C)			
PARAMETER	MAXIMUM FIELD SIZE	CODE NAME	DEFINITION
DIGITAL VIDEO			
ENCODING METHOD	64	C-d\VID\E	SPECIFY THE VIDEO ENCODING METHOD USED.
DESCRIPTION	640	C-d\VID\D	SPECIFY THE DECODING ALGORITHM TO BE USED.
COMMENTS			
COMMENTS	3200	C-d\COM	PROVIDE ANY OTHER INFORMATION REQUIRED OR DESIRED.

9.5.9 Airborne Hardware Attributes (H). The Airborne Hardware Attributes Group defines the specific configuration of airborne instrumentation hardware in use on the item under test. This group allows the same TMATS file to describe the airborne hardware as well as the telemetry attributes.

Specific information on the structure and definition of airborne hardware attributes is not included in this standard. There are far too many hardware systems to try to define them all in one group. The main purpose of identifying this group is to reserve the 'H' designation for those instrumentation organizations which choose to use the TMATS standard in this way.

The only H group attributes defined in this standard are:

- Test Item (code name H\TA) specifies the item under test and ties the H group to the G group, and

- Airborne System Type (code name H\ST-n) will distinguish which airborne systems are being described in the current file and will determine how the rest of the attributes in the H group are interpreted.

For anyone wishing to define an H group, it is strongly recommended that the conventions laid out in this standard be followed. The resultant document should maintain the look and feel of this standard for consistency.