MILITARY SPECIFICATION

DIGITAL CHART OF THE WORLD (DCW)

**This Specification is approved for use by all
Departments and Agencies of the Department of Defense.**

1. SCOPE

1.1 Scope. These specifications define the content and structure of the U.S. Defense Mapping Agency (DMA) Digital Chart of the World (DCW) product.

1.2 Purpose. Conformance to these specifications assures uniformity of treatment among all mapping and charting elements engaged in coordinated production and maintenance program of this product.

1.3 Security.

1.3.1 Security classification of specification. This product specification is UNCLASSIFIED.

1.3.2 Security classification of product. The DCW is UNCLASSIFIED.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Director, Defense Mapping Agency, ATTN: PR, 8613 Lee Highway, Fairfax, VA 22031-2137 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC   AREA MCGT

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

MIL-D-89009

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the current Department of Defense Index of Specifications and Standards (DODISS) and the supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

PS/1AB/190   -   Product Specification for Operational Navigation Chart, third edition December 1988 and amendments and changes thereto

PS/1AC/140   -   Product Specification for Jet Navigation Chart, first edition November 1980 and amendments and changes thereto

STANDARDS

MILITARY

MIL-STD-490A   -   Specification Practices

MIL-STD-1189B   -   Standard Department of Defense Bar Code Symbology, 10 August 1989

MIL-STD-600001   -   Mapping, Charting & Geodesy Accuracy Standard, 26 February 1990

MIL-STD-600003   -   MC&G Product Generation Rules

MIL-STD-600006   -   Vector Product Format, April 1992

MIL-STD-600010   -   DMA Stock Number Bar Coding Requirements

2

MIL-D-89009

(Unless otherwise indicated, copies of federal and military
specifications, standards, and handbooks are available from the
Standardization Documents Order Desk, Bldg. 4D, 700 Robbins
Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and
publications. The following other Government documents, drawings,
and publications form a part of this document to the extent
specified herein. Unless otherwise specified, the document
versions are those cited in the solicitation.

DMA TM 8358.1 - Datums, Ellipsoids, Grids, and Grid Reference
Systems. First Edition. September 1990.

DIAM 65-18 - Defense Intelligence Agency Manual -
Geopolitical Data Elements and Related Features. March 1984.

(These publications are available from DMA by writing to:
Director, Defense Mapping Agency, ATTN: PR, 8613 Lee Highway,
Fairfax, VA 22031-2137.)

2.2 Non-Government publications. The following documents
form a part of this document to the extent specified herein.
Unless otherwise specified, the issues of the documents which are
DoD adopted are those listed in the issue of the DODISS cited in
the solicitation. Unless otherwise specified, the issues of
documents not listed in the DODISS are the issues of the documents
cited in the solicitation (see 6.2).

ANSI/IEEE 754-1985. IEEE Standard for Binary Floating Point
Arithmetic. August 12, 1985.

(Application for copies should be addressed to the publisher:
IEEE, Inc., 345 East 47th St., NY, 10017.)

Anderson, J.R., Hardy, E.E., Roach, J.T., and Witmer, R.E. A
Land Use and Land Cover Classification System for Use with
Remote Sensor Data. U.S. Geological Survey Prof. Paper 964,
U.S. Government Printing Office, 1976.

ISO 9660. 1988 (E). International Standard Organization for
Standardization (ISO) Information Processing - Volume and File
Structure of CD-ROM for Information Interchange. First
edition, 1988.

ISO 10149. International Standard Organization for
Standardization (ISO) Data Interchange on Read Only 120 MM
Optical Data Discs "CD-ROMs".

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

(Non-government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other information services.)

2.3   Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

MIL-D-89009

3. REQUIREMENTS

3.1   Accuracy.

3.1.1   Absolute horizontal accuracy. The absolute horizontal
accuracy of the DCW for all features derived from Operational
Navigation Charts (ONCs) is 2040 meters (6700 feet) rounded to the
nearest 5 meters at 90% Circular Error (CE), World Geodetic System
(WGS84). The absolute horizontal accuracy of the DCW for all
features derived from Jet Navigation Charts (JNCs) is 4270 meters
(14006 feet) at 90% Circular Error.

3.1.2   Absolute vertical accuracy. The absolute vertical
accuracy of the DCW is the same as for the original ONC and JNC
lithographs at 90% Linear Error (LE), Mean Sea Level (MSL).

   a. Contour accuracy. The accuracy of contours collected
      from ONC source is $\pm$610 meters ($\pm$2000 feet).

   b. Spot elevations. The accuracy of spot elevations
      collected from ONC source is $\pm$30 meters ($\pm$100 feet).

3.1.3   Displaced feature symbols. The accuracy requirements
stated in 3.1.1 and 3.1.2 do not apply to feature symbols that are
displaced as identified in MIL-STD-600003 (reference displacement
rules).

3.2   Datum.

3.2.1   Horizontal datum. The horizontal datum shall be the
current WGS.

3.2.2   Vertical datum. The vertical datum shall be Mean Sea
Level.

3.3   Units of measure. Units of measurement in this product
specification are given in the metric system. They are also
presented in English units, where appropriate. The unit of
measurement for the DCW database shall be the English measurement
system.

3.4   DCW product overview.

3.4.1   Product description. The DCW is a general-purpose
global digital database designed to support Geographic Information
System (GIS) applications. The DCW database contains five
libraries represented on four CD-ROMs. The BROWSE library
contains world-wide data at approximately 1:31,000,000 scale,
which supports overview displays at a global scale. There are four

"detailed data" libraries, one for each CD-ROM. Each "detailed library" contains data for a geographic region of the world at 1:1,000,000 scale. Each CD-ROM contains one of the four "detailed data" libraries and a copy of the BROWSE library.

   3.4.2   Database design. The DCW utilizes the Vector Product Format (VPF) georelational data model to support a vector-based, thematically layered database. The VPF is described in MIL-STD-600006.

   3.4.3   Database sources. The DCW database content is based primarily on the feature content of the 1:1,000,000-scale DMA ONC series. The 270 ONC sheets are supplemented with six 1:2,000,000-scale JNCs in the Antarctic region where ONC coverage is not available. Other ancillary sources for the DCW are DMA's Digital Aeronautical Flight Information File (DAFIF) for the airport features, Advanced Very High Resolution Radiometer (AVHRR) imagery developed by the USGS for the vegetation over the continental U.S., and Joint Operation Graphics (JOGs), and Tactical Pilotage Charts (TPCs) for the transportation network of approximately 355 major cities. The BROWSE map was derived from original source compilation.

   3.4.4   Thematic layer organization. The DCW database is organized into thematic layers. Each DCW detailed data library contains 17 thematic layers. The BROWSE library contains eight thematic layers (TABLE 1).

   3.4.5   DCW feature attributes. Each DCW feature is defined by attributes and attribute value code combinations (see Appendix Section 30).

   3.4.6   Distribution medium. The DCW database is distributed on Compact Disc-Read Only Memory (CD-ROM) conforming to ISO Standard 9660, Volume and File Structure of CD-ROM for Information Interchange.

   3.4.7   Geographic organization. The DCW database is organized on four CD-ROMs. The geographic organization for the detailed data libraries on the discs is (1) North America, (2) Europe and Northern Asia, (3) South America, Africa, and Antarctica and (4) Southern Asia and Australia. The BROWSE library is duplicated on each of the four discs.

MIL-D-89009

3.4.8   Geographic Information System (GIS) analysis. The DCW database supports GIS analysis; however, in order to perform GIS functions, the DCW database must be used with user-supplied GIS software.

TABLE 1.   Thematic layers and other coverages for DCW detailed libraries and BROWSE library.

DCW library thematic layers	Coverage name	BROWSE library thematic layers	Coverage name
Aeronautical	AE	ONC Compilation Date	CO
Cultural Landmarks	CL	Data Volume	DV
Data Quality	DQ	Drainage	DN
Drainage	DN	Geographic Regions	GR
Drainage-Supplemental	DS	Hypsographic Data Availability	DA
Hypsography	HY		
Hypsography-Supplemental	HS	ONC Index	IN
Land Cover	LC	Political/Oceans	PO
Ocean Features	OF	Populated Places	PP
Physiography	PH		
Political/Oceans	PO		
Populated Places	PP		
Railroads	RR		
Roads	RD		
Transportation Structure	TS		
Utilities	UT		
Vegetation[1]	VG		
Other DCW library coverages	**Coverage name**	**Other BROWSE library coverages**	**Coverage name**
Gazetteer	GAZETTE	None	
Tile Reference	TILEREF		
Library Reference	LIBREF		

[1] Vegetation data are available only on Disc 1 and only for a portion of the North American continent.

3.4.9   File structure. The DCW database utilizes the standard Disk Operating System (DOS) directory structure.

3.4.10 Database size. The entire DCW database contains approximately 1,700 megabytes (MB) of data.

3.5   Database structure.

3.5.1   Data structure. The DCW database shall be implemented in VPF in accordance with MIL-STD-600006.

3.5.2   VPF implementation. The DCW database is implemented in the VPF data structure as described in paragraphs 3.6 through 3.8. These sections describe, respectively, the directory levels implemented in the DCW (3.6), the VPF file types implemented in

7

the DCW (3.7), and the physical record format and content of the
VPF tables and files used in the DCW (3.8).

3.6 <u>DCW directory levels</u>. The DCW physically organizes
geographic data into four directory levels: database, library,
coverage, and primitive (FIGURE 1).

3.6.1 <u>Database directory level</u>. The DCW contains one
database directory which is duplicated on each disc. The
database-specific information and metadata for the DCW are
specified at the database level. Also specified at the database
level are the libraries contained in the DCW.

3.6.2 <u>Library directory level</u>. The DCW contains five
library directories (four detailed and one BROWSE). Each library
contains information and metadata that are specific for that
library. Also specified at this level are the coverages contained
within each library.

3.6.3 <u>Coverage directory level</u>. The DCW contains 17
coverage directories in each of the 4 detailed libraries and 8
coverages in the one BROWSE library. Each coverage contains the
feature, primitive, and attribute information that make up a
thematic layer.

3.6.4 <u>Primitive directory level</u>. The DCW contains up to
four VPF primitive types: nodes, edges, faces, and text,
organized on the basis of physical tile partitions.

```
                        ┌─────────────────────┐
                        │    DCW DATABASE     │
                        │     DIRECTORY       │
                        └─────────────────────┘
                            │            │
              ┌─────────────────┐    ┌─────────────────┐
              │  4 DCW LIBRARY  │    │ 1 BROWSE LIBRARY│
              │   DIRECTORIES   │    │    DIRECTORY    │
              └─────────────────┘    └─────────────────┘
                      │                      │
              ┌─────────────────┐    ┌─────────────────┐
              │  17 COVERAGE    │    │   8 COVERAGE    │
              │  DIRECTORIES    │    │  DIRECTORIES    │
              │  PER LIBRARY    │    │                │
              └─────────────────┘    └─────────────────┘
                      │                      │
         ┌──────────────────────┐  ┌──────────────────────┐
         │  MULTIPLE PRIMITIVE   │  │     NO TILES -       │
         │ DIRECTORIES PER COV.  │  │ PRIMITIVES STORED    │
         │  BASED ON TILE SCHEME │  │ IN COVERAGE DIRECTORY│
         └──────────────────────┘  └──────────────────────┘
```
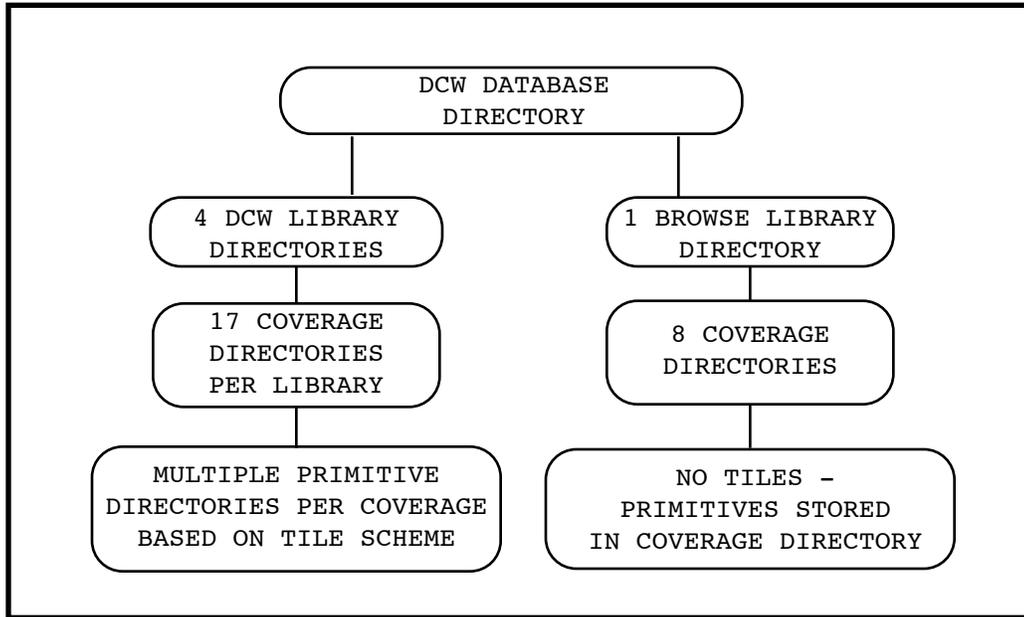
FIGURE 1.   DCW database implementation.

3.7   DCW files.   The DCW implements three types of VPF files:
directories, tables, and indices.

3.7.1   Directories.   All DCW database files are contained in
a hierarchy of DOS directories.   Contained within these
directories are the tables and indices that provide information
about the database.

3.7.2   VPF Tables.   Each directory within the DCW database
contains a series of VPF tables.   VPF tables consist of two parts:
(1) a header and (2) data records.

  a. Header.   The header defines the table contents,
     including the column names, data types, field sizes, key
     types, and descriptive information.

  b. Data records.   Following the header is a series of one
     or more data records (or rows).   Rows can be of fixed
     length or variable length.   VPF specifies which are
     fixed and which are variable.   Each row comprises a set
     of fields containing information that corresponds to the
     definitions of the columns.   Each row is identified by a
     sequential integer beginning with the number 1 that is
     called a row identifier or ID.   In fixed-length tables,
     all rows in a table have the same number and type of
   columns and field definitions.   The values contained in

9

MIL-D-89009

each row store the information pertaining to each
defined column. Each column in a table has a unique
name, and is defined by field, count, and key type.

3.7.3 <u>Indices</u>. Index files are implemented for tables with
variable-length records, primitive tables, and feature tables in
tiled databases that require query response capabilities. In the
DCW, tables that have an associated index are all those with
variable-length records; area, line, point, and text feature
tables; and the face, edge, node and text primitive tables.

     a. Variable-length field index. The index associated with
variable-length fields specifies the starting position
in bytes for variable-length text or coordinate records.
This index is a separate file containing a header and a
data array that specifies the byte offset from the
beginning of the file for each record. These indices
are implemented to permit direct data access, which
accelerates data retrieval.

     b. Spatial index. The index associated with primitive
tables is a spatial index that enhances data access and
is based on the value of the coordinate column.

     c. Thematic index. The index associated with tiled feature
tables is a thematic index that enhances data access and
is based on the value of the ID columns.

3.8 <u>DCW record layout</u>. The directories, tables, and indices
implemented for the DCW are presented in this section generally in
the order they are stored on the CD-ROM, beginning with the
database directory (see Appendix Section 50). A format and
content table illustration is used throughout this specification
to define the physical record structure required for each VPF
table in the DCW (FIGURE 2). The VPF field types and key types
implemented in the DCW are depicted in TABLE 2. The tables
implemented in the DCW are listed by directory level in TABLE 3.

MIL-D-89009

Documentation file name
(dash when no file present)

Header
length

Value description table
(dash when not applicable)

Table
description

Column definition
(Field type, number of
elements, key type)

Column
description

Thematic index name
(dash when not applicable)

Column
name

```
{4 Byte int};\
Drainage Areas;     DNAREA.DOC;\

ID       = I,1,P, Row ID,                    -,         -,:\
DNPYTYPE= I,1,N, Type of Drainage Area,      INT.VDT,-,:\
TILE_ID = S,1,F, Tile Reference Identifier, -,         DNAREA.ATI,:\
FAC_ID  = I,1,F, Face Primitive Foreign Key,-,         -,:;
```

Header
definition

```
     1              4              176            1
     2              3              143            2
     3              4              155            3
     :              :              :              :
     n              n              n              n
```

Table
values

ID   DNPYTYPE   TILE_ID   FAC_ID

NOTES:
1. The header portion (top half of the illustration) defines the entries
    required for the VPF table header, while the content portion (bottom
    half) defines the record entries for the data fields.
2. The backslash character (\) at the end of each line is used to indicate
    that the record entry is continued uninterrupted to the next line; no
    carriage returns should be embedded in the string.
3. The semi-colon character (;) at the end each line is used to indicate the
    end of the component.
4. The colon character (:) at the end each line is used to indicate the end
    of the column definition.

FIGURE 2. VPF physical record structure.

11

MIL-D-89009

TABLE 2. Field and key types implemented in the DCW.

Field Type	Description		Key Type	Description
K	ID triplet		P	Primary key
I	Long Integer		F	Foreign key
S	Short Integer		N	Non-key
T<n>	Fixed-length text string			
T*	Variable-length text string			
C	Coordinate pair (x, y)			
C<n>	Coordinate array			
C*	Coordinate string			
D	Date			
X	Null column			

3.8.1 Database-level record layout. The DCW is one database with five libraries. Two mandatory VPF files are implemented at the database level:

a. Database header table. This table contains information about the contents of the database and security information. The format and content for the database header table are presented in TABLE 4.

b. Library attribute table. The library attribute table (TABLE 5) contains six columns; the row id, the name, and the extent for each library in the database. The format and content of the library attribute table is presented in TABLE 5.

3.8.2 Library-level record layout DCW libraries must contain the same minimum set of required VPF files; however, they do not need to contain the same thematic layers or coverages. The library names are also the directory names and are represented in capital letters. The thematic layer names and coverage names for the DCW libraries are listed in TABLE 1. The contents of the DCW libraries are described in 3.8.3. The contents of the BROWSE library are described in 3.8.4.

3.8.3 DCW library contents. The DCW libraries are directories containing VPF tables, thematic coverages, and reference coverages. A detailed description of library contents is available in the Military Standard for Vector Product Format, MIL-STD-60006. There are three mandatory VPF tables: library header table, geographic reference table, and coverage attribute table, and two tables: data quality table and a lineage narrative table. There are 17 coverage subdirectories, each of which contains a thematic coverage. The thematic coverages are listed in the coverage attribute table. There are three additional coverage subdirectories in the DCW library: the name placement

12

coverage, the library reference coverage, and the tile reference
coverage. Feature tables associated with these other coverages
are presented in Appendix 30.

MIL-D-89009

TABLE 3. Table descriptions, names, and indices by DCW
directory level

DCW Directory level	Table description	Table name	Index table†	Section
DATABASE	Database Header Table	DHT	–	3.8.1 a
	Library Attribute Table	LAT	–	3.8.1 b
LIBRARY	Library Header Table (m)	LHT	–	3.8.3 a / 3.8.4 a
	Geographic Reference Table(m)	GRT	–	3.8.3 b / 3.8.4 b
	Coverage Attribute Table (m)	CAT	–	3.8.3 c / 3.8.4 c
	Data Quality Table(o)	DQT	DQX	3.8.3 d / 3.8.4 d
	Lineage Narrative Table (o)	LINEAGE.DOC	–	3.8.6 e
COVERAGE	Feature Class Schema Tables	FCS	–	3.8.6 a / 3.8.7 b
	Area Feature Tables	*.AFT	*.AFX	3.8.6 b
	Area Thematic Index	*.ATI[1]	–	3.8.6 d
	Area Lineage Documentation	*.DOC		3.8.6 b
	Line Feature Tables	*.LFT	*.LFX	3.8.6.b
	Line Thematic Index	*.LTI[1]	–	3.8.6 d
	Line Lineage Documentation	*.DOC		3.8.6 b
	Point Feature Tables	*.PFT	*.PFX	3.8.6 b
	Point Thematic Index	*.PTI[1]	–	3.8.6 d
	Point Lineage Documentation	*.DOC		3.8.6 b
	Text Feature Tables	*.TFT	*.TFX	3.8.6 b
	Text Thematic Index	*.TTI[1]	–	3.8.6 d
	Character Value Description Table	CHAR.VDT	–	3.8.6 c / 3.8.7 d
	Integer Value Description Table	INT.VDT	–	3.8.6 c / 3.8.7 d
PRIMITIVE	Face Primitive Tables	FAC	–	3.8.8 g
	Face Spatial Indices	FSI[1]	–	3.8.8 m
	Face Bounding Rectangle	FBR	–	3.8.8 h
	Ring Tables	RNG	–	3.8.8 j
	Edge Primitive Tables	EDG	EDX	3.8.8 d
	Edge Spatial Indices	ESI[1]	–	3.8.8 m
	Edge Bounding Rectangle	EBR	–	3.8.8 e
	Entity Node Primitive Tables	END	–	3.8.8 b
	Node Spatial Index	NSI[1]	–	3.8.8 m
	Text Primitive Tables	TXT	TXX	3.8.8 l
	Text Spatial Index	TSI[1]	–	3.8.8 m

* Denotes the feature class name.
† Variable-length index tables.

[1] Spatial and thematic indices have a different format and structure than the variable-length index tables and are, therefore, referenced separately.

(m) – mandatory
(o) – optional

14

MIL-D-89009

TABLE 4. File format and content for Database Header Table (DHT).

```
{Header length};\
Database Header Table;-;\
ID=I,           1,P,Row Identifier,-,-,:\
DATABASE_NAME=T,  8,N,Directory name of this database,-,-,:\
DATABASE_DESC=T,100,N,Description of this database,-,-,:\
MEDIA_STANDARD=T,20,N,"Media Standard (i.e. CDROM)",-,-,:\
ORIGINATOR=T,    50,N,Producer of this database,-,-,:\
ADDRESSEE=T,     100,N,Address of the producer,-,-,:\
MEDIA_VOLUMES=T,  1,N,Number of Volumes in this database,-,-,:\
SEQ_NUMBERS=T,    1,N,The Sequential Number(s) in this database,-,-,:\
NUM_DATA_SETS=T,  1,N,Number of Data Sets,-,-,:\
SECURITY_CLASS=T, 1,N,Security Classification,-,-,:\
DOWNGRADING=T,    3,N,Downgrading,-,-,:\
DOWNGRADE_DATE=D, 1,N,Date,-,-,:\
RELEASABILITY=T, 20,N,Releasability restrictions of data,-,-,:\
OTHER_STD_NAME=T,50,N,Description of other data standards used,-,-,:\
OTHER_STD_DATE=D, 1,N,Date,-,-,:\
OTHER_STD_VER=T, 10,N,Version number of other standard,-,-,:\
TRANSMITTAL_ID=T, 1,N,Unique Transmittal Identifier,-,-,:\
EDITION_NUMBER=T,10,N,Edition Number of this database,-,-,:\
EDITION_DATE=D,   1,N,Date of edition,-,-,:;
```

```
1\
DCW\
DIGITAL CHART OF THE WORLD:  a general purpose global database
designed to support GIS applications\
ISO 9660\
DEFENSE MAPPING AGENCY/SYSTEM CENTER\
"HEADQUARTERS DEFENSE MAPPING AGENCY ATTN: PR 8613 LEE HIGHWAY FAIRFAX
VA 22031-2138"\
4\
1\
1\
U\
NO\
00000000000000.00000\
UNRESTRICTED\
DIGEST\
19910600000000.00000\
1\
1\
1\
19920300000000.00000
```

15

MIL-D-89009

TABLE 5. <u>Format and content for Library Attribute Table (LAT)</u>.

```
{Header length};\
Library Attribute Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
LIBRARY_NAME=T,  8,P,Library name,-,-,:\
XMIN=F,          1,N,Westernmost longitude,-,-,:\
YMIN=F,          1,N,Southernmost latitude,-,-,:\
XMAX=F,          1,N,Easternmost longitude,-,-,:\
YMAX=F,          1,N,Northernmost latitude,-,-,:;
```

1	NOAMER	-180.0	5.0	-5.0	90.0
2	EURNASIA	-50.0	35.0	-165.0	90.0
3	SOAMAFR	-180.0	-90.0	180.0	50.0
4	SASAUS	25.0	-55.0	-130.0	55.0
5	BROWSE	-180.0	-90.0	180.0	90.0

a. DCW library header table (LHT). This table (TABLE 6)
   identifies the data set, data sources, and security
   information in the DCW libraries.

b. Geographic reference table (GRT). This table (TABLE 7)
   contains the geographic parameters and projection
   information about the DCW libraries.

c. Coverage attribute table (CAT). This coverage attribute
   table (TABLE 8) contains four columns: the row
   identifier, coverage name, coverage description, and
   topology level. The coverage description column is the
   equivalent of the thematic layer name.

d. Data quality table (DQT). This table (TABLE 9) contains
   information on the source data characteristics including
   actual map/chart sheets used in the production process,
   compilation date, and general accuracy information.
   This table also has a separate variable-length index
   file with the following suffix: DQT.

e. Lineage narrative table (LNT). This table contains data
   lineage information common to all DCW coverages,
   including project history information of digitizing and
   transformation tolerance used in the production process.
   This table uses a standard documentation format which is
   described in Section Appendix section 40.3.

MIL-D-89009

TABLE 6.   <u>Format and content for a representative DCW Library Header
         Table (LHT)</u>.

```
{Header length};\
Library Header Table;-;\
ID=I,               1,P,Row Identifier,-,-,:\
PRODUCT_TYPE=T,     12,N,Product Type,-,-,:\
LIBRARY_NAME=T,     12,N,Name,-,-,:\
DESCRIPTION=T,     100,N,Description of the library,-,-,:\
DATA_STRUCT_CODE=T,  1,N,Data Structure Code,-,-,:\
SCALE=I,             1,N,Scale of the library,-,-,:\
SOURCE_SERIES=T,    15,N,Series,-,-,:\
SOURCE_ID=T,        30,N,ID of the source reference,-,-,:\
SOURCE_EDITION=T,   20,N,Edition number of the source,-,-,:\
SOURCE_NAME=T,     100,N,Name of library source,-,-,:\
SOURCE_DATE=D,       1,N,Source Date,-,-,:\
SECURITY_CLASS=T,    1,N,Security Classification,-,-,:\
DOWNGRADING=T,       3,N,Downgrading,-,-,:\
DOWNGRADING_DATE=D,  1,N,Date,-,-,:\
RELEASABILITY=T,    20,N,Releasability,-,-,:;
```
```
1\
DCW\
NOAMER[1]\
This library contains one of the 4 geographic regions of the world
from the DCW database.\
8\
1000000\
ONC\
ONC SERIES COVERING GEOG AREA\
VARIES\
OPERATIONAL NAVIGATION CHARTS or JET NAVIGATION CHARTS\
19890000000000.00000\
U\
NO\
00000000000000.00000\
UNRESTRICTED
```

[1] Replace with EURNASIA, SOAMAFR, or SASAUS for the appropriate DCW LHT.

17

MIL-D-89009

TABLE 7.   <u>Format and content for DCW library Geographic
            Reference Table (GRT)</u>.

```
{Header length};\
Geographic Reference Table;-;\
ID=I,                  1,P,Row Identifier,-,-,:\
DATA_TYPE=T,           3,N,Data Type,-,-,:\
UNITS=T,               3,N,Units,-,-,:\
ELLIPSOID=T,          15,N,Ellipsoid,-,-,:\
ELLIPSOID_DETAIL=T,   50,N,Ellipsoid Details,-,-,:\
VERT_DATUM_REF=T,     15,N,Datum Vertical Reference,-,-,:\
VERT_DATUM_CODE=T,     3,N,Vertical Datum Code,-,-,:\
SOUND_DATUM=T,        15,N,Sounding Datum,-,-,:\
SOUND_DATUM_CODE=T,    3,N,Vertical Datum Code,-,-,:\
GEO_DATUM_NAME=T,     15,N,Datum Geodetic Name,-,-,:\
GEO_DATUM_CODE=T,      3,N,Datum Geodetic Code,-,-,:\
PROJECTION_NAME=T,    20,N,Projection Name,-,-,:;
```

```
1\
GEO\
014\
WGS 84\
A=6378137 B=6356752 Meters\
MEAN SEA LEVEL\
015\
MEAN SEA LEVEL\
015\
WGS 84\
WGE\
DECIMAL DEGREES
```

18

MIL-D-89009

TABLE 8. <u>Format and content for DCW Coverage Attribute Table (CAT)</u>.

```
{Header length};\
Coverage Attribute Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
COVERAGE_NAME=T,  8,P,Coverage name,-,-,:\
DESCRIPTION=T,   50,N,Coverage description,-,-,:\
LEVEL=I,          1,N,Topology level,-,-,:;
```

1	PO	POLITICAL/OCEANS	3
2	PP	POPULATED PLACES	3
3	LC	LAND COVER	3
4	RD	ROADS	3
5	RR	RAILROADS	2
6	UT	UTILITIES	2
7	AE	AERONAUTICAL	0
8	DQ	DATA QUALITY	3
9	DN	DRAINAGE	3
10	DS	SUPPLEMENTAL DRAINAGE	0
11	HY	HYPSOGRAPHY	3
12	HS	SUPPLEMENTAL HYPSOGRAPHY	2
13	CL	CULTERAL LANDMARKS	3
14	OF	OCEAN FEATURES	2
15	PH	PHYSIOGRAPHY	2
16	TS	TRANSPORTATION STRUCTURE	2
17	VG	VEGETATION[1]	3

[1] Vegetation data is only available on Disc 1 for the continental U.S.

19

MIL-D-89009

TABLE 9. <u>Format and content for DCW library Data Quality Table (DQT).</u>

```
{Header length};\
Library Data Quality Table;LINEAGE.DOC;\
ID=I,               1,P,Row Identifier,-,-,:\
VPF_LEVEL=T,        8,N,VPF Level,-,-,:\
VPF_LEVEL_NAME=T,  20,N,Name of VPF Level,-,-,:\
FEATURE_COMPLETE=T, *,N,Feature Completeness Percent,-,-,:\
ATTRIB_COMPLETE=T,  *,N,Attribute Completeness Percent,-,-,:\
LOGICAL_CONSIST=T,  *,N,Logical Consistency,-,-,:\
EDITION_NUM=T,      8,N,Edition Number,-,-,:\
CREATION_DATE=D,    1,N,Creation Date,-,-,:\
REVISION_DATE=D,    1,N,Revision Date,-,-,:\
SPEC_NAME=T,       20,N,Product Specification Name,-,-,:\
SPEC_DATE=D,        1,N,Product Specification Date,-,-,:\
EARLIEST_SOURCE=D,  1,N,Date of Earliest Source,-,-,:\
LATEST_SOURCE=D,    1,N,Date of Latest Source,-,-,:\
QUANT_ATT_ACC=T,    *,N,Standard Deviation of Quantitative
                        Attributes,-,-,:\
QUAL_ATT_ACC=T,     *,N,Percent Reliability of Qualitative
                        Attributes,-,-,:\
COLLECTION_SPEC=T,  *,N,Collection Specification Name,-,-,:\
SOURCE_FILE_NAME=T,12,N,Included Source File Name,-,-,:\
ABS_HORIZ_ACC=T,    *,N,Absolute Horizontal Accuracy of VPF Level,-,-,:\
ABS_HORIZ_UNITS=T, 20,N,Unit of Measure for Absolute Horizontal
                        Accuracy,-,-,:\
ABS_VERT_ACC=T,     *,N,Absolute Vertical Accuracy of VPF Level,-,-,:\
ABS_VERT_UNITS=T,  20,N,Unit of Measure for Absolute Vertical
                        Accuracy,-,-,:\
REL_HORIZ_ACC=T,    *,N,Point to point horizontal accuracy of
                        VPF Level,-,-,:\
REL_HORIZ_UNITS=T, 20,N,Unit of Measure for Point to Point Horizontal
                        Accuracy,-,-,:\
REL_VERT_ACC=T,     *,N,Point to Point Vertical Accuracy of
                        VPF Level,-,-,:\
REL_VERT_UNITS=T,  20,N,Unit of Measure for Point to Point Vertical
                        Accuracy,-,-,:\
COMMENTS=T,         *,N,Miscellaneous Comments,-,-,:;
```

```
1\
LIBRARY\
NOAMER[1]\
100 percent of features depicted on the ONC source materials have been
captured.\
100 percent of the features have valid attribute codes assigned to
them.\
All data were found to be topologically correct.  No duplicate features
are present.  All areas are completely described as depicted on the
source manuscripts.  No undershoots or overshoots are present.  All
data were consistently captured using the rules described in the
narrative associated with this table and in the various feature table
narrative files present at the coverage level within the library.\
1\
19920228000000.00000\
19920228000000.00000\
```

[1] Replace with EURNASIA, SOAMAFR, or SASAUS for the appropriate DQT.

MIL-D-89009

TABLE 9.   Format and content for DCW library Data Quality Table
           (DQT) - Continued.

```
DCW\
19911207000000.00000\
19580401000000.00000\
19890101000000.00000\
100 percent of attribute codes were reviewed against the source
manuscripts. No formal effort was undertaken to develop a quantitative
accuracy statement.\
100 percent of attribute codes were reviewed against the source
manuscripts. No formal effort was undertaken to develop a qualitative
accuracy statement.\
Operational Navigational Charts (ONC)\
NA
+/- 6700 feet:  This figure represents overall library accuracy.  Chart-
specific accuracies are available as area feature attributes in the DCW
data quality coverage.  Detailed horizontal accuracy figures were
developed by comparing the positions of well-defined points in the
roads, railroads, utility lines, and drainage coverages against sources
of higher accuracy, measuring the offsets, and expressing differences as
a Circular Map Accuracy figure at a 90% confidence interval.  This
figure was independently verified by adding known production errors to
source chart accuracies in a root sum square calculation.  The primary
accuracy analysis was performed on one chart only in the prototyping
phase of the project.\
FEET\
+/- 2000 feet:  This figure represents overall library accuracy.
Chart-specific accuracies are available as area feature attributes in
the DCW data quality coverage.  Vertical accuracy figures were
developed by comparing elevation contour locations on 1:24,000 scale
maps to elevation values at the same location within the digital
database.  Some manual interpolation was necessary to complete this
test.  The analysis results are expressed as linear error at a 90%
confidence interval.\
FEET\
UNKNOWN\
N/A\
UNKNOWN\
N/A\
Additional descriptions of data lineage are available in the narrative
table associated with this data quality table (called lineage.doc).
```

   f. Names placement coverage. The GAZETTE directory
       consists of a names placement point feature table, which
       contains information about the named features in the
       names placement coverage, and the names placement entity
       node primitive table, which contains the point location
       in the coverage.

   g. Library reference coverage. The LIBREF directory
       contains a generalized line map over the extent of the
       library and is spatially registered to the tile
       reference coverage.

h. Tile reference coverage. The TILEREF directory contains an area feature layer with faces and edges that identifies the tiles used to subdivide the library.

3.8.4 <u>BROWSE library contents</u>. The BROWSE library is a directory containing three mandatory VPF files and eight coverage directories (each representing a thematic layer), with an optional data quality table. The library files required by VPF are the library header table, geographic reference table, and coverage attribute table. The thematic layer names and associated coverage names for the BROWSE library are listed in TABLE 1.

a. BROWSE library header table (LHT). The library header table contains the data set, source, and security information for the library. The format and content of the BROWSE library header table are presented in TABLE 10.

b. Geographic reference table (GRT). The format and content for the BROWSE library geographic reference table (GRT) are presented in TABLE 11.

c. Coverage attribute table (CAT). The BROWSE library coverage attribute table (TABLE 12) contains four columns: the row identifier, coverage name, coverage description, and topology level. The coverage description is the equivalent of the thematic layer name.

d. Data quality table (DQT). The data quality table (TABLE 13) contains information on the completeness, consistency, date status, attribute accuracy, and positional accuracy of the data.

MIL-D-89009

TABLE 10. Format and content for BROWSE Library Header Table
          (LHT).

```
{Header length};\
Library Header Table;-;\
ID=I,                 1,P,Row Identifier,-,-,:\
PRODUCT_TYPE=T,      12,N,Product Type,-,-,:\
LIBRARY_NAME=T,      12,N,Name,-,-,:\
DESCRIPTION=T,      100,N,Description of the library,-,-,:\
DATA_STRUCT_CODE=T,  1,N,Data Structure Code,-,-,:\
SCALE=I,              1,N,Scale of the library,-,-,:\
SOURCE_SERIES=T,     15,N,Series,-,-,:\
SOURCE_ID=T,         30,N,Identifier of the source reference,-,-,:\
SOURCE_EDITION=T,    20,N,Edition number of the source,-,-,:\
SOURCE_NAME=T,      100,N,Name of library source,-,-,:\
SOURCE_DATE=D,        1,N,Source Date,-,-,:\
SECURITY_CLASS=T,     1,N,Security Classification,-,-,:\
DOWNGRADING=T,        3,N,Downgrading,-,-,:\
DOWNGRADING_DATE=D,   1,N,Date,-,-,:\
RELEASABILITY=T,     20,N,Releasability,-,-,:;
```

```
1\
DCW\
BROWSE\
The BROWSE library contains data which supports overview displays at
 a global scale\
8\
31000000\
ORIGINAL COMPILATION\
NA\
ONE\
ORIGINAL COMPILATION\
19910000000000.00000\
U\
NO\
00000000000000.00000\
UNRESTRICTED
```

MIL-D-89009

TABLE 11.   Format and content for BROWSE library Geographic
            Reference Table (GRT).

```
{Header length};\
Geographic Reference Table;-;\
ID=I,                  1,P,Row Identifier,-,-,:\
DATA_TYPE=T,           3,N,Data Type,-,-,:\
UNITS=T,               3,N,Units,-,-,:\
ELLIPSOID=T,          15,N,Ellipsoid,-,-,:\
ELLIPSOID_DETAIL=T,   50,N,Ellipsoid Details,-,-,:\
VERT_DATUM_REF=T,     15,N,Datum Vertical Reference,-,-,:\
VERT_DATUM_CODE=T,     3,N,Vertical Datum Code,-,-,:\
SOUND_DATUM=T,        15,N,Sounding Datum,-,-,:\
SOUND_DATUM_CODE=T,    3,N,Vertical Datum Code,-,-,:\
GEO_DATUM_NAME=T,     15,N,Datum Geodetic Name,-,-,:\
GEO_DATUM_CODE=T,      3,N,Datum Geodetic Code,-,-,:\
PROJECTION NAME=T,    20,N,Projection Name,-,-,:;
```
```
1\
GEO\
014\
WGS 84\
A=6378137 B=6356752 Meters\
MEAN SEA LEVEL\
015\
MEAN SEA LEVEL\
015\
WGS 84\
WGE\
ROBINSON
```

TABLE 12. Format and content for BROWSE Coverage Attribute Table
           (CAT).

```
{Header length};\
Coverage Attribute Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
COVERAGE_NAME=T,  8,P,Coverage name,-,-,:\
DESCRIPTION=T,   50,N,Coverage description,-,-,:\
LEVEL=I,          1,N,Topology level,-,-,:;
```

1	CO	ONC COMPILATION DATE	3
2	DV	DATA VOLUME	3
3	DN	DRAINAGE	3
4	GR	GEOGRAPHIC REGIONS	3
5	DA	HYPSOGRAPHIC DATA AVAILABILITY	3
6	IN	ONC INDEX	3
7	PO	POLITICAL/OCEANS	3
8	PP	POPULATED PLACES	0

24

MIL-D-89009

TABLE 13.   Format and content for BROWSE library Data Quality
            Table (DQT).

```
{Header length};\
Library Data Quality Table;-;\
ID=I,              1,P,Row Identifier,-,-,:\
VPF_LEVEL=T,       8,N,VPF Level,-,-,:\
VPF_LEVEL_NAME=T,  20,N,Name of VPF Level,-,-,:\
FEATURE_COMPLETE=T, *,N,Feature Completeness Percent,-,-,:\
ATTRIB_COMPLETE=T,  *,N,Attribute Completeness Percent,-,-,:\
LOGICAL_CONSIST=T,  *,N,Logical Consistency,-,-,:\
EDITION_NUM=T,      8,N,Edition Number,-,-,:\
CREATION_DATE=D,   1,N,Creation Date,-,-,:\
REVISION_DATE=D,   1,N,Revision Date,-,-,:\
SPEC_NAME=T,       20,N,Product Specification Name,-,-,:\
SPEC_DATE=D,       1,N,Product Specification Date,-,-,:\
EARLIEST_SOURCE=D,  1,N,Date of Earliest Source,-,-,:\
LATEST_SOURCE=D,   1,N,Date of Latest Source,-,-,:\
QUANT_ATT_ACC=T,    *,N,Standard Deviation of Quantitative
                        Attributes,-,-,:\
QUAL_ATT_ACC=T,     *,N,Percent Reliability of Qualitative
                        Attributes,-,-,:\
COLLECTION_SPEC=T,  *,N,Collection Specification Name,-,-,:\
SOURCE_FILE_NAME=T,12,N,Included Source File Name,-,-,:\
ABS_HORIZ_ACC=T,    *,N,Absolute Horizontal Accuracy of VPF Level,-,-,:\
ABS_HORIZ_UNITS=T, 20,N,Unit of Measure for Absolute Horizontal
                        Accuracy,-,-,:\
ABS_VERT_ACC=T,     *,N,Absolute Vertical Accuracy of VPF Level,-,-,:\
ABS_VERT_UNITS=T,  20,N,Unit of Measure for Absolute Vertical
                        Accuracy,-,-,:\
REL_HORIZ_ACC=T,    *,N,Point to point horizontal accuracy of
                        VPF Level,-,-,:\
REL_HORIZ_UNITS=T, 20,N,Unit of Measure for Point to Point Horizontal
                        Accuracy,-,-,:\
REL_VERT_ACC=T,     *,N,Point to Point Vertical Accuracy of
                        VPF Level,-,-,:\
REL_VERT_UNITS=T,  20,N,Unit of Measure for Point to Point Vertical
                        Accuracy,-,-,:\
COMMENTS=T,         *,N,Miscellaneous Comments,-,-,:;
```

```
1\
LIBRARY\
BROWSE\
Only portions of features froma variety of sources were included in the
original compilation\
Valid attribute codes have been assigned to features.\
All data were found to be topologically correct.  No duplicate features
are present.  All areas are completely described as depicted on the
source manuscripts.  No undershoots or overshoots are present.\
1\
19910115000000.00000\
19910115000000.00000\
DCW\
```

25

MIL-D-89009

TABLE 13. Format and content for BROWSE library Data Quality
Table (DQT) – Continued.

```
19911207000000.00000\
0000000000000.00000\
0000000000000.00000\
No formal effort was undertaken to develop a quantitative accuracy
statement.\
No formal effort was undertaken to develop a qualitative accuracy
statement.\
N/A\
N/A\
Unknown.  No accuracy evaluation was undertaken.\
N/A\
UNKNOWN\
N/A\
UNKNOWN\
N/A\
UNKNOWN\
N/A\
The coverages within this library were created for reference only.
They are not intended to be used for analytical purposes.
```

e. BROWSE library tiling scheme. The tiling scheme
implemented for the BROWSE library is a single global
tile that covers the entire extent of the BROWSE
library. The BROWSE library does not require either a
LIBREF or TILEREF coverage.

3.8.5 Coverage-level record layout. Each coverage is the
conceptual equivalent of a thematic layer. Each coverage
directory contains one coverage with a two-character name
representative of the thematic layer name (e.g., DN for drainage).

a. Coverage-level tables. Each coverage within a coverage
directory is made up of a feature class schema table,
feature tables, value description tables, primitive
tables, and index tables. The feature class schema
table, which is required for each coverage, specifies
the feature table and primitive table relationships that
define a feature class. A coverage may include one,
two, or three feature classes and one text feature
class. Feature tables contain the attribute and
attribute values that define each feature class. Value
description tables are required to provide descriptions
of the attribute values found in a feature table. A DCW
coverage may include either an integer value description
table, a character value description table, or both. A
thematic index is also implemented for specified columns
of each feature table. Primitive tables contain the
coordinate values for the nodes, edges and faces, and

26

MIL-D-89009

are organized in subdirectories on the basis of physical tile partitions. Spatial indexing occurs on the primitive level and is implemented for each primitive table. DCW coverage contents are described in 3.8.6, and BROWSE coverage contents are described in 3.8.7. The primitive-level record layout is described in 3.8.8.

b. Coverage topology. The topology level of each coverage is defined by the types of feature classes present. A coverage with level 0 topology contains a point feature class only. Coverages with level 2 topology must contain a line feature class and may also contain a point feature class. Level 3 topology coverages must contain an area feature class. The topology level of each coverage is specified in the coverage description table within each library (TABLES 8 and 12). The DCW coverages represent level 0, 2, and 3 topology. The DCW does not provide topology between coverages.

3.8.6   <u>DCW coverage-level record layout</u>. A DCW coverage is a grouping of thematically consistent data. All data within the thematic layer are represented by and contained within a single coverage. Within the coverage there may be up to three geographic feature classes: point, line, and area; and one cartographic feature class: text. A VPF feature class is logically defined as the combination of a feature table and a primitive table. DCW contains 34 simple (area, line, and point) and 12 text feature classes. DCW does not contain any complex feature classes. DCW thematic layers, coverages, and feature classes are listed in TABLE 14. Other coverages implemented in the DCW libraries are listed in TABLE 15.

a. Feature class schema tables. Each DCW library coverage contains one feature class schema table. The feature class schema table describes the relationship between each feature table and associated primitive table within the coverage according to the primary and foreign keys of the tables (TABLES 16 to 35).

27

MIL-D-89009

TABLE 14. DCW thematic layers, coverages, and feature classes.

DCW thematic library layers	Coverage name	Feature classes			
		Area	Line	Point	Text
Aeronautical	AE			AEPOINT	
Cultural Landmarks	CL	CLAREA	CLLINE	CLPOINT	CLTEXT
Data Quality	DQ	DQAREA	DQLINE		DQTEXT
Drainage	DN	DNAREA	DNLINE	DNPOINT	DNTEXT
Drainage-Supplemental	DS			DSPOINT	
Hypsography	HY	HYAREA	HYLINE	HYPOINT	
Hypsography-Supplemental	HS		HSLINE	HSPOINT	
Land Cover	LC	LCAREA		LCPOINT	LCTEXT
Ocean Features	OF		OFLINE	OFPOINT	OFTEXT
Physiography	PH		PHLINE		PHTEXT
Political/Oceans	PO	POAREA	POLINE	POPOINT	POTEXT
Populated Places	PP	PPAREA		PPPOINT	PPTEXT
Railroads	RR		RRLINE		RRTEXT
Roads	RD		RDLINE		RDTEXT
Transportation Structure	TS		TSLINE	TSPOINT	TSTEXT
Utilities	UT		UTLINE		UTTEXT
Vegetation[1]	VG	VGAREA			

[1] Vegetation data is only available on Disc 1 for the continental U.S.

TABLE 15. Additional coverages in each DCW library.

Additional DCW library coverages	Coverage codes	Feature class			
		Area	Line	Point	Text
Gazetteer	GAZETTE			GAZETTE	
Library Reference	LIBREF		LIBREF		
Tile Reference	TILEREF	TILEREF			

TABLE 16. Content and format for Aeronautical (AE) feature class schema table.

```
{Header length};\
Aeronautical Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

| 1 | AEPOINT | AEPOINT.PFT | END_ID | END | ID |
| 2 | AEPOINT | END | AEPOINT.PFT_ID | AEPOINT.PFT | ID |

MIL-D-89009

TABLE 17. Content and format for Cultural Landmarks (CL)
feature class schema table.

```
{Header length};\
Cultural Landmarks Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	CLAREA	CLAREA.AFT	FAC_ID	FAC	ID
2	CLAREA	FAC	CLAREA.AFT_ID	CLAREA.AFT	ID
3	CLLINE	CLLINE.LFT	EDG_ID	EDG	ID
4	CLLINE	EDG	CLLINE.LFT_ID	CLLINE.LFT	ID
5	CLPOINT	CLPOINT.PFT	END_ID	END	ID
6	CLPOINT	END	CLPOINT.PFT_ID	CLPOINT.PFT	ID
7	CLTEXT	CLTEXT.TFT	TXT_ID	TXT	ID
8	CLTEXT	TXT	CLTEXT.TFT_ID	CLTEXT.TFT	ID

TABLE 18. Content and format for Data Quality (DQ) feature
class schema table.

```
{Header length};\
Data Quality Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	DQAREA	DQAREA.AFT	FAC_ID	FAC	ID
2	DQAREA	FAC	DQAREA.AFT_ID	DQAREA.AFT	ID
3	DQAREA	DQAREA.AFT	DQPYSID	DQAREA.RAT	DQPYSID
4	DQAREA	DQAREA.RAT	DQPYSID	DQAREA.AFT	DQPYSID
5	DQLINE	DQLINE.LFT	EDG_ID	EDG	ID
6	DQLINE	EDG	DQLINE.LFT_ID	DQLINE.LFT	ID
7	DQLINE	DQLINE.LFT	DQLNID	DQLINE.RAT	DQLNID
8	DQLINE	DQLINE.RAT	DQLNID	DQLINE.LFT	DQLNID
9	DQTEXT	DQTEXT.TFT	TXT_ID	TXT	ID
10	DQTEXT	TXT	DQTEXT.TFT_ID	DQTEXT.TFT	ID

Refer to Appendix Section 30.3.3.a (Data Quality Coverage) for an
explanation of DQAREA.RAT and DQLINE.RAT tables.

29

MIL-D-89009

TABLE 19. Content and format for Drainage (DN) feature class
           schema table.

```
{Header length};\
Drainage Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	DNAREA	DNAREA.AFT	FAC_ID	FAC	ID
2	DNAREA	FAC	DNAREA.AFT_ID	DNAREA.AFT	ID
3	DNLINE	DNLINE.LFT	EDG_ID	EDG	ID
4	DNLINE	EDG	DNLINE.LFT_ID	DNLINE.LFT	ID
5	DNPOINT	DNPOINT.PFT	END_ID	END	ID
6	DNPOINT	END	DNPOINT.PFT_ID	DNPOINT.PFT	ID
7	DNTEXT	DNTEXT.TFT	TXT_ID	TXT	ID
8	DNTEXT	TXT	DNTEXT.TFT_ID	DNTEXT.TFT	ID

TABLE 20. Content and format for Drainage-Supplemental (DS)
           feature class schema table.

```
{Header length};\
Supplemental Drainage Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

| 1 | DSPOINT | DSPOINT.PFT | END_ID | END | ID |
| 2 | DSPOINT | END | DSPOINT.PFT_ID | DSPOINT.PFT | ID |

TABLE 21.   Content and format for Hypsography (HY) feature class
            schema table.

```
{Header length};\
Hypsography Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	HYAREA	HYAREA.AFT	FAC_ID	FAC	ID
2	HYAREA	FAC	HYAREA.AFT_ID	HYAREA.AFT	ID
3	HYLINE	HYLINE.LFT	EDG_ID	EDG	ID
4	HYLINE	EDG	HYLINE.LFT_ID	HYLINE.LFT	ID
5	HYPOINT	HYPOINT.PFT	END_ID	END	ID
6	HYPOINT	END	HYPOINT.PFT_ID	HYPOINT.PFT	ID

TABLE 22.   Content and format for Hypsography-Supplemental (HS)
            feature class schema table.

```
{Header length};\
Supplemental Hypsography Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	HSLINE	HSLINE.LFT	EDG_ID	EDG	ID
2	HSLINE	EDG	HSLINE.LFT_ID	HSLINE.LFT	ID
3	HSPOINT	HSPOINT.PFT	END_ID	END	ID
4	HSPOINT	END	HSPOINT.PFT_ID	HSPOINT.PFT	ID

MIL-D-89009

TABLE 23. Content and format for Land Cover (LC) feature class
schema table.

```
{Header length};\
Land Cover Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	LCAREA	LCAREA.AFT	FAC_ID	FAC	ID
2	LCAREA	FAC	LCAREA.AFT_ID	LCAREA.AFT	ID
3	LCPOINT	LCPOINT.PFT	END_ID	END	ID
4	LCPOINT	END	LCPOINT.PFT_ID	LCPOINT.PFT	ID
5	LCTEXT	LCTEXT.TFT	TXT_ID	TXT	ID
6	LCTEXT	TXT	LCTEXT.TFT_ID	LCTEXT.TFT	ID

TABLE 24. Content and format for Ocean Features (OF) feature
class schema table.

```
{Header length};\
Ocean Features Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	OFLINE	OFLINE.LFT	EDG_ID	EDG	ID
2	OFLINE	EDG	OFLINE.LFT_ID	OFLINE.LFT	ID
3	OFPOINT	OFPOINT.PFT	END_ID	END	ID
4	OFPOINT	END	OFPOINT.PFT_ID	OFPOINT.PFT	ID
5	OFTEXT	OFTEXT.TFT	TXT_ID	TXT	ID
6	OFTEXT	TXT	OFTEXT.TFT_ID	OFTEXT.TFT	ID

MIL-D-89009

TABLE 25. Content and format for Physiography (PH) feature
class schema table.

```
{Header length};\
Physiography Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	PHLINE	PHLINE.LFT	EDG_ID	EDG	ID
2	PHLINE	EDG	PHLINE.LFT_ID	PHLINE.LFT	ID
3	PHTEXT	PHTEXT.TFT	TXT_ID	TXT	ID
4	PHTEXT	TXT	PHTEXT.TFT_ID	PHTEXT.TFT	ID

TABLE 26. Content and format for Political/Oceans (PO) feature
class schema table.

```
{Header length};\
Political/oceans Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,         12,P,First Table,-,-,:\
FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
TABLE2=T,         12,P,Second Table,-,-,:\
PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

1	POAREA	POAREA.AFT	FAC_ID	FAC	ID
2	POAREA	FAC	POAREA.AFT_ID	POAREA.AFT	ID
3	POLINE	POLINE.LFT	EDG_ID	EDG	ID
4	POLINE	EDG	POLINE.LFT_ID	POLINE.LFT	ID
5	POPOINT	POPOINT.PFT	END_ID	END	ID
6	POPOINT	END	POPOINT.PFT_ID	POPOINT.PFT	ID
7	POTEXT	POTEXT.TFT	TXT_ID	TXT	ID
8	POTEXT	TXT	POTEXT.TFT_ID	POTEXT.TFT	ID

33

MIL-D-89009

TABLE 27. Content and format for Populated Places (PP) feature class schema table.

```
{Header length};\
Populated places Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,          12,P,First Table,-,-,:\
FOREIGN_KEY=T,     16,P,Column Name in First Table,-,-,:\
TABLE2=T,          12,P,Second Table,-,-,:\
PRIMARY_KEY=T,     16,P,Column Name in Second Table,-,-,:;
```

1	PPAREA	PPAREA.AFT	FAC_ID	FAC	ID
2	PPAREA	FAC	PPAREA.AFT_ID	PPAREA.AFT	ID
3	PPPOINT	PPPOINT.PFT	END_ID	END	ID
4	PPPOINT	END	PPPOINT.PFT_ID	PPPOINT.PFT	ID
5	PPTEXT	PPTEXT.TFT	TXT_ID	TXT	ID
6	PPTEXT	TXT	PPTEXT.TFT_ID	PPTEXT.TFT	ID

TABLE 28. Content and format for Railroads (RR) feature class schema table.

```
{Header length};\
Railroads Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,          12,P,First Table,-,-,:\
FOREIGN_KEY=T,     16,P,Column Name in First Table,-,-,:\
TABLE2=T,          12,P,Second Table,-,-,:\
PRIMARY_KEY=T,     16,P,Column Name in Second Table,-,-,:;
```

1	RRLINE	RRLINE.LFT	EDG_ID	EDG	ID
2	RRLINE	EDG	RRLINE.LFT_ID	RRLINE.LFT	ID
3	RRTEXT	RRTEXT.TFT	TXT_ID	TXT	ID
4	RRTEXT	TXT	RRTEXT.TFT_ID	RRTEXT.TFT	ID

MIL-D-89009

TABLE 29.   Content and format for Roads (RD) feature class
            schema table.

```
{Header length};\
Roads Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	RDLINE	RDLINE.LFT	EDG_ID	EDG	ID
2	RDLINE	EDG	RDLINE.LFT_ID	RDLINE.LFT	ID
3	RDTEXT	RDTEXT.TFT	TXT_ID	TXT	ID
4	RDTEXT	TXT	RDTEXT.TFT_ID	RDTEXT.TFT	ID

TABLE 30.   Content and format for Transportation Structure (TS)
            feature class schema table.

```
{Header length};\
Transportation Structure Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	TSLINE	TSLINE.LFT	EDG_ID	EDG	ID
2	TSLINE	EDG	TSLINE.LFT_ID	TSLINE.LFT	ID
3	TSPOINT	TSPOINT.PFT	END_ID	END	ID
4	TSPOINT	END	TSPOINT.PFT_ID	TSPOINT.PFT	ID
5	TSTEXT	TSTEXT.TFT	TXT_ID	TXT	ID
6	TSTEXT	TXT	TSTEXT.TFT_ID	TSTEXT.TFT	ID

MIL-D-89009

TABLE 31.   Content and format for Utilities (UT) feature class schema table.

```
{Header length};\
Utilities Feature Class Schema Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	UTLINE	UTLINE.LFT	EDG_ID	EDG	ID
2	UTLINE	EDG	UTLINE.LFT_ID	UTLINE.LFT	ID
3	UTTEXT	UTTEXT.TFT	TXT_ID	TXT	ID
4	UTTEXT	TXT	UTTEXT.TFT_ID	UTTEXT.TFT	ID

TABLE 32.   Content and format for Vegetation (VG) feature class schema table.

```
{Header length};\
Vegetation Feature Class Schema Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	VGAREA	VGAREA.AFT	FAC_ID	FAC	ID
2	VGAREA	FAC	VGAREA.AFT_ID	VGAREA.AFT	ID
3	VGLINE	VGLINE.LFT	EDG_ID	EDG	ID
4	VGLINE	EDG	VGLINE.LFT_ID	VGLINE.LFT	ID

TABLE 33.   Content and format for Names Placement (GAZETTE) feature class schema table.

```
{Header length};\
 Gazetteer Feature Class Schema Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

| 1 | GAZETTE | GAZETTE.PFT | ID | END | ID |
| 2 | GAZETTE | END | ID | GAZETTE.PFT | ID |

MIL-D-89009

TABLE 34.   Content and format for Library Reference (LIBREF)
             feature class schema table.

```
{Header length};\
Library reference Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,          12,P,First Table,-,-,:\
FOREIGN_KEY=T,     16,P,Column Name in First Table,-,-,:\
TABLE2=T,          12,P,Second Table,-,-,:\
PRIMARY_KEY=T,     16,P,Column Name in Second Table,-,-,:;
```

| 1 | LIBREF | LIBREF.LFT | ID | EDG | ID |
| 2 | LIBREF | EDG | ID | LIBREF.LFT | ID |

TABLE 35.   Content and format for Tile Reference (TILEREF)
             feature class schema table.

```
{Header length};\
Tile reference Feature Class Schema Table;-;\
ID=I,              1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,   8,P,Name of Feature Class,-,-,:\
TABLE1=T,          12,P,First Table,-,-,:\
FOREIGN_KEY=T,     16,P,Column Name in First Table,-,-,:\
TABLE2=T,          12,P,Second Table,-,-,:\
PRIMARY_KEY=T,     16,P,Column Name in Second Table,-,-,:;
```

| 1 | TILEREF | TILEREF.AFT | ID | FAC | ID |
| 2 | TILEREF | FAC | ID | TILEREF.AFT | ID |

b. Feature tables. The feature tables implemented at the
    coverage level are point, line, area, and text. All
    feature tables have the same structure and contain a row
    identifier column and one or more attribute columns.
    The number of attribute columns in each feature table is
    a function of the number of attributes associated with
    the feature class.

    Each point, line, and area feature table has a narrative
    table (*.DOC) associated with it describing data quality
    characteristics that vary at this level of the database.
    Any feature table that has variable-length records will
    also require a separate variable-length index file.
    These indices are contained within files having one of
    four suffixes: PFX (Point Feature index), LFX (Line
    Feature index), AFX (Area Feature index), and TFX (Text
    Feature index).

MIL-D-89009

TABLE 36 specifies the area, line, point, and text
feature tables required in the DCW libraries according
to their associated coverages. TABLE 37 specifies the
format and an example of the type of content for a
narrative table. Appendix Section 30.3 (data
dictionary) specifies the format and an example of the
content required for each feature table in the DCW.

TABLE 36. Feature table(s) by coverage.

DCW thematic library layers	Coverage	Feature tables			
		Area	Line	Point	Text
Aeronautical	AE			AEPOINT.PFT	
Culture Landmarks	CL	CLAREA.AFT	CLLINE.LFT	CLPOINT.PFT	CLTEXT.TFT
Data Quality	DQ	DQAREA.AFT	DQLINE.LFT		DQTEXT.TFT
Drainage	DN	DNAREA.AFT	DNLINE.LFT	DNPOINT.PFT	DNTEXT.TFT
Drainage-Supplemental	DS			DSPOINT.PFT	
Hypsography	HY	HYAREA.AFT	HYLINE.LFT	HYPOINT.PFT	
Hypsography-Supplemental	HS		HSLINE.LFT	HSPOINT.PFT	
Land Cover	LC	LCAREA.AFT		LCPOINT.PFT	LCTEXT.TFT
Ocean Features	OF		OFLINE.LFT	OFPOINT.PFT	OFTEXT.TFT
Physiography	PH		PHLINE.LFT		PHTEXT.TFT
Political/Oceans	PO	POAREA.AFT	POLINE.LFT	POPOINT.PFT	POTEXT.TFT
Populated Places	PP	PPAREA.AFT		PPPOINT.PFT	PPTEXT.TFT
Railroads	RR		RRLINE.LFT		RRTEXT.TFT
Roads	RD		RDLINE.LFT		RDTEXT.TFT
Transportation Structure	TS		TSLINE.LFT	TSPOINT.PFT	TSTEXT.TFT
Utilities	UT		UTLINE.LFT		UTTEXT.TFT
Vegetation[1]	VG	VGAREA.AFT			
Other DCW coverages	Coverage	Feature tables			
		Area	Line	Point	Text
Gazetteer	GAZETTE			GAZETTE.PFT	
Library Reference	LIBREF		LIBREF.LFT		
Tile Reference	TILEREF	TILEREF.AFT			

[1] Vegetation data is only available on Disc 1 for the continental U.S.

TABLE 37. Format and example of content for narrative (*.DOC) tables.

```
{Header length};\
Metadata for a feature class;-;\
ID=I,      1,P,Feature table primary key,-,-,:\
TEXT=T,   80,N,Text information,-,-,:;
```

MIL-D-89009

1	This table describes characteristics of the feature data within
2	this coverage. Three subjects are discussed: 1) special
3	automation techniques, 2) feature coincidence, and 3) database
4	design issues. The table does not contain a full description
5	of the data production process.
:	
n	...

MIL-D-89009

TABLE 38.   <u>Format for variable-length index (*.*X) files</u>.

Starting Position (Bytes)	No. of Bytes	Field Type	Description
0	4	Integer	Number of records (N) in table being indexed
4	4	Integer	Number of bytes in header of table being indexed
8	16	Integer Array	A two-dimensional array of 4 byte integers defined as: [n][0]=Byte offset from beginning of file [n][1]=Number of bytes in table record where n ranges from 1 to N

c. Variable-length index file. The variable-length index is a separate file that is mandatory when a VPF table contains variable-length records. TABLE 38 describes the format for the variable-length index files. The file has two parts: a header and a data array. Each entry in the data array relates to a record in the VPF table.

The data array identifies the location of every record in the variable-length file by containing the following entries for each record:

[n][0]   =   Byte offset from beginning of file
[n][1]   =   Number of bytes in table record

where n is an integer from 1 to N. The term byte offset refers to a location with respect to the beginning of a file. The first byte of a file has an offset of zero.

Thus, if the software requires the location of record 45 in a VPF table, the index file can be used to locate the exact position of the record without sequentially searching for the match. The entry for record 45 in the variable-length index would indicate the byte offset in the VPF table to the position of record 45 and the number of bytes in record 45.

d. Value description tables. Value description tables specify the attribute codes for features in a coverage, organized by feature class, and provide a description for each attribute value. Appendix Section 30.3 (data dictionary) specifies the format and content for all of

40

MIL-D-89009

integer and character value description tables utilized
for the DCW.

e. Thematic index. The DCW implements a thematic index for
each point, line, area, and text feature table using the
TILE_ID column. These indices are contained within
files having either a: PTI (Point Thematic Index), LTI
(Line Thematic Index), ATI (Area Thematic Index) or TTI
(Text Thematic Index).

The VPF thematic index (TABLE 39) is a sequential file
of data partitioned into three groups:

(1)   A fixed-length header of 60 bytes that specifies
the associated feature table and the column within
that table being indexed.

(2)   A directory consisting of a repeating number of
records identifies the location of the rows within
the subsequent data list.

(3)   One data record for each index entry consisting of
row IDs from the table that is indexed.

TABLE 39.   Format for thematic index (*.*TI) file.

Starting Pos.(Bytes)	# of Byte	Field Type	Description
0	4	Integer	Sizes in bytes of this header (60)
4	4	Integer	Number of codes within the attribute column of the table being indexed
8	4	Integer	Number of rows of data in the table being indexed
12	1	Char	Type of index file ("T" for thematic)
13	1	Char	Field type of data element being indexed: I, T, S, F, or R
14	4	Integer	Number of data element comprising one directory entry (usually 1)
18	1	Char	Data type specifier for the data portion of the index file
19	12	Char	Name of the VPF table being indexed
31	25	Char	Name of the column in the VPF table being indexed
56	4	Char	Unused
60+n*(d+8)	d	char short int float double	The element being indexed (the code value from the attribute column of the table being indexed).

41

MIL-D-89009

60+n*(d+8)+d	4	Integer	The byte offset from the beginning of the file where the row of ids associated with this index entry is located.
60+n*(d+8)+d+4	4	Integer	The number of items within the row associated with this index entry.
60+number of index entries * (d+8)	-	-	Record ids from the table being indexed.

Where: n ranges from 0 to number of index entries-1
       d = size of (indexed type)

3.8.7 BROWSE coverage-level record layout.

  a. BROWSE thematic layers. A BROWSE theme or thematic layer is a grouping of thematically consistent data. For each thematic layer, a single coverage is implemented. All data within the thematic layer is represented by and contained within coverage. The BROWSE thematic layers and their associated coverages, and feature classes are listed in TABLE 40.

TABLE 40. BROWSE thematic layers, coverages, and feature classes.

BROWSE library thematic layers	Coverage name	Feature classes			
		Area	Line	Point	Text
ONC Compilation Date	CO	COAREA			
Data Volume	DV	DVAREA			
Drainage	DN	DNAREA	DNLINE		
Geographic Regions	GR	GRAREA	GRLINE		GRTEXT
Hypsographic Data Availability	DA	DAAREA			
ONC Index	IN	INAREA			INTEXT
Political/Oceans	PO	POAREA	POLINE		POTEXT
Populated Places	PP			PPPOINT	PPTEXT

  b. Feature class schema tables. Each BROWSE library coverage contains one feature class schema table. The feature class schema table describes the relationship between each feature table and associated primitive table within the coverage according to the primary and foreign keys of the tables (TABLES 41 to 48).

TABLE 41. Format and content for Compilation Date (CO) feature class schema table.

```
{Header length};\
Compilation date Feature Class Schema Table;-;\
```

42

MIL-D-89009

```
| ID=I,              1,N,Row Identifier,-,-,:\
| FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
| TABLE1=T,          12,P,First Table,-,-,:\
| FOREIGN_KEY=T,    16,P,Column Name in First Table,-,-,:\
| TABLE2=T,          12,P,Second Table,-,-,:\
| PRIMARY_KEY=T,    16,P,Column Name in Second Table,-,-,:;
```

| 1 | COAREA | COAREA.AFT | ID | FAC | ID |
| 2 | COAREA | FAC | ID | COAREA.AFT | ID |

43

MIL-D-89009

TABLE 42.   <u>Format and content for Data Volume (DV) feature class schema table</u>.

```
{Header length};\
Data volume Feature Class Schema Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

| 1 | DVAREA | DVAREA.AFT | ID | FAC | ID |
| 2 | DVAREA | FAC | ID | DVAREA.AFT | ID |

TABLE 43.   <u>Format content for Drainage (DN) feature class schema table</u>.

```
{Header length};\
Drainage Feature Class Schema Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	DNAREA	DNAREA.AFT	ID	FAC	ID
2	DNAREA	FAC	ID	DNAREA.AFT	ID
3	DNLINE	DNLINE.LFT	ID	EDG	ID
4	DNLINE	EDG	ID	DNLINE.LFT	ID

TABLE 44.   <u>Format and content for Geographic Regions (GR) feature class schema table</u>.

```
{Header length};\
Geographic Regions Feature Class Schema Table;-;\
ID=I,             1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	GRAREA	GRAREA.AFT	ID	FAC	ID
2	GRAREA	FAC	ID	GRAREA.AFT	ID
3	GRLINE	GRLINE.LFT	ID	EDG	ID
4	GRLINE	EDG	ID	GRLINE.LFT	ID
5	GRTEXT	GRTEXT.TFT	ID	TXT	ID
6	GRTEXT	TXT	ID	GRTEXT.TFT	ID

44

MIL-D-89009

TABLE 45. <u>Format and content for hypsographic Data Availability
(DA) feature class schema table</u>.

```
{Header length};\
Hypsographic data availability Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	DAAREA	DAAREA.AFT	ID	FAC	ID
2	DAAREA	FAC	ID	DAAREA.AFT	ID

TABLE 46. <u>Format and content for ONC Index (IN) feature class
schema table</u>.

```
{Header length};\
 ONC index Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	INAREA	INAREA.AFT	ID	FAC	ID
2	INAREA	FAC	ID	INAREA.AFT	ID
3	INTEXT	INTEXT.TFT	ID	TXT	ID
4	INTEXT	TXT	ID	INTEXT.TFT	ID

TABLE 47. <u>Format and content for Political/Oceans (PO) feature
class schema table</u>.

```
{Header length};\
 Political/oceans Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	POAREA	POAREA.AFT	ID	FAC	ID
2	POAREA	FAC	ID	POAREA.AFT	ID
3	POLINE	POLINE.LFT	ID	EDG	ID
4	POLINE	EDG	ID	POLINE.LFT	ID
5	POTEXT	POTEXT.TFT	ID	TXT	ID
6	POTEXT	TXT	ID	POTEXT.TFT	ID

45

MIL-D-89009

TABLE 48. <u>Format and content for Populated Places (PP) feature class schema table.</u>

```
{Header length};\
Populated Places Feature Class Schema Table;-;\
ID=I,            1,N,Row Identifier,-,-,:\
FEATURE_CLASS=T,  8,P,Name of Feature Class,-,-,:\
TABLE1=T,        12,P,First Table,-,-,:\
FOREIGN_KEY=T,   16,P,Column Name in First Table,-,-,:\
TABLE2=T,        12,P,Second Table,-,-,:\
PRIMARY_KEY=T,   16,P,Column Name in Second Table,-,-,:;
```

1	PPPOINT	PPPOINT.PFT	ID	END	ID
2	PPPOINT	END	ID	PPPOINT.PFT	ID
3	PPTEXT	PPTEXT.TFT	ID	TXT	ID
4	PPTEXT	TXT	ID	PPTEXT.TFT	ID

c. BROWSE feature table. The area, line, and point feature tables in the BROWSE library are indicated in TABLE 49 according to their associated coverage. Appendix Section 30.4 specifies the format required for each feature table in the BROWSE library.

TABLE 49. <u>Feature table(s) by coverage.</u>

BROWSE library thematic layers	Name	Feature tables			
		Area	Line	Node	Text
ONC Compilation Date	CO	COAREA.AFT			
Data Volume	DV	DVAREA.AFT			
Drainage	DN	DNAREA.AFT	DNLINE.LFT		
Geographic Regions	GR	GRAREA.AFT	GRLINE.LFT		GRTEXT.TFT
Hypsographic Data Availability	DA	DAAREA.AFT			
ONC Index	IN	INAREA.AFT			INTEXT.TFT
Political/Oceans	PO	POAREA.AFT	POLINE.LFT		POTEXT.TFT
Populated Places	PP			PPPOINT.PFT	PPTEXT.TFT

d. Value description tables. Appendix Section 30.4 specifies the format and content for all value description tables in the BROWSE library.

e. Thematic index tables. The BROWSE library implements a thematic index for each point, line, area, and text feature table in accordance with the format specified in Section 3.8.6 d.

46

MIL-D-89009

3.8.8 <u>Primitive-level record layouts</u> Contained within each coverage directory are tile subdirectories that contain primitive tables. The DCW primitive tables contain three geometric primitive types and one cartographic primitive type. The geometric primitive tables are entity node, edge, and face. The cartographic primitive table is text. The primitive tables implemented in the DCW library coverages are indicated in TABLE 50 according to their associated coverages. The primitive tables in the BROWSE library coverages are indicated in TABLE 51 according to their associated coverage.

TABLE 50. <u>DCW primitive tables by coverage.</u>

DCW libraries thematic layers	Coverage name	Primitive tables			
		Face	Edge	Node	Text
Aeronautical	AE			END	
Culture Landmarks	CL	FAC,RNG	EDG	END	TXT
Data Quality	DQ	FAC,RNG	EDG		TXT
Drainage	DN	FAC,RNG	EDG	END	TXT
Drainage-Supplemental	DS			END	
Hypsography	HY	FAC,RNG	EDG	END	
Hypsography-Supplemental	HS		EDG	END	
Land Cover	LC	FAC,RNG	EDG	END	TXT
Ocean Features	OF		EDG	END	TXT
Physiography	PH		EDG		TXT
Political/Oceans	PO	FAC,RNG	EDG	END	TXT
Populated Places	PP	FAC,RNG	EDG	END	TXT
Railroads	RR		EDG		TXT
Roads	RD		EDG		TXT
Transportation Structure	TS		EDG	END	TXT
Utilities	UT		EDG		TXT
Vegetation	VG	FAC,RNG	EDG		
Other DCW library layers	**Coverage name**	**Primitive tables**			
		Face	Edge	Node	Text
Gazetteer	GAZETTE			END	
Library Reference	LIBREF		EDG		
Tile Reference	TILEREF	FAC,RNG	EDG		

TABLE 51. <u>BROWSE primitive tables by coverage.</u>

BROWSE library thematic layers	Coverage name	Primitive tables			
		Face	Edge	Node	Text
ONC Compilation Date	CO	FAC,RNG	EDG		
Data Volume	DV	FAC,RNG	EDG		
Drainage	DN	FAC,RNG	EDG		
Geographic Regions	GR	FAC,RNG	EDG		TXT
Hypsographic Data Availability	DA	FAC,RNG	EDG		
ONC Index	IN	FAC,RNG	EDG		TXT
Political/Oceans	PO	FAC,RNG	EDG		TXT
Populated Places	PP			END	TXT

47

MIL-D-89009

a. Entity node primitives. The DCW entity nodes represent
such items as wells, survey markers, and towers or area
features that cannot be resolved at the collection
scale. Entity nodes may be free floating or may occur
on edges or at edge intersections. Entity nodes that
occur at edge intersections contain at least one
attribute and are not topologically linked to the edges.
The coordinates for entity nodes are stored in entity
node primitive tables. Faces that are present in the
same coverage as entity nodes are topologically linked.

b. Entity node primitive table. The entity node primitive
table is composed of the five required VPF columns: the
row identifier (which is a primary key), containing face
(which is a foreign key to a face table, when faces are
present in the coverage), first edge, and a column
containing the x,y coordinate values of the entity node.
The format and an example of the content for an entity
node primitive table are shown in TABLE 52.

TABLE 52. <u>Format and example of content for entity node (END)
primitive table</u>.

```
{Header length};\
Entity Node Primitives;-;\
ID=I,             1,P,Row Identifier,-,-,:\
*.PFT_ID=I,       1,F,Foreign Key to Point Feature Table,-,-,:\
CONTAINING_FACE=I, 1,F,Foreign Key to Face Table,-,-,:\
FIRST_EDGE=X,     1,N,Foreign Key to Edge Table (null),-,-,:\
COORDINATE=C,     1,N,Coordinates of Node,-,-,:;
```

1	1	0	X	-7.893952,43.774712
2	2	3	X	-7.893897,43.773613
3	3	0	X	-7.843663,43.768391
:	:	:	:	:
n	n	n	X	x.xxxxxx,y.yyyyyy

NOTE: The "*" preceding the ".PFT_ID" is replaced with the appropriate
feature class name.

c. Edge primitives. In the DCW, edges represent linear
features such as streams or roads. Edges also define
the borders of faces, which represent areal features
such as countries. Edges are topologically linked to
the nodes at the end of each edge, and to the faces on
each side of an edge when faces are present in the same
coverage (level 3 topology). Edges are also
topologically linked across tile boundaries (see

48

MIL-D-89009

paragraph 3.8.9) by means of a triplet id field type
(K), which maintains pointers to the appropriate
external tile and primitive within that tile. Refer to
MIL-STD-600006, Appendix D, for additional information
regarding cross-tile topology and the triplet ID..

    d. Edge primitive table. Edge primitives and their
topology are stored in edge primitive tables. Edge
primitive tables in the DCW database contain either
seven or nine VPF columns depending on the topology
level of the coverage. Coverages with level 1 and 2
topology require only seven columns to establish
connectivity between neighboring edges. Coverages with
level 3 topology require two additional columns
(RIGHT_FACE and LEFT_FACE) to establish connectivity
between the edge and its adjoining faces. The format
and an example of the content for an edge primitive
table are shown in TABLE 53.

    e. Edge bounding rectangle. Edge primitives require a
bounding rectangle for each record in the primitive
table. The format and an example of the content for an
edge primitive bounding rectangle table are shown in
TABLE 54.

TABLE 53. Format and example of content for edge (EDG) primitive table.

```
{Header length};\
Edge Primitives;-;\
ID=I,             1,P,Row Identifier,-,-,:\
*.LFT_ID=I,       1,F,Foreign Key to Line Feature Table,-,-,:\
START_NODE=I,     1,F,Start/Left Node,-,-,:\
END_NODE=I,       1,F,End/Right Node,-,-,:\
RIGHT_FACE=K,     1,F,Right Face,-,-,:\
LEFT_FACE=K,      1,F,Left Face,-,-,:\
RIGHT_EDGE=K,     1,F,Right Edge from End Node,-,-,:\
LEFT_EDGE=K,      1,F,Left Edge from Start Node,-,-,:\
COORDINATES=C,    *,N,Coordinates of Edge,-,-,:;
```

1	1	1	2	6,260,210	1,0,0	29,196,14	26,12,18	-10.00,45.00; 9.90,45.00; x.xx,y.yy
2	2	3	5	5,0,0	8,260,214	30,198,12	76,52,48	-7.70,43.69; -7.80,43.70; -7.90,43.80; x.xx, y.yy
:	:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n	x.xx,y.yy

NOTES: (1) The "*" preceding the ".LFT_ID" is replaced with the
appropriate feature class name.

49

(2) The RIGHT_FACE and LEFT_FACE columns are required only for
    coverages with level 3 (face) topology.

MIL-D-89009

TABLE 54.   Format and example of content for Edge Bounding Rectangle (EBR) table.

```
{Header length};\
Edge Bounding Rectangle Table;-;\
ID=I,           1,P,Row Identifier,-,-,:\
XMIN=F,         1,N,Minimum X Coordinate,-,-,:\
YMIN=F,         1,N,Minimum Y Coordinate,-,-,:\
XMAX=F,         1,N,Maximum X Coordinate,-,-,:\
YMAX=F,         1,N,Maximum Y Coordinate,-,-,:;
```

1	-76.333313	36.999981	-76.331650	36.999981
2	-76.331650	36.999981	-76.331215	36.999981
3	-76.331215	36.999981	-76.322617	36.999981
:	:	:	:	:
n	n	n	n	n

f. Face primitives. In the DCW, faces represent such areal features as countries and inland water. Faces are areas enclosed by edges. All faces are defined by the set of edges composing the face border. All faces are topologically linked to the appropriate edge and ring primitives.

g. Face table. Face primitives and their topology are stored in face primitive tables. Face primitive tables in the DCW database contain three mandatory columns: a face row identifier (which is a primary key); a feature table identifier and a ring pointer column (which is a foreign key to a ring primitive table); and the face table (identifies all faces present in a coverage). It is through the topologic link to a ring table that the relationship between a face, its associated edges, and other surrounding faces is made. The format and an example of the content for a face primitive table are shown in TABLE 55.

h. Face bounding rectangle. Face primitives require a bounding rectangle for each record in the primitive table. The format and an example of the content for an face primitive bounding rectangle table are shown in TABLE 56.

51

MIL-D-89009

TABLE 55. Format and example of content for Face (FAC) table.

```
{Header length};\
Face Primitives;-;\
ID=I,            1,P,Row Identifier,-,-,:\
*.AFT_ID=I,      1,F,Foreign Key to Area Feature Table,-,-,:\
RING_PTR=I,      1,F,Foreign Key to Ring Table,-,-,:;
```

1	1	12
2	2	13
3	3	14
:	:	:
n	n	n

NOTE: The "*" preceding the ".AFT_ID" is replaced with the appropriate
      feature class name.

TABLE 56. Format and example of content for Face Bounding
           Rectangle (FBR) table.

```
{Header length};\
Face Bounding Rectangle Table;-;\
ID=I,            1,P,Row Identifier,-,-,:\
XMIN=F,          1,N,Minimum X Coordinate,-,-,:\
YMIN=F,          1,N,Minimum Y Coordinate,-,-,:\
XMAX=F,          1,N,Maximum X Coordinate,-,-,:\
YMAX=F,          1,N,Maximum Y Coordinate,-,-,:;
```

1	-76.333359	36.916660	-76.250031	36.999981
2	-76.333359	36.999451	-76.331215	36.999981
3	-76.333359	36.994431	-76.321991	36.999981
:	:	:	:	:
n	n	n	n	n

i. Ring primitive. The ring table is topologically linked
   to the face table and edge table within a coverage.

j. Ring table. The ring table contains a ring row
   identifier column, face column, and edge column. The
   first entry in the ring table for a particular face
   contains the outer ring of that face. Subsequent rings
   for the same face indicate internal rings within the
   outer ring. The format and an example of the content
   for a ring primitive table are shown in TABLE 57.

52

MIL-D-89009

TABLE 57. Format and example of content for Ring (RNG) table.

```
{Header length};\
Ring Table;-;\
ID=        I,1,P,Row Identifier,-,-,:\
FACE_ID=   I,1,F,Foreign Key to Face Table,-,-,:\
START_EDGE=I,1,F,Foreign Key to Edge Table,-,-,:;
```

1	1	2
2	2	47
3	2	51
:	:	:
n	n	n

k. Text primitive. The function of this cartographic primitive is to represent textual information, rather than geographic objects. DCW text primitive represents and displays named geographic entities in the form of an annotation. In the DCW implementation, text doesn't have any topologic link with geometric primitives.

l. Text primitive table. Text information is stored in text primitive tables. The text primitive table is composed of four columns: row identifier, text feature id, text string, and shape line. The string column contains the actual text to be displayed. The shape line column contains the coordinate string which defines how the text will be placed. The format and an example of the content for a text primitive table are presented in TABLE 58.

TABLE 58. Format and example of content for Text (TXT) primitive table.

```
{Header length};\
Text Primitives;-;\
ID=        I,1,P,Row Identifier,-,-,:\
*.TFT_ID=  I,1,F,Foreign Key to Text Feature Table,-,-,:\
STRING=    T,*,N,Text String,-,-,:\
SHAPE_LINE= C,*,N,Shape of Text String,-,-,:;
```

1	2	Eatontown	-5.811609,43.662006
2	3	Bladen	-8.574136,43.435287
3	18	Coraopolis	-7.437326,42.881957
4	20	Schaffhausen	-6.835582,40.736553, -6.825007,40.846355
:	:	:	:
n	n	n	n

NOTE: The "*" preceding the ".TFT_ID" is replaced with the appropriate feature class name.

MIL-D-89009

m. Spatial index. A spatial index file is implemented for
each face, edge, entity node and text primitive table in
a tile directory. A spatial index provides the
capability to use a set of coordinates to identify a
primitive, and its associated feature attributes. The
DCW implements spatial query indices for reduction of
data access time for geographic coordinate queries of
the DCW database.

The spatial indices are contained within files using one
of four suffixes in their filename: FSI (Face Spatial
Index), ESI (Edge Spatial Index), NSI (Node Spatial
Index), and TSI (Text Spatial Index). The VPF spatial
index (TABLE 59) is a sequential file of data that is
partitioned into three groups:

(1)   A header containing the number of primitives, the
      bounding rectangle of the spatial extent of the
      tile, and the number of nodes in a binary search
      tree.

(2)   A bit array of the tree where each bit represents
      the tree node id.

(3)   Each tree node written as a record.

TABLE 59.   Format for spatial index (*.*SI) file.

Starting Position (Bytes)	No. of Bytes	Field Type	Description
0	4	Integer	Number of primitives
4	4	Float	Bounding rectangle x1
8	4	Float	Bounding rectangle y1
12	4	Float	Bounding rectangle x2
16	4	Float	Bounding rectangle y2
20	4	Integer	Number of nodes in tree
24 + n * 4	4	Integer	Offset (os) of primitive list for node n
24 + n * 4 + 4	4	Integer	Count in integer units
os+(8*NNODE+24)+c*8 + 0	1	Byte	Primitive bounding rectangle x1
os+(8*NNODE+24)+c*8 + 1	1	Byte	Primitive bounding rectangle y1
os+(8*NNODE+24)+c*8 + 2	1	Byte	Primitive bounding rectangle x2
os+(8*NNODE+24)+c*8 + 3	1	Byte	Primitive bounding rectangle y2
os+(8*NNODE+24)+c*8 + 4	4	Integer	Primitive ID

54

Where: n ranges from 0 to number of nodes-1 and c ranges from 0 to number of
       primitives for node at primitive offset os-1

3.8.9   DCW tile directories.   The data in the DCW libraries
are partitioned in a systematic 5° by 5° tile structure based upon
the world-wide Geographic Reference System (GEOREF) (see Appendix
Section 70).   The tiling scheme for the DCW libraries implements a
pair of single-digit numbers to represent the 5° by 5° tile
referenced within each 15° by 15° standard GEOREF division.   The
first number represents the first, second, or third tile in the x
direction (longitude).   The second number represents the first,
second, or third tile in the y (latitude) direction (FIGURE 3).
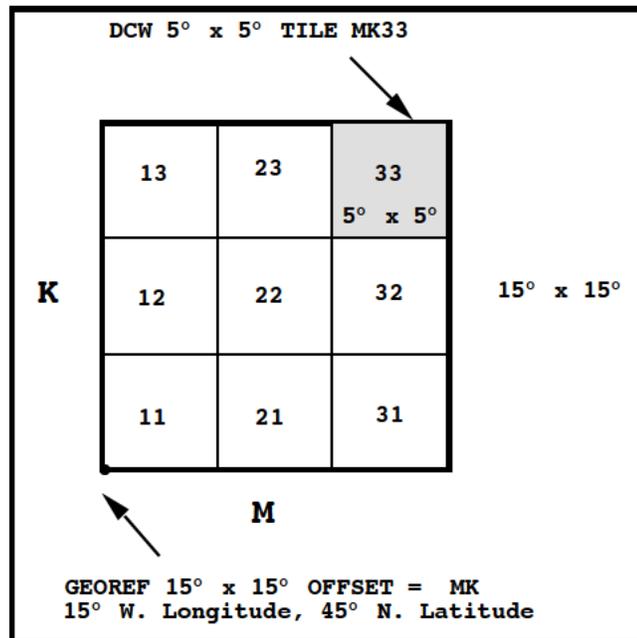
FIGURE 3.   5° by 5° tiling scheme of the DCW libraries:
An example from the GEOREF offset "MK".

a. Tile directory hierarchy.   The primitive tables for each
    coverage are divided among tile directories that are
    ordered in a three-tier hierarchy based on the tile
    naming convention.   The first and second tier
    subdirectories contain only pointers to the third
    subdirectory, where all primitive tables are stored.

b. Tile directory naming convention.   The first tier of
    subdirectories has single-letter names from A to Z
    (excluding I and O) corresponding to the first GEOREF
    letter (longitude zone) in the tile name.   The second
    tier of subdirectories has single-letter names from A to
    M (excluding I) corresponding to the second GEOREF
    letter (latitude zone) in the tile name.   The third tier

56

of subdirectories corresponds to the two-digit number
representing the 5° by 5° DCW tile (FIGURE 4).

MIL-D-89009
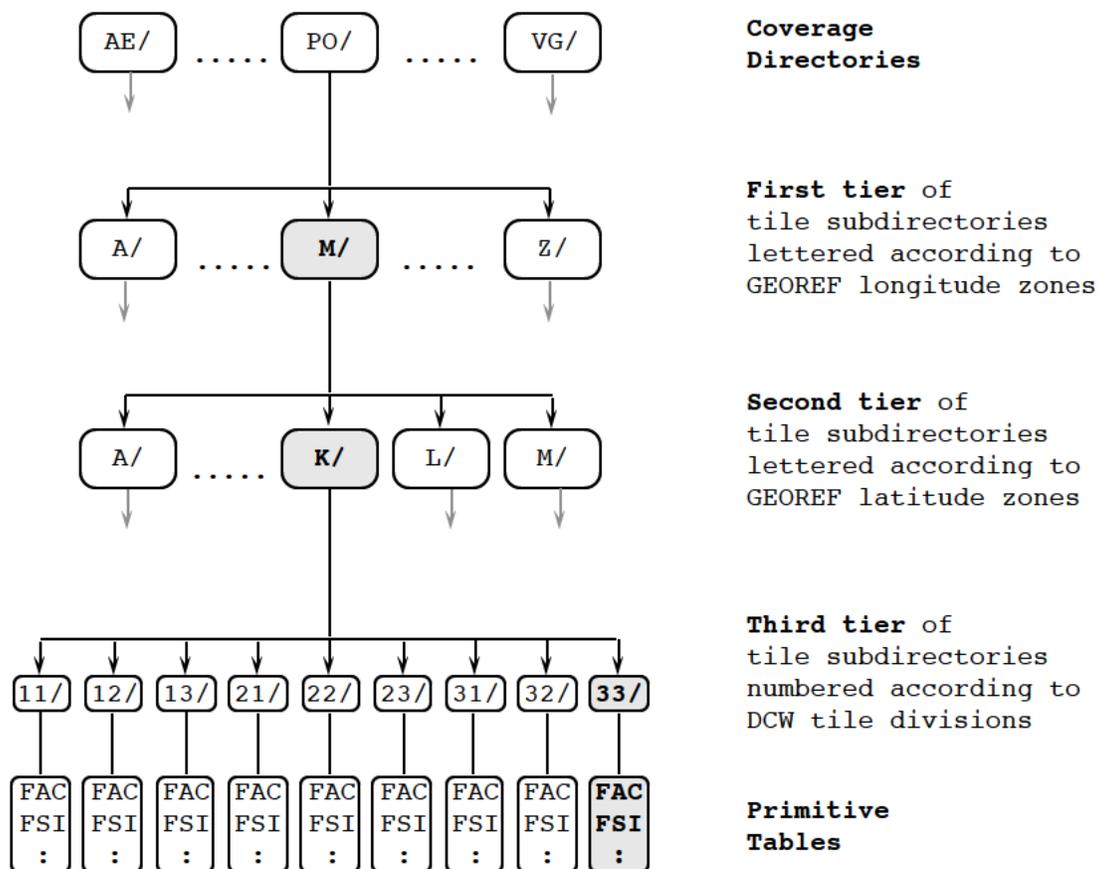
FIGURE 4.   Tile directory hierarchy.

c. Cross-tile topology. Topology across tiles is
    maintained through the use of a reference tile id in the
    edge primitive table that establishes a "cross-tile"
    link over the physical tile partitions (see paragraph
    3.8.8 c). This enables the database to function as a
    seamless unit for analysis purposes.

3.8.10 BROWSE tile directories The BROWSE library is not
tiled and therefore contains does not contain any tile
subdirectories. All primitive tables for BROWSE coverages are
stored at the coverage directory level.

MIL-D-89009

3.9 Cartographic considerations for DCW database.

a. Source.   The DMA's 1:1,000,000 ONC series of
   aeronautical charts provides the fundamental source data
   set as of September, 1989. The JNC series of DMA
   products at 1:2,000,000 scale supplements the ONC data.
   Six JNCs have been utilized as the source for the
   Antarctic region, where there is'nt any ONC coverage.

b. Compilation scale. The compilation scale of the DCW is
   1:1,000,000.

c. Minimum polygon size. Where polygons on ONCs were below
   the minimum capturable size of $\leq$3.05 millimeters
   (0.12 inch) in circumference, and consist of a single
   edge, they are represented as point features.

d. Connection rules. Connection rules apply for linear
   road and railroad features in the DCW database. Where
   roads and railroads are broken by text on an ONC, gaps
   wider than 0.1 inch (2.54 millimeters) in the network
   are coded as special connectors with TYPE attribute code
   of 8, and STATUS attribute code of 4, 6, or 9. Smaller
   gaps along a road or railroad are coded with the TYPE
   attribute code 1 or 2, and STATUS attribute code 1, 2,
   3, or 5. Connectivity rules do not apply in situations
   where gaps are clearly due to natural obstructions.

   Gaps created due to a road or railroad not being shown
   in the urban area of the ONC source were connected
   either with accurate delineation compiled from
   collateral source material (for 359 major cities) or
   with straight lines forming a "wagon wheel" (for the
   remaining cities). These gaps in the city areas of the
   ONCs are coded as special connectors with a TYPE
   attribute code of 8 and a STATUS attribute code of 4.

3.10 Source map projections. The projection parameters for
the ONCs vary with map sheet and the producing agency. Data
capture was principally in the Lambert Conformal projection from
the ONCs, and Transverse Mercator projection for the JNCs.

3.11 DCW projection. Regardless of the original map
projection, all data captured from ONC and JNC sheets were
converted to geographic coordinates in decimal degrees for storage
in the DCW database. Projection parameters were developed
specifically for each map sheet.

MIL-D-89009

    3.12 <u>Digital marginalia</u>. Digital marginalia refers to the information that originally appeared in notes, tables, and graphs on the borders of the ONC map sheets. For the DCW this information is included in the area attribute values of the data quality coverage and in the data quality tables.

MIL-D-89009

4. QUALITY ASSURANCE

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of Section 3. The accuracy reviews set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract.

4.1.2 Final product quality. Final product quality will reflect the quality expressed by each applicable military standard. A series of independent data quality inspections shall be undertaken to ensure the quality of the DCW product. These inspections are outlined below.

  a. Pre-automation review. This review shall be performed in the map preparation stage prior to automation. During this process, cartographic staff connect features, add missing features, or enhance data on ONC film separates to facilitate optical scanning.

  b. Cartographic accuracy review. This data review shall be designed to identify errors in linework using both positional accuracy and cartographic presentation criteria. In most instances, data are subjected to three review/edit cycles. In the roads thematic layer, for example, the position of the (thinner) plotted line is verified to fall within the position of the road on the source ONC when visually checked.

  c. Attribute code review. The attribute code review shall consist of both automated and manual processes. Attribute code frequencies are automatically tabulated to identify invalid codes and unusual behavior in attribute tables. Plots of the data shall then be

61

created and exhaustively reviewed for attribute code accuracy. In most cases, a second and third plot shall be created to verify that identified errors have been corrected. At times cartographic interpretation must be made regarding representation of ONC features in the DCW. These decisions must be tempered with the judgment of cartographic appropriateness. For example, when a stream on the ONC is represented by both perennial and intermittent symbology, a decision as to where to begin or end the appropriate stream code is influenced by the adjoining stream symbology.

d. Verification review. This is a review of all thematic data plotted together to verify proper integration or feature positioning between coverages. Additionally, the check shall be used as a means for identifying and correcting problems with text placement. For example, a check shall be made to verify that text strings do not overlap.

e. Tiling review. The tiling review shall be conducted to verify that the tile-splitting process has been performed correctly. This entails reviewing a random sample of tiles in various coverages to verify the correctness of the tile split, and to ensure cartographic and attribute data completeness.

f. Software review. Development or enhancements of the software interface is subject to a variety of controls, including formal reviews of system design documentation and functionality.

g. Final quality control review. This is a review of the final vendor data format prior to VPF conversion. All attribute names and attribute definitions are verified. Additionally, a final frequency count of all features for each thematic layer shall be recorded. All thematic layers are verified for the correct units of measure. Finally, a check shall be conducted to verify that all edit masks are removed, and that the correct topology is present.

h. Data translation review. This step is a review of the translated vendor data format into VPF format. The number of features, attribute definitions, and topology are verified between formats.

MIL-D-89009

i. CD-ROM review. The quality assurance process on the
    CD-ROM consists of two phases: premastering and
    mastering.

    (1)   Premastering. The premastered tape is checked to
          test data integrity through a series of production
          steps. This check involves conducting a series of
          tests, processes, and verifications which shall
          include comparing file sizes at each stage in the
          premastering process.

    (2)   Mastering. This review shall focus on monitoring
          the physical product characteristics of the CD-ROM
          itself. This includes testing the physical medium
          characteristics, and functionality testing of the
          CD-ROM.

5.   PACKAGING

5.1   General. The DCW package shall contain four CD-ROMs, floppy disks containing executable versions of the VPFVIEW software and (optionally) source code versions, a users manual, installation instructions, and other documentation. (The VPFVIEW software and associated documentation is not considered to be part of the DCW product but will be distributed as part of the DCW package.) The DCW uses the "3 of 9" bar code as set forth in DoD Military Standard 1189B and DMA Military Standard 600010.

5.1.1   CD-ROM labeling. Each CD-ROM label shall indicate the producers, the database edition number, date, and reference to the geographic extent of the CD-ROM.

5.1.2   Floppy disk labeling. The floppy disk labels shall contain the software version number. The VPFVIEW executable code shall be labeled with the UPC bar code "DCWXXSOFTWARE". The VPFVIEW source code shall be labeled with the UPC bar code "DCWXXCODE".

5.1.3   Users manual. A users manual shall be provided as a component of the DCW package providing information on how to use the DCW with the VPFVIEW software. The User Manual shall be labeled with the UPC bar code "DCWXXMANUAL".

5.1.4   Installation instructions. Installation instructions shall be provided on a separate sheet in the DCW package.

5.2   Containers.

5.2.1   DCW outer container. The outer container shall be used to distribute DCW materials. The outer container shall consist of a material and material thickness sufficient to protect the contents. The DCW database name and the UPC bar code "DCWXXPACK" shall be present on the outer container.

5.2.2   DCW inner container. The inner container shall be used to store DCW material. The design for the container shall be an adaptation of the Robinson projection graphic.

5.2.3   CD-ROM cases. The CD-ROM discs shall be distributed in a multiple-CD jewel case. The UPC bar code "DCWXXDATABASE" shall be present on the jewel case. The jewel case shall contain an insert booklet describing the DCW and providing reference to the geographic extent of each disc.

6.   NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1   Intended use.

6.1.1   General usage. The DCW database is intended for use as a small-scale general purpose basemap which can support GIS applications. It can be used as a background display for other geographic data. The DCW is intended for both use by military and civilian government agencies.

6.1.2   Non-intended usage. The DCW database is not appropriate for aeronautical navigation. The DCW product was not designed to satisfy visual or radar in-flight navigation requirements, and therefore is not intended for applications involving detailed flight planning for medium-level flight or low-altitude/high-speed operations.

6.1.3   Analysis limitation. Analytical use of DCW data at a scale larger than 1:1,000,000 is not recommended.

6.2   Acquisition requirements. When this specification is used in acquisition, the applicable issue of the DODISS must be cited in the solicitation (see 2.1.1 and 2.2).

6.3   Supersession. This section is not applicable to this specification.

6.4   Definitions. These definitions are taken from the Vector Product Format MIL-STD-600006, April 1992. Many of these terms are used in this document.

Area feature. A geographic entity that encloses a region; for example, a lake, administrative area, or state.

Area feature class. A collection of area features that maintains a homogeneous set of attributes. Implies the use of face primitives.

Area feature table. The implementation of an area feature class in a VPF attribute table.

Attribute. A property of an entity; for example, the color of a building, the width of a road, or the accuracy level of a database. Defined subtypes of an attribute are the feature attribute, coverage attribute, database attribute, and library attribute.

MIL-D-89009

Attribute accuracy. Attribute accuracy refers to the accuracy or reliability of attribute data within the limits described by feature completeness. If attribute accuracy information is not available in the above form, a description of known attribute accuracy characteristics may be substituted.

Attribute completeness. Attribute completeness refers to the percentage of feature attribute fields not populated by null or default values.

Attribute table. A collection of identically formatted (defined) attribute rows. An attribute table inherits the properties of a VPF table, but also may have value description tables.

Attribute value. The specific value of an attribute; for example, green for building color, 48 feet for road width, level 2 for the accuracy of a database.

Byte order. A hardware implementation of an encoding scheme. It determines the order in which bytes are stored in a long word. Two commonly used orders are little-endian, or least significant first (i.e., 1234); and big-endian, or most significant first (i.e., 4321).

Cartographic primitive. The text primitive.

Code table. A set of character specifications. A code table defines the alphanumeric and special characters that are used in a computer system to model written languages.

Column. The set of all values of a particular attribute within a table.

Column type. The relational model uses column types to implement the data type of an attribute. For instance, the column ELEVATION could have an integer column type.

Complex feature. A feature that includes simple or other complex features. For instance, a watershed complex feature may include river (line), lake (area), and well (point) simple features.

Complex feature class. A feature class that includes two or more other feature classes (simple or complex).

Complex feature table. An implementation of a complex feature class in VPF.

Compound key. A group of columns used together to create a key in a relational table.

Connected node. One of the two node primitive types used to represent linked features that are zero dimensional at a particular scale. Connected nodes are always found at the ends of edges and are topologically linked to the edges. Connected nodes are used in two ways: (1) to define edges topologically (always) and (2) to represent point features that are found at a juncture of linear features, such as overpasses, locks in a canal, or underground utility access points. Under the first usage, the connected nodes are referred to as start and end nodes. Under the second usage, attributes will be associated with the point features related to the connected nodes. If many edges intersect a node, only one edge will be maintained per node in the connected node table; other edges are linked by using winged-edge topology.

Containing face. A face that contains one or more entity nodes. Used to establish the relationship from a node to its face, if level 3 topology is present.

Coordinate. A specified position in Cartesian space. The value takes the form of a short or long floating point value. Z values (if any) are ignored during the enforcement and use of planar graphs.

Coordinate array. A fixed-length list of coordinate tuples.

Coordinate pair. A specified position in a two-dimensional grid, where the first position relates to the X axis and the second position relates to the Y axis.

Coordinate string. A variable-length list of coordinate tuples.

Coordinate triplet. A specified position in a three-dimensional grid, where the first position relates to the X axis, the second position relates to the Y axis, and the third position relates to the Z axis.

Coordinate tuple. A coordinate pair or triplet.

Coverage. A set of feature classes that has a specified spatial extent and in which the primitives interconnect as described by the coverage's topology.

Coverage attribute. A property of a coverage. The coverage attribute table contains properties for all coverages in the library.

Cross-tile topology. The encoding of topological relationships in such a manner that those relations are maintained even when a coverage has been physically partitioned into multiple tiles.

Data dictionary. A collection of tables with entries that define the meaning of attributes and the allowable values (or ranges of values).

Data structure. The physical structure used to represent the data model.

Data syntax. A description of the computer-readable (bit-level) representation of data.

Database. A collection of related libraries as defined by a product specification.

Database attribute. A property of a database.

Date status. Date status refers to the date at which the data was introduced or modified in the database. This date of entry is used as a proof of modification for a single data element and permits the statistical interpretation of groups of data elements.

Direct access. Retrieval of data by reference to its location on a storage medium rather than relative to the previously retrieved data. The access mechanism goes directly to the data in question. This access method is normally required for online data usage.

Directory. A file that contains a list of the unique names, file types (directory or table), beginning addresses, and lengths of other files.

Edge. A one-dimensional primitive used to represent the location of a linear feature and/or the borders of faces. Depending upon the level of topology, edges may be topologically linked to nodes, edges, and faces. Edges are composed of an ordered collection of two or more coordinate tuples (pairs or triplets). At least two of the coordinate tuples must be distinct. The orientation of an edge can be recognized by the ordering of the coordinate tuples.

Encapsulation. A set format that serves to identify data elements.

Encoding. The assignment of bit-patterns to data types in a computer. For example, one given bit arrangement may define an integer data type (e.g., 2's complement, 1's complement, or biased), whereas another may describe a character data type (e.g., ASCII, EBCDIC).

End node. The terminating node of an edge.

Entity. A general term for any object that is being modeled or defined within a database.

Entity node. One of the two node primitive types used to represent isolated features that are zero dimensional at a particular scale. Entity nodes are topologically linked to a containing face when face topology is present. Entity nodes can reside at any location, whether or not there is another primitive at that same location.

Escape sequence. A special character code used to extend the characters used in a character code table.

Face. A region enclosed by an edge or set of edges. Faces are topologically linked to their surrounding edges as well as to the other faces that surround them. Faces are always nonoverlapping, exhausting the area of a plane.

Feature. A model of a real world geographic entity. A zero-, one-, or two-dimensional entity of uniform attribute scheme from an exhaustive attribute distribution across a plane, or a set of such entities sharing common attribute values. The three subtypes are simple features, complex features, and text features. The types of simple features are point features, line features, and area features.

Feature attribute. A property of a feature.

Feature class. A set of features that shares a homogeneous set of attributes. A feature class consists of a set of tables that includes one or more primitive tables and one or more attribute tables. A feature class has the same columns of attribute information for each feature. Every feature class has one and only one feature table. The three types of feature classes are the simple feature class, complex feature class, and text feature class. The types of simple feature classes are the point feature class, line feature class, and area feature class.

Feature class schema table. A table that stores the composition rules of each feature class. This table describes the definition for each feature class and the way in which each table in a feature class relates to other tables.

Feature completeness. Feature completeness refers to the degree to which all features of a given type for the area of the data set have been included.

Feature join table. A table that identifies 1:N or N:1 relationships between features and other features or primitives. Simple features may be composed of one or more primitive instances, and complex features may be composed of one or more simple features or other complex features. A primitive instance may belong to more than one feature.

Feature table. A table made up of rows of features in a feature class. These rows collectively form the feature table for that feature class.

Field. A field contains a single attribute value of a single entity. Fields in a table identify the data types contained within each table.

File. A named stream of bytes. The three VPF file types are directory, table, and index file.

First edge. An edge arbitrarily selected as the first edge to enable traversing around a connected node, or through the ring table.

Fixed field. A field made up of a predefined number of bytes. Fixed fields are generally used for numeric data, or when blank entries are significant.

Foreign key. One or more column in one table that are used as a primary key in another table.

Geographic entity. A phenomenon characterized by its locational context and about which spatially referenced information is stored.

Geographic information system (GIS). An organized collection of computer hardware, software, geographic data, and standard operating procedures for efficiently capturing, storing, maintaining, retrieving, analyzing, displaying, and reporting spatially referenced information.

Geographic reference table. A table that defines the coordinate system of a library.

Geometric primitive. The basic geometric units of
representation; specifically, nodes, edges, and faces.

Georelational data model. A generic conceptual model in
which geographic information is represented by using a combination
of vector geometry and planar, topology, and relational data
models.

Index. A mechanism used to quickly identify a particular
record or group of records based on a table's primary key.

Index file. The implementation of an index stored in a file
instead of a table. There are row id indexes, variable-length
indexes, spatial indexes, and thematic indexes.

Inner ring. The inner boundary of a face, composed of edges
ordered in a sequence. A face may have none or any arbitrary
number of inner rings. The inner rings have the opposite edge
order sequence from the outer ring.

Integrated data. A geographic data set in which all feature
data are contained in a single coverage. Opposite of layered
data.

Jet Navigation Chart A 1:2,000,000 scale coordinated series
of multicolored charts designed to satisfy the long-range
navigation requirements of high-altitude, high-speed aircraft.

Key. In a relational data model, one or more columns
(attributes) whose values uniquely identify or can be used to
select a row.

Layered data. Feature data thematically separated into
separate coverages. Opposite of integrated data.

Left edge. The left edge is the first neighbor of the
current edge as one moves counterclockwise around the start node
of the current edge.

Left face. The face to the left of an edge in a traverse
from the start node to the end node.

Levels of topology. See topology.

Library. A collection of one or more coverages contained
within a specified spatial extent, all of which share a single
coordinate system. Coverages may be tiled in a library. All

tiled coverages in a library must share a common tiling scheme, however.

Library attribute. A property of a library. The library attribute table describes the properties of each library in a database.

Line feature. A geographic entity that defines a linear (one-dimensional) structure; for example, a river, road, or a state boundary.

Line feature class. A collection of line features that maintains a homogeneous set of attributes. Composed of edge primitives.

Line feature table. The implementation of a line feature class in a VPF attribute table.

Lineage information. Information that describes processing tolerances, interpretation rules applied to source materials, and basic production and quality assurance procedures. Lineage information should include all available information from the source.

Little-endian. Byte order in which the least significant byte of data is stored first.

Logical consistency. Logical consistency refers to the fidelity of the relationships encoded in a data set. In a VPF data set, logical consistency requires that all topological foreign keys match the appropriate primitive, that all attribute foreign keys match the appropriate primitive or features, and that all tables described in the feature class schema tables maintain the relationships described.

Media volumes. As used herein, the number of distinct media that comprise a VPF database. For instance, there may be four CD-ROM media volumes in one database.

Medium. A data storage device (e.g., a CD-ROM, hard disk drive, magnetic tape, or floppy disk).

Metadata. Information about data; more specifically, information about the meaning of other data.

Minimum bounding rectangle. A rectangle of coordinate tuples that defines the minimum and maximum coordinates of an entity. Abbreviated as MBR.

Names placement coverage. A coverage that contains (at a minimum) a point feature table with columns indicating a place name and its known coordinate. Used to help a user locate places by name.

NaN. Stands for not a number. Used as a floating point null value in VPF.

Neutral format. A characteristic of a data model that does not contain product-specific information.

Node. A zero-dimensional geometric primitive that is composed of a single coordinate tuple (pair or triplet). There are two types of nodes: entity nodes and connected nodes.

Operational Navigation Chart A chart at scale 1:1,000,000 that is designed for both general navigation and special military operations.

Outer ring. The outermost boundary of a face, composed of edges ordered in a sequence. The outer ring has the opposite edge order sequence from the inner rings.

Pathname. A file specification that uniquely identifies the location path to a file within a series of one or more directories.

Planar model. A planar model is a two-dimensional surface in which every point has a neighborhood (a two-dimensional region) that is topologically equal to a flat disk. It is implemented as a planar graph {N, E, F} with a finite number of nodes N = {n1, n2,...}, edges E = {e1, e2,...}, and faces A = {f1, f2,...} bounded by edges and nodes. Each edge has an orientation from its first (starting) coordinate tuple to its last coordinate tuple. Also, each face of the graph has a certain orientation (cycle) around its edges and nodes. Each edge of a planar model is incident with exactly two faces.

Point feature. A geographic entity that defines a zero-dimensional location; for example, a well or a building.

Point feature class. A collection of point features that maintains a homogeneous set of attributes. Composed of node primitives.

Point feature table. The implementation of a point feature class in a VPF attribute table.

73

Pointer. A field within a record or within an index that contains the address of a record.

Polygon. Thematically homogenous areas composed of one or more faces.

Positional accuracy. Positional accuracy refers to the root mean square error (RMSE) of the coordinates relative to the position of the real world entity being modeled. Positional accuracy shall be specified without relation to scale and shall contain all errors introduced by source documents, data capture, and data processing.

Primary key. A key whose value uniquely identifies a row.

Primitive The smallest component of VPF, of which all features are composed. There are three geometric primitives (nodes, edges, faces) and one cartographic primitive (text).

Primitive table. A primitive table inherits the properties of a VPF table, but may also have an associated minimum bounding rectangle table and/or a spatial index file.

Product specification. A document that defines the precise content and format of a specific product. It contains technical requirements and database design decisions such as coding, tiling, special relationships between entities, and so forth. In the context of the VPF, each separate product or application is defined by a product specification and implemented by using VPF structures.

Relational join. An operation that combines two tables, both of which contain a column or a set of columns possessing domains common to both tables.

Right edge. The right edge is the first neighbor of the current edge as one moves counterclockwise around the end node of the current edge.

Right face. The face to the right of an edge in a traverse from the start node to the end node.

Ring. A connected set of edges that composes a closed face border. Any single ring is only referenced to and by a single face. If the same set of edges is shared by two different faces, two rings that correspond to the two faces are created from the single edge set. Rings only occur at level 3 topology (when faces are also present).

Row. An ordered collection of fields pertaining to the entity. A tuple in a relation.

Row id. An integer that uniquely identifies each row in a table.

Schema A description (or picture or diagram) of the structures of a database system.

Schema table. A schema table defines the tables and their relationships within a coverage.

Semantics. The implied meaning of data. Used to define what entities mean with respect to their roles in a system.

Shape line. An ordered set of one or more coordinate tuples that define the placement and shape of a text primitive.

Simple feature class. Consists of a single type of primitive (face, edge, node, or text) and a feature table. There are four subtypes of simple feature classes: point, line, area, and text.

Source. Source information describes the origin or derivation of a single feature, primitive, or attribute. It includes information about processing of the data as well as information about the data source.

Spatial index. A data structure file that allows for the rapid identification of a primitive by using the values of the primitive's coordinates.

Start node. The first node of an edge.

Syntax. The rules governing the construction of a machine language or machine representation of entities.

Table. An organizational structure for data content. In the relational model, a table is a group of repeating rows defined by columns. Equivalent to a relation.

Text feature. A cartographic entity that relates a textual description to a zero- or one-dimensional location. A text feature usually contains information such as font, color, and height.

Text feature class. A collection of text features that maintains a homogenous set of attributes. Composed of text primitives.

Text feature table. The implementation of a text feature class in a VPF attribute table.

Text primitive. Characters placed in specific locations in a coordinate system. Text is a cartographic object, rather than a geographic entity, since it does not participate in topology. A text array indicates a fixed-length string of characters. A text string indicates a variable-length collection of characters.

Thematic attribute. A column in a table that provides a thematic description of a feature. For example, a feature class that contains rivers may have attributes such as width, depth, and name.

Thematic index. A file that allows software to access the row ids of its associated table. In a VPF table, the index is created on a column. Four special indexes are used for feature tables: point, line, area, and text thematic indexes.

Theme. An organizational concept used in the design of spatial databases. Common themes in spatial geographic databases are transportation, hydrology, and soil/land suitability.

Tile A spatial partition of a coverage that shares the same set of feature classes with the same definitions as the coverage. The topology of each tile is independent of that of each other tile in the coverage.

Tiled coverage. A coverage that has been physically partitioned into tiles.

Tiling scheme. The scheme used to define tile shape and size and to identify tiles (assign identification numbers).

Topology. The branch of mathematics concerned with geometric relationships unaltered by elastic deformation. In geographic applications, topology refers to any relationship between connected geometric primitives that is not altered by continuous transformation. VPF recognizes four levels of topology. Level 0 topology manipulates the purely geometric aspects of the spatial data. No topological information is stored in level 0 topology. Level 1 topology maintains a nonplanar graph. Level 2 topology maintains a planar graph. Level 4 topology explicitly represents the faces defined by the planar graph.

Traverse A software operation that uses winged-edge topology to retrieve a series of neighboring edges to satisfy a query of a network.

Triplet id. A variable-length structure used to contain
information for crossing tile boundaries. The first field
contains the internal primitive id (referred to as ID). The
second field contains the tile reference coverage id (TILE_ID),
and the third field contains the primitive id in the associated
tile (EXT_ID).

Tuple. See coordinate tuple.

Universe face. The unbounded region surrounding a level 3
topology coverage. The universe face always maintains the first
record in a face table.

Variable-length column. A column whose length is determined
by the amount of storage needed to store its contents. Useful for
character strings and coordinate strings.

Vector. Indicates a collection of coordinate tuples to
define a geographic or geometric entity.

Vector product format. A standard format, structure, and
organization for large geographic databases based on a
georelational data model and intended for direct access.
Abbreviated as VPF.

VPF table A VPF table consists of a table and (optionally)
an associated narrative table and/or (optionally) an associated
variable-length index file. Primitive tables and attribute tables
are derived from VPF tables. Feature tables are derived from
attribute tables. Attribute tables may have associated value
description tables. Primitive tables may have associated minimum
boundary rectangle tables.

Winged-edge topology. A topological construct that connects
each edge to two of its neighboring edges, allowing topologic
traversal of an edge and/or face network. A neighboring edge is
any edge that shares a start or end node with the original edge.
An edge has a start node, which is connected to the left edge, and
an end node, which is connected to the right edge.

6.5   International standardization agreements. "Certain
provisions of this specification are subject to international
standardization agreement. When amendment, revision, or
cancellation of this specification is proposed that will modify
the international agreement concerned, the preparing activity will
take appropriate action through international standardization
channels, including departmental standardization offices, to
change the agreement or make other appropriate accommodations."

6.5.1   International Standardization Agreements (STANAGs). STANAG 2211, "Geodetic Datums, Spheroids, Grids, and Cell References".

6.5.2   Quadripartite Standardization Agreements (QSTAGs). This section is not applicable to this specification.

6.5.3   Air Standardization Coordinating Committee Agreements (ASCC AIR STDs/STDs/ADV PUBs). This section is not applicable to this specification.

6.5.4   International MC&G agreements. This section is not applicable to this specification.

6.5.5   Executive orders. This section is not applicable to this specification.

6.5.6   Inter-Agency agreements. This section is not applicable to this specification.

6.5.7   Other documentation. This section is not applicable to this specification.

APPENDIX

DATA ORGANIZATION

10. SCOPE

10.1 <u>Scope</u>. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

30. DATA DICTIONARY

The data dictionary contains a description of all feature tables in a coverage for all the DCW and BROWSE libraries. The feature tables and primitive tables are stored as files in their respective coverage directories. The DCW and BROWSE data dictionaries are discussed in the remainder of this section.

30.1 <u>Data dictionary contents</u>. The DCW and BROWSE data dictionaries presented in this appendix contain the name and description of each attribute, attribute values, and explanatory notes for each feature table. The DCW uses a product-specific attribute coding system that is composed of TYPE and STATUS designators for area, line, and point features; and LEVEL and SYMBOL designators for text features. The TYPE attribute specifies what the feature is, while the STATUS attribute specifies the current condition of the feature. Some features require both a TYPE and STATUS code to uniquely identify their characteristics. For clarity, a matrix table defining the legal attribute code combinations within a feature class is provided when necessary. In order to uniquely identify each geographic attribute in the DCW, the TYPE and STATUS attribute code names are preceded by the two letter coverage abbreviation and a two letter abbreviation for the type of graphic primitive present. Where possible, ONC symbolization codes (from Appendix I - Symbolization of the Product Specification for Operation Navigation Chart) are mapped to DCW attribute values. Section 70 contains a cross-reference table between the DCW TYPE and STATUS codes and FACC (Feature/Attribute Coding Catalog) and FACS (Feature/Attribute Coding System) codes. TABLE 60 identifies all feature tables and primitive tables within a coverage for the DCW libraries. Feature and primitive tables for the BROWSE library are presented in Section 30.4.

MIL-D-89009

APPENDIX

30.2 Data dictionary organization. The coverages in each
library are presented in alphabetical order. A brief description
is provided for each coverage. The coverage description is
followed by value description tables. The value description
tables specify the attribute codes for features in that coverage,
organized by feature class, and provide the description for each
value. Area, line, point, and text feature tables (*.AFT, *.LFT,
*.PFT and *.TFT), when present, appear in that order. The feature
tables provide the field definition and the field size required to
store the attribute data.

30.3. DCW library coverages.

30.3.1 Aeronautical coverage.

a. Coverage contents. This coverage contains only airport
   information stored in a point feature table. All
   airport data were derived from the DMA Digital
   Aeronautical Flight Information File (DAFIF) or from ONC
   coverage. Airport data for Antarctica were derived from
   the JNC charts. Airport point features are described by
   six attributes: AEPTTYPE, AEPTNAME, AEPTVAL, AEPTDATE,
   AEPTICAO, and AEPTDKEY. Attribute values are as
   described in the integer value description table
   (TABLE 61).

b. AEPOINT.PFT attribute definitions. TABLE 62 describes
    the attribute names and descriptions that comprise the
    aeronautical point feature table (AEPOINT.PFT).

80

MIL-D-89009

APPENDIX

TABLE 60. DCW library feature and primitive tables by coverage.

Theme number	Thematic layer	Coverage name	Feature table(s)	Primitive table	Section
1	AERONAUTICAL	AE	AEPOINT.PFT	END	30.3.1
2	CULTURE LANDMARKS	CL	CLAREA.AFT CLLINE.LFT CLPOINT.PFT CLTEXT.TFT	FAC,RNG EDG END TXT	30.3.2
3	DATA QUALITY	DQ	DQAREA.AFT DQLINE.LFT DQTEXT.TFT	FAC,RNG EDG TXT	30.3.3
4	DRAINAGE	DN	DNAREA.AFT DNLINE.LFT DNPOINT.PFT DNTEXT.TFT	FAC,RNG EDG END TXT	30.3.4
5	DRAINAGE-SUPPLEMENTAL	DS	DSPOINT.PFT	END	30.3.5
6	HYPSOGRAPHY	HY	HYAREA.AFT HYLINE.LFT HYPOINT.PFT	FAC,RNG EDG END	30.3.6
7	HYPSOGRAPHY-SUPPLEMENTAL	HS	HSLINE.LFT HSPOINT.PFT	EDG END	30.3.7
8	LAND COVER	LC	LCAREA.AFT LCPOINT.PFT LCTEXT.TFT	FAC,RNG END TXT	30.3.8
9	OCEAN FEATURES	OF	OFLINE.LFT OFPOINT.PFT OFTEXT.TFT	EDG END TXT	30.3.9
10	PHYSIOGRAPHY	PH	PHLINE.LFT PHTEXT.TFT	EDG TXT	30.3.10
11	POLITICAL/OCEANS	PO	POAREA.AFT POLINE.LFT POPOINT.PFT POTEXT.TFT	FAC,RNG EDG END TXT	30.3.11
12	POPULATED PLACES	PP	PPAREA.AFT PPPOINT.PFT PPTEXT.TFT	FAC,RNG END TXT	30.3.12
13	RAILROADS	RR	RRLINE.LFT RRTEXT.TFT	EDG TXT	30.3.13
14	ROADS	RD	RDLINE.LFT RDTEXT.TFT	EDG TXT	30.3.14
15	TRANSPORTATION STRUCTURE	TS	TSLINE.LFT TSPOINT.PFT TSTEXT.TFT	EDG END TXT	30.3.15
16	UTILITIES	UT	UTLINE.LFT UTTEXT.TFT	EDG TXT	30.3.16
17	VEGETATION	VG	VGAREA.AFT	FAC,RNG	30.3.17
Other Coverages					
18	GAZETTEER	GAZETTE	GAZETTE.PFT	END	30.3.18
19	TILE REFERENCE	TILEREF	TILEREF.AFT	FAC,RNG	30.3.19
20	LIBRARY REFERENCE	LIBREF	LIBREF.LFT	EDG	30.3.20

MIL-D-89009

APPENDIX

TABLE 61. <u>Aeronautical integer value description table</u>
            <u>(INT.VDT)</u>.

```
{Header length};\
Aeronautical Integer Value Description Table;-;\
ID=         I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,;
```

1	AEPOINT.PFT	AEPTTYPE	1	Active civil
2	AEPOINT.PFT	AEPTTYPE	2	Active civil and military
3	AEPOINT.PFT	AEPTTYPE	3	Active military
4	AEPOINT.PFT	AEPTTYPE	4	Other
5	AEPOINT.PFT	AEPTTYPE	5	Added from ONC source when DAFIF not available

MIL-D-89009

APPENDIX

TABLE 62. <u>Aeronautical point feature table (AEPOINT.PFT)</u>.

```
{Header length};\
Aeronautical Points;AEPOINT.DOC;\
ID=      I, 1,P,Row Identifier,-,-,:\
AEPTTYPE=I, 1,N,Airport Type,INT.VDT,-,:\
AEPTNAME=T,50,N,Airport Name,-,-,:\
AEPTVAL= I, 1,N,Airport Elevation Value,-,-,:\
AEPTDATE=D, 1,N,Aeronautical Information Date,-,-,:\
AEPTICAO=T, 4,N,International Civil Organization Number,-,-,:\
AEPTDKEY=T, 7,N,DAFIF Reference Number,-,-,:\
TILE_ID= S, 1,F,Tile Reference Identifier,-,AEPOINT.PTI,:\
END_ID=  I, 1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	3	BANAK	25	19900502000000	0052	NO25784	134	1
2	3	ANDOYA	46	19900502000000	0052	NO74165	177	2
:	:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n	n

AEPTTYPE[1]

Airport type.

1	=	Active civil
2	=	Active civil and military
3	=	Active military
4	=	Other
5	=	Added from ONC source when not available from DAFIF

AEPTNAME

Airport name. This attribute uses a 50-character field which contains the name of a particular airport.

AEPTVAL

Airport elevation value. The VAL attribute contains the airport's elevation value in feet. In cases where airport data are not available from DAFIF, and the airport location was derived from the ONC lithograph, a VAL = 99999 is used to denote an unknown airport elevation.

AEPTDATE

Airport currency date. This attribute provides currency information about the airport, and cycle date of aeronautical information which indicates when the record was added to the file or last revised.

AEPTICAO

International Civil Aeronautical Organization number. A four-character alphanumeric code used to represent the International Civil Organization Number.

AEPTDKEY

DAFIF key. A seven-character alphanumeric code to represent the DAFIF reference number.

83

MIL–D–89009

APPENDIX

Notes (AEPOINT.PFT)

[1]Airport data includes ONC codes 1103.1—1103.4. The sources
 for the DCW airport data is the DAFIF file and ONC coverages.

MIL-D-89009

APPENDIX

30.3.2 Culture landmarks coverage.

a. Culture landmarks coverage. This coverage contains
    information pertaining to manmade or general cultural
    features other than transportation features, populated
    places, and utilities which are also manmade. These
    features captured from the ONCs are primarily for use as
    visual reference for air crews. These data are stored
    in area, line and point feature tables. All feature
    classes contain the LABEL attribute. Attribute values
    are as described in the integer value description table
    (TABLE 63).

b. CLAREA.AFT attribute definition. The LABEL attribute
    for the cultural landmark area feature table
    (CLAREA.AFT) is described in TABLE 64.

c. CLLINE.LFT attribute definition. The LABEL attribute
    for the cultural landmark line feature table
    (CLLINE.LFT) is described in TABLE 65.

d. CLPOINT.PFT attribute definitions. The attributes for
    the cultural landmarks point feature table (CLPOINT.PFT)
    are described in TABLE 66.

e. Text feature table. TABLE 67 provides the schema for
    the cultural landmarks text feature table (CLTEXT.TFT).

MIL-D-89009

APPENDIX

TABLE 63. Culture landmarks integer value description table (INT.VDT).

```
{Header length};\
Culture landmarks Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

| 1 | CLTEXT.TFT | LEVEL | 1 | Unattached Cultural annotation |
| 2 | CLTEXT.TFT | SYMBOL | 1 | Black annotation |

TABLE 64. Culture landmarks area feature table (CLAREA.AFT)[1]

```
{Header length};\
Culture Landmark Areas;CLAREA.DOC;\
ID=      I, 1,P,Row Identifier,-,-,:\
CLPYLABEL=T,50,N,Landmark label,-,-,:\
TILE_ID=  S, 1,F,Tile Reference Identifier,-,CLAREA.ATI,:\
FAC_ID=   I, 1,F,Face Primitive Foreign Key,-,-,:;
```

1	Filtration Beds	421	1
2	Tank Farm	465	2
:	:	:	:
n	n	n	n

CLPYLABEL
The type of landmark is entered in this field as a text string.
Landmarks with labels require the label to be entered in this field.
Representative values are:

	ONC Codes
Forts	908.2
Athletic fields	908.8
Area delimiting lines	908.12
Structure other than buildings	908.19

[1]This table does not appear in the Eurnasia Library.

Downloaded from http://www.everyspec.com

MIL-D-89009

APPENDIX

TABLE 65. Culture landmarks line feature table (CLLINE.LFT).

```
{Header length};\
Culture Landmark Lines;CLLINE.DOC;\
ID=       I, 1,P,Row Identifier,-,-,:\
CLLNLABEL=T,50,N,Landmark label,-,-,:\
TILE_ID=  S, 1,F,Tile Reference Identifier,-,CLLINE.LTI,:\
EDG_ID=   I, 1,F,Edge Primitive Foreign Key,-,-,:;
```

1	Aerial Conveyor	177	3
2	Seawall	214	1
:	:	:	:
n	n	n	n

CLLNLABEL
The type of landmark is entered in this field as a text string.
Landmarks with labels require the label to be entered in this field.
Representative values are:

	ONC Codes
Weirs, jetties, and groynes	905.6
Ramps	906.4
Prominent fences	907.2
Piers, wharves, quays	906.3
Breakwaters	None
Aerial cableways	908.15
Walls, trenches, tank traps	907.1
Dams	None

MIL-D-89009

APPENDIX

TABLE 66. Culture landmarks point feature table (CLPOINT.PFT)

```
{Header length};\
Culture Landmarks Points;CLPOINT.DOC;\
ID=       I, 1,P,Row Identifier,-,-,:\
CLPTLABEL=T,50,N,Landmark Label,-,-,:\
TILE_ID=  S, 1,F,Tile Reference Identifier,-,CLPOINT.PTI,:\
END_ID=   I, 1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	Hut	91	5
2	Camp	91	7
:	:	:	:
n	n	n	n

CLPTLABEL
Representative text labels of cultural landmark point features as of
December 2, 1991 are:

ABANDONED JETTY	AERIALS
ANCIENT RUINS	ARIANA LAUNCH SITE (NON-MILITARY)
ARMY BARRACKS	ARMY BARRACKS AND TOWERS
ARMY CAMP	ARMY CAMP (BARRACKS)
BARRACKS	BEACON ON TOWER
BITUMEN LAKE	BORDER POST
BORDER POSTS	BRICKWORKS
BUILDING	BUILDINGS
BUILDINGS AND MASTS	CABIN
CABIN (ABANDONED)	CABINS
CAIRN	CAIRNS
CAMP	CAMPS
CARAVAN HALT	CASTLE
CEMETERY	CHAPEL
CHIMNEY	CHURCH
	CISTERN
CISTERNS	COASTGUARD OUTPOST
COASTGUARD STATION	COMPRESSOR STATION
CONSTRUCTION CAMP AND MAST	CORRAL
CORRALS	CRUSHERS
CUSTOMS HOUSE	CUSTOMS POST
CUSTOMS POST AND MAST	CUSTOMS POSTS
	DISUSED LIGHTHOUSE
ELECTRIC PLANT	ELECTRIC SUBSTATION
FACTORIES	FACTORY
FARM	FARM (WALLED)
FARMS	FILTER BEDS
FISHERIES	FISHERY
FISHING HUTS	FLAG STATION
FLARES	FORT
FORT (WALLED)	FORTS
GARDENS	GAS WELL
GAS WELLS	GAS/OIL SEPARATOR PLANT
GAS/OIL SEPARATOR PLANT AND SUB- STATION	GRAVE
GRAVES	GROUNDMARK
GUARD POST	H-1 WALLED PUMPING STATION
HATCHERY	HOSPITAL

88

MIL-D-89009

APPENDIX

TABLE 66. Culture landmarks point feature table (CLPOINT.PFT) – Continued.

HOSTEL	HUNTERS CABIN
HUT	HUTS
HYDRO-ELECTRIC POWER PLANT	HYDRO-ELECTRIC POWER STATIONS
INDUSTRIAL COMPLEX	KILN
KILNS	LANDING
LIGHT	LIGHT TOWER
LIGHTHOUSE	LIGHTHOUSES
LIGHTS	LIGHTSHIP
LOADING PLATFORM	
MARINE BIOLOGICAL STATION	MARSHALLING YARD
MAST	MASTS
MILITARY AREA	MILITARY CAMP
MILITARY CAMPS	MILITARY COMPOUND
MILITARY POST	MILL
MINE	MINE WORKINGS
MINING AREA	MINING CAMP
MISSION	MONASTERIES
MONASTERY	MONUMENT
MONUMENTS	MOSQUE
MOSQUES	MOUNTAIN PASS
NATURAL GAS PROCESSING CENTER	NOMAD CAMP
NUCLEAR POWER PLANT	NUMEROUS FARM COLONIES
NUMEROUS FORTS	NUMEROUS OIL WELLS AND TANKS
OBSERVATORY	OIL
OIL CAMP	OIL CAMPS
OIL DEPOT	OIL MILL
OIL MILLS	OIL PUMPING STATION
OIL REFINERY	OIL TANK
OIL TANKS	OIL TERMINAL
OIL TERMINALS	OIL WELL
OIL WELL (ABANDONED)	OIL WELLS
OLD WIND PUMP	OLD WORKINGS
OTHER/UNKNOWN (for symbols not in specifications or for unlabeled symbols)	PALACE
PAPER MILL	PIPELINE TERMINAL
PLANT	PLANTATION
PLATFORM	POLAR STATION
POLICE POST	POLICE POST AND BULDINGS
POLICE POST AND MAST	POLICE POST AND TOWER
POLICE STATION	POST
POWER PLANT	POWER STATION
POWER STATIONS	POWERHOUSE
PRISON	PROCESSING PLANT
PUMPING STATION	PUMPING STATIONS
PUMPING UNIT	PYRAMID
PYRAMIDS	RACECOURSE
RACETRACK	RADIO STATION
RADIO TELESCOPE	RADIO TOWER
RADIO TOWER AND PALACE	RADIO TRANSMITTING STATION
RADIO-POLAR STATION	RANCH
RECEIVER STATION	REFINERY
RESTHOUSE	RIFLE RANGE
ROUNDHOUSE	RUIN

89

MIL-D-89009

APPENDIX

TABLE 66. Culture landmarks point feature table (CLPOINT.PFT) -
           Continued.

RUINED FORT	RUINED TOWER
RUINED TOWERS	RUINED VILLAGE
RUINS	SALT EVAPORATOR
SATELLITE STATION	SAW MILL
SHEEP PEN	SHEEPFOLD
SHEEPFOLDS	SHRINE
SHRINES	SILO
SILOS	SITE
SLAGPILE	STATION
STEEL PLANT	STEEL TOWER
STEEL WORKS	STORAGE AREA
STORAGE TANKS	
SUB STATION	SUB STATIONS
SUGAR FACTORY	SUMMER CAMP
TALC WORKINGS	TANK
TANK AND DERRICKS	TANK FARM
TANKS	TEAHOUSE
TELECOMMUNICATIONS STATION	TELEPHONE STATION
TEMPLE	TEMPLES
TENT CITIES	TOMB
TOMBS	TOWER
TOWERS	TRADING POST
TRANSFORMER STATION	TRANSFORMER YARD
TRANSMITTING STATION AND MAST	WALL (RUINS)
WALLED CITY	WALLED FORT
WALLED RUINS	WALLED TOWN
WALLED VILLAGE	WALLS
WAREHOUSE	WAREHOUSES
WATCH TOWER	WATCH TOWERS
WATER MILL	WATER PUMP
WATER TANK	WATER TANKS
WATER TOWER	WATER TREATMENT PLANT
WATERMILL	WATERMILLS
WEATHER STATION	WELLS
WHARVES	WINDMILL
WINTER QUARTERS	WORKS

Notes
Both plural and singular labels are coded in the database (for example,
ruin and ruins).

Many of the features found in this category carry labels suggesting that
they may belong in another layer. Pumping stations associated with oil
pipelines, for example, are placed in this coverage rather than in the
utilities coverage, since these features represent primarily landmarks
rather than a complete inventory of features for the world.

Strategic or landmark place names (captured as points) that are denoted
in ONC marginal notes as villages, homesteads, or populated places are
stored in the populated places point feature table.

90

MIL-D-89009

APPENDIX

TABLE 67. <u>Culture landmarks text feature table (CLTEXT.TFT)</u>.

```
{Header length};\
Culture Landmarks Text;-;\
ID=      I,1,P,Row Identifier,-,-,:\
LEVEL=   I,1,N,Type of text,INT.VDT,-,:\
HEIGHT=  F,1,N,Height of text,-,-,:\
TEXT=    T,*,N,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL=  I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,CLTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.02131	fort	1.27000	1	60	1
2	1	0.02131	grave	1.27000	1	107	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

91

MIL-D-89009

APPENDIX

30.3.3 Data quality coverage.

    a. Data quality coverage. This coverage stores data
quality information in area and line feature tables.
Area primitives correspond to the effective data extents
of the individual ONC sheets from which the data were
extracted. These do not correspond to the exact
boundaries of the ONC sheets themselves, since some
overlap exists between charts. Area attributes in the
DQAREA.AFT are derived from the ONC map sheets, usually
from marginal notes. Comments stored in related tables
(DQAREA.RAT) are derived from both source material
marginal notes and from observations made by the
processing staff during the automation effort. Line
primitives are those edges comprising the effective data
extents. Line attributes exist to document edgematch
characteristics between source maps, and techniques used
to reconcile problem areas. Attributes contained in the
DQLINE.LFT tables are limited to identifying which
source charts form the border being described. Primary
attributes are stored in relate tables (DQLINE.RAT).
Both area and line feature tables have a one to many
relationship to their respective RATs, allowing an
unlimited number of comments to be stored about any area
or line features. The DQ coverage also contains text
data, allowing for documentation of regional data
quality issues within the sheets. These are not linked
to any other database primitives. Attribute values are
as described in the integer value description table
(TABLE 68).

    b. Attribute definitions. The attribute names,
descriptions, and values that comprise the data quality
area feature table (DQAREA.AFT) are described in TABLE
69. For the area relate attribute table (DQAREA.RAT)
they are described in TABLE 70.

    c. Attribute definitions. The attribute names,
descriptions, and values that comprise the data quality
line feature table (DQLINE.LFT) are described in
TABLE 71. For the line relate attribute table
(DQLINE.RAT) they are described in TABLE 72.

    d. Text feature table. TABLE 73 provides the schema for
the data quality text feature table (DQTEXT.TFT).

92

MIL-D-89009

APPENDIX

TABLE 68. Data quality integer value description table
(INT.VDT).

```
{Header length};\
Data Quality Integer Value Description Table;-;\
ID=         I, 1,N,Row ID,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	DQTEXT.TFT	LEVEL	1	Political/Oceans
2	DQTEXT.TFT	LEVEL	2	Populated Places
3	DQTEXT.TFT	LEVEL	3	Railroads
4	DQTEXT.TFT	LEVEL	4	Roads
5	DQTEXT.TFT	LEVEL	5	Utilities
6	DQTEXT.TFT	LEVEL	6	Drainage
7	DQTEXT.TFT	LEVEL	7	Supplemental Drainage
8	DQTEXT.TFT	LEVEL	8	Hypsography
9	DQTEXT.TFT	LEVEL	9	Supplemental Hypsography
10	DQTEXT.TFT	LEVEL	10	Land Cover
11	DQTEXT.TFT	LEVEL	11	Ocean Features
12	DQTEXT.TFT	LEVEL	12	Physiography
13	DQTEXT.TFT	LEVEL	13	Aeronautical
14	DQTEXT.TFT	LEVEL	14	Cultural Landmarks
15	DQTEXT.TFT	LEVEL	15	Transportation Structure
16	DQTEXT.TFT	LEVEL	16	Vegetation
17	DQTEXT.TFT	LEVEL	17	Data Quality
18	DQTEXT.TFT	SYMBOL	1	Black Annotation

93

MIL-D-89009

APPENDIX

TABLE 69. Data quality area feature table (DQAREA.AFT).

```
{Header length};\
Data Quality Areas;DQAREA.DOC;\
ID=     I, 1,P,Row Identifier,-,-,:\
DQPYSID=T, 6,N,ONC Sheet Identifier,-,-,:\
DQPYCOM=D, 1,N,Compilation Date of the ONC(excluding aeronautical),-,-,:\
DQPYREV=D, 1,N,Last Revision Date of the ONC,-,-,:\
DQPYLIT=D, 1,N,Current Revision Litho or Print Date,-,-,:\
DQPYREM=T,40,N,Sheet-wide Marginalia or Observed Characteristics,-,-,:\
DQPYAHA=I, 1,N,Absolute Horizontal Accuracy,-,-,:\
DQPYAVA=I, 1,N,Absolute Vertical Accuracy,-,-,:\
TILE_ID=S, 1,F,Tile Reference Identifier,-,DQAREA.ATI,:\
FAC_ID= I, 1,F,Face Primitive Foreign Key,-,-,:;
```

1	G18	19840701	19871201	19871201	None	6700	2000	150	1
2	G20	19740201	19910503	19910503	None	6700	2000	189	2
:	:	:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n	n	n

DQPYSID
Sheet identifier. This attribute contains a two- or three-character
alphanumeric sheet identification number for ONC sheets and three-
character numeric identifier numbers for JNC sheets (e.g., A1 to U19 for
ONC sheets, and 120 to 125 for JNC sheets).

DQPYCOM
Compilation date. This attribute contains the compilation date of the
source ONC or JNC sheet (excluding aeronautical data).

DQPYREV
Revision date. This attribute contains the date of the last revision of
the ONC source sheet

DQPYLIT
Litho date. This attribute contains the ONC or JNC sheet litho date or
print date of the most current revision.

DQPYREM
Remarks or comment field. This attribute provides a remark or comment
field for storing sheet-wide marginalia or observed data
characteristics; that is, "All roads are approximate alignment," or
"All point elevations are unreliable."

DQPYAHA
Absolute horizontal accuracy. This attribute contains the absolute
horizontal accuracy in feet.

DQPYAVA
Absolute vertical accuracy. This attribute contains the absolute
vertical accuracy in feet.

94

MIL-D-89009

APPENDIX

TABLE 70. <u>Data quality area relate attribute table (DQAREA.RAT)</u>.

```
{Header length};\
Data Quality Area Relate Attribute Table;-;\
ID=     I,  1,N,Row Identifier,-,-,:\
DQPYSID=T,  6,P,Relate Item to Area Feature Table,-,-,:\
LAYER=  T,  2,N,Database Layer Name,-,-,:\
TEXT=   T,320,N,Miscellaneous Text,-,-,:;
```

1	G18	DN	Political boun. .
2	G20	AE	Utilities . . .
:	:	:	:
n	n	n	n

DQPYSID
Relate item to DQAREA.AFT. This attribute contains a two- or three-character alphanumeric sheet identification number for ONC sheets and a three character numeric identifier for JNC sheets.

LAYER
Layer identifier. This attribute contains a two character alphabetic code identifying which DCW coverage is referenced by the table record (e.g. DN, HY, etc.)

TEXT
Text string. This attribute contains text describing specific conditions occurring within the database. Typically this refers to a source sheet-wide phenomena, although discrete regions may be included in the description.

MIL-D-89009

APPENDIX

TABLE 71. <u>Data quality line feature table (DQLINE.LFT)</u>.

```
{Header length};\
Data Quality Lines;DQLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
DQLNID=  I,1,N,Line Identifier,-,-,:\
DQLNONC1=T,3,N,First ONC Sheet,-,-,:\
DQLNONC2=T,3,N,Second ONC Sheet,-,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,DQLINE.LTI,:\
EDG_ID=  K,1,F,Edge Primitive Foreign Key,-,:;
```

1	1	G18	G19	135	1
2	2	G19	G20	136	2
:	:	:	:	:	:
n	n	n	n	n	n

DQLNID
Line identifier.

DQLNONC1
First ONC sheet.

DQLNONC2
Second ONC sheet.

TABLE 72. <u>Data quality line relate attribute table</u>
<u>(DQLINE.RAT)</u>.

```
{Header length};\
Data Quality Line Relate Attribute Table;-;\
ID=     I,  1,N,Row Id,-,-,:\
DQLNID=I,  1,P,Relate Item to Line Feature Table,-,-,:\
LAYER= T,  2,N,Database Layer Name,-,-,:\
TEXT=  T,320,N,Miscellaneous Text,-,-,:;
```

1	1	DN	Edgematch prob .
2	2	AE	Airport data . .
:	:	:	:
n	n	n	n

DQLNID
Relate item to DQLINE.LFT. This is an internal database identifier.

LAYER
Layer identifier. This attribute contains a two character alphabetic code identifying which DCW coverage is referenced by the table record (e.g., DN, HY, etc.)

TEXT

96

MIL-D-89009

APPENDIX

Text string. This attribute contains text describing specific
conditions occurring within the database. Typically this refers to
edgematch problems observed on source maps and steps taken to alleviate
the problem.

MIL–D–89009

APPENDIX

TABLE 73. Data quality text feature table (DQTEXT.TFT).

```
{Header length};\
Data Quality Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,N,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,DQTEXT,TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.00931	Some text	1.27000	1	102	1
2	1	0.00931	Characte	.1.27000	1	113	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

98

MIL-D-89009

APPENDIX

30.3.4 <u>Drainage coverage</u>.

a. Drainage coverage. This coverage contains drainage or hydrographic feature information stored as area, line, and point feature tables. The area and point feature tables require only the TYPE attribute. The line feature table implements the TYPE and STATUS attributes to describe drainage line information. Attribute values are as described in the integer value description table (TABLE 74).

b. DNAREA.AFT attribute definitions. TABLE 75 describes the drainage area feature table attribution (DNAREA.AFT).

c. DNLINE.LFT attribute definitions. TABLE 76 describes the drainage line feature table attribution (DNLINE.LFT).

d. Legal code combinations. Since there are two combinatorial attributes in the drainage line feature table, TABLE 77 provides a listing of the legal code combinations and the resulting descriptions.

e. Attribute definitions. TABLE 78 describes the drainage point feature table (DNPOINT.PFT) attribution.

f. Text feature table. TABLE 79 provides the schema for the drainage text feature table (DNTEXT.TXT). Text strings may contain diacritical marks or special characters. All drainage text pertaining to point features is 1.52 millimeters (0.06 inch) in height. Text pertaining to area features is stored as one of four different heights: 1.52 millimeters (0.06 inch), 2.03 millimeters (0.08 inch, 2.54 millimeters (0.10 inch), and 3.81 millimeters (0.15 inch).

99

MIL-D-89009

APPENDIX

TABLE 74. Drainage integer value description table (INT.VDT).

```
{Header length};\
Drainage Integer Value Description Table;-;\
ID=         I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	DNAREA.AFT	DNPYTYPE	1	Inland water - perennial
2	DNAREA.AFT	DNPYTYPE	2	Inland water - nonperennial
3	DNAREA.AFT	DNPYTYPE	3	Wet sand
4	DNAREA.AFT	DNPYTYPE	4	Snowfields, glaciers, ice
5	DNLINE.LFT	DNLNTYPE	1	Streams, rivers, channelized rivers
6	DNLINE.LFT	DNLNTYPE	2	Inland shorelines
7	DNLINE.LFT	DNLNTYPE	3	Wet sand limits
8	DNLINE.LFT	DNLNTYPE	4	Canals, aqueducts, flumes, penstocks, kanats
9	DNLINE.LFT	DNLNTYPE	5	Glacial limits
10	DNLINE.LFT	DNLNTYPE	6	Snowfields, glaciers, or land ice to water ice or ocean
11	DNLINE.LFT	DNLNTYPE	7	Ice free limits (land/ice line)
12	DNLINE.LFT	DNLNTYPE	8	Connectors
13	DNLINE.LFT	DNLNSTAT	1	Perennial (used for streams only)
14	DNLINE.LFT	DNLNSTAT	2	Nonperennial (used for streams only)
15	DNLINE.LFT	DNLNSTAT	3	Definite (used for inland shorelines only)
16	DNLINE.LFT	DNLNSTAT	4	Indefinite (used for inland shorelines only)
17	DNLINE.LFT	DNLNSTAT	5	Unsurveyed perennial (used for streams only)
18	DNLINE.LFT	DNLNSTAT	6	Unsurveyed nonperennial (used for streams only)
19	DNLINE.LFT	DNLNSTAT	7	Abandoned
20	DNLINE.LFT	DNLNSTAT	8	Under construction
21	DNLINE.LFT	DNLNSTAT	9	Suspended or elevated
22	DNLINE.LFT	DNLNSTAT	10	Underground
23	DNLINE.LFT	DNLNSTAT	11	Above ground
24	DNLINE.LFT	DNLNSTAT	88	ONC Module boundary
25	DNLINE.LFT	DNLNSTAT	99	None
26	DNPOINT.PFT	DNPTTYPE	1	Springs, wells, or waterholes
27	DNPOINT.PFT	DNPTTYPE	2	Reservoir
28	DNPOINT.PFT	DNPTTYPE	3	Falls
29	DNPOINT.PFT	DNPTTYPE	4	Rapids
30	DNPOINT.PFT	DNPTTYPE	5	Locks
31	DNPOINT.PFT	DNPTTYPE	6	Dams
32	DNPOINT.PFT	DNPTTYPE	7	Sluice gate
33	DNTEXT.TFT	LEVEL	1	Running streams
34	DNTEXT.TFT	LEVEL	2	Standing lakes and reservoirs
35	DNTEXT.TFT	LEVEL	3	Land ice names
36	DNTEXT.TFT	LEVEL	4	Running streams (diacritical)
37	DNTEXT.TFT	LEVEL	5	Standing lakes and reservoirs (diacritical)
38	DNTEXT.TFT	LEVEL	6	Land ice names (diacritical)
39	DNTEXT.TFT	LEVEL	7	DNPOINT regular annotation

100

MIL-D-89009

APPENDIX

40	DNTEXT.TFT	LEVEL		DNPOINT diacritical annotation
41	DNTEXT.TFT	SYMBOL	1	Black annotation
42	DNTEXT.TFT	SYMBOL	4	Blue annotation

TABLE 75. Drainage area feature table (DNAREA.AFT).

```
{Header length};\
Drainage Areas;DNAREA.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
DNPYTYPE=I,1,N,Type of Drainage Area,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,DNAREA.ATI,:\
FAC_ID=  I,1,F,Face Primitive Foreign Key,-,-,:;
```

1	3	22	1
2	2	67	2
:	:	:	:
n	n	n	n

DNPYTYPE		**ONC Codes**	
1 =	Inland water		
	– perennial	303.1	Lakes, perennial
		304.1	Reservoirs, natural shorelines[1]
		304.2	Reservoir, manmade shoreline[1]
		304.3	Reservoirs, under construction[1]
		305.1	Streams, perennial
		305.8	Streams, unsurveyed, perennial
		307.2	Canals, navigable, to scale
2 =	Inland water		
	– nonperennial	303.2	Lakes, nonperennial; wadi; sabkha
		307.4	Canals, navigable, abandoned
		305.2	Streams, nonperennial
		305.6	Streams, seasonally fluctuating, wul
		305.7	Streams, seasonally fluctuating, mbl
3 =	Wet sand	305.10	Sand deposits in & along riverbeds
		305.11	Wet sand areas
4 =	Snowfields,		
	glaciers, ice	315.1	Glaciers
		315.3	Snowfields, ice fields, and ice caps
		315.7	Permanent polar ice
9 =	None (used for background		
	and for inland water islands)		

Notes
When inland water bodies and rivers represented as area features are
contiguous, it is not possible to differentiate between the two features
on an ONC. Therefore all areal river features are categorized as inland
water.

[1]All reservoirs are considered perennial.

101

MIL-D-89009

APPENDIX

TABLE 76. Drainage line feature table (DNLINE.LFT).

```
{Header length};\
Drainage Lines;DNLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
DNLNTYPE=I,1,N,Type of Drainage line,INT.VDT,-,:\
DNLNSTAT=I,1,N,Status of Drainage line,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,DNLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	1	2	131	1
2	4	8	77	2
:	:	:	:	:
n	n	n	n	n

DNLNTYPE

1 = Streams, rivers, channelized rivers[1]
2 = Inland shorelines
3 = Wet sand limits
4 = Canals, aqueducts, flumes, penstocks,
      kanats, or similar features (clearly identified by
      annotation in text primitive table)[2]
5 = Glacial limits
6 = Snowfields, glaciers, or land ice to water ice or ocean
7 = Ice free limits (land/ice line)
8 = Connectors (used to separate inland water for ocean or ocean
      ice)[3]
9 = None (outer boundary)

DNLNSTAT
This attribute classifies drainage features according to whether or not
they are: perennial, seasonally fluctuating, unsurveyed, abandoned,
under construction, suspended, or underground.

1 = Perennial (used for streams only)
2 = Nonperennial (used for streams only)
3 = Definite (used for inland shorelines only)
4 = Indefinite (used for inland shorelines only)
5 = Unsurveyed perennial (used for streams only)[4]
6 = Unsurveyed nonperennial (used for streams only)[5]
7 = Abandoned
8 = Under construction
9 = Suspended or elevated
10 = Underground
11 = Above ground
88 = ONC module boundary
99 = None

Notes

[1] In some cases, it is not possible to differentiate canals from streams
or rivers on an ONC.
[2] Only features clearly identified by textual annotation in the text
primitive table have been given this code. All questionable features
have been coded as streams.

102

MIL-D-89009

APPENDIX

TABLE 76. <u>Drainage line feature table (DNLINE.LFT)</u> – Continued.

[3] These lines are derived by the differences in shading on the ONC between inland water and open ocean or ocean ice.
[4] The unsurveyed perennial code is used if the drainage feature flows into definite inland water.
[5] The unsurveyed nonperennial code is used if the drainage feature flows into indefinite inland water.

TABLE 77. <u>Legal code combinations for drainage line attributes</u>.

DNLNTYPE	DNLNSTAT	Description
1	1	STREAMS, RIVERS, CHANNELIZED RIVERS, PERENNIAL
1	2	STREAMS, RIVERS, CHANNELIZED RIVERS, NONPERENNIAL
1	5	STREAMS, RIVERS, CHANNELIZED RIVERS, UNSURVEYED PERENNIAL
1	6	STREAMS, RIVERS, CHANNELIZED RIVERS, UNSURVEYED NONPERENNIAL
2	3	INLAND SHORELINES, SEASONALLY FLUCTUATING WITH UNDEFINED LIMITS
2	4	INLAND SHORELINES, SEASONALLY FLUCTUATING, WITH DEFINITE LIMITS
3	99	WET SAND LIMITS
4	7	CANALS, AQUEDUCTS, FLUMES, ETC, ABANDONED
4	8	CANALS, AQUEDUCTS, FLUMES, ETC, UNDER CONSTRUCTION
4	9	CANALS, AQUEDUCTS, FLUMES, ETC, SUSPENDED OR ELEVATED
4	10	CANALS, AQUEDUCTS, FLUMES, ETC, UNDERGROUND
4	11	CANALS, AQUEDUCTS, FLUMES, ETC, ABOVE GROUND
5	99	GLACIAL LIMITS
6	99	SNOWFIELDS, GLACIERS, OR LAND ICE TO WATER ICE OR OCEAN
7	99	ICE FREE LIMITS (LAND/ICE LINE)
8	99	CONNECTORS (ADDED TO CLOSE INLAND WATER AREAS)
9	99	NONE (OUTER BOUNDARY)

103

MIL-D-89009

APPENDIX

TABLE 78. <u>Drainage point feature table (DNPOINT.PFT)</u>.

```
{Header length};\
Drainage Points;DNPOINT.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
DNPTTYPE=I,1,N,Type of Drainage point,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,DNPOINT.PTI,:\
END_ID=  I,1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	4	221	1
2	1	132	2
:	:	:	:
n	n	n	n

DNPTTYPE	**ONC Codes**	
1 = Springs, wells, or waterholes	313.1	
2 = Reservoir	908.13	Other located object (reservoir)
3 = Falls	306.1	Falls, double line
	306.2	Falls, single line
4 = Rapids	306.3	Rapids, double line
	306.4	Rapids, single line
5 = Locks	905.3	Passable locks
	905.5	Small locks
6 = Dams	905.1	
7 = Sluice gate	905.4	
	908.13	Other located object (sluice gate)

TABLE 79. <u>Drainage text feature table (DNTEXT.TFT)</u>.

```
{Header length};\
Drainage Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,N,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,DNTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.00931	falls	1.27000	1	178	1
2	1	0.00931	locks	1.27000	1	179	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

104

MIL-D-89009

APPENDIX

30.3.5 Drainage-supplemental coverage.

   a. Drainage-supplemental coverage. This coverage contains
      small lakes and small inland water island features that
      were below the minimum capturable size during the
      production process for DCW area features. These data
      are, therefore, stored as point features using only the
      DSPTTYPE attribute. Attribute values are as described
      in the integer value description table (TABLE 80).

   b. Attribute definition. TABLE 81 describes the drainage
      supplemental point feature table (DSPOINT.PFT)
      attribution.

   TABLE 80. Drainage supplemental integer value description
              table (INT.VDT).

```
{Header length};\
Drainage Supplemental Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

| 1 | DSPOINT.PFT | DSPTTYPE | 1 | Small lakes or glaciers |
| 2 | DSPOINT.PFT | DSPTTYPE | 2 | Small inland water islands |

   TABLE 81. Drainage supplemental point feature table
             (DSPOINT.PFT).

```
{Header length};\
Supplemental Drainage Points;DSPOINT.DOC;\
ID=       I,1,P,Row Identifier,-,-,:\
DSPTTYPE=I,1,N,Type of Supplemental Drainage Point,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,DSPOINT.PTI,:\
END_ID=  I,1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	1	91	1
2	1	91	1
:	:	:	:
n	n	n	n

DSPTTYPE
1 = Small lakes or glaciers
2 = Small inland water islands

105

MIL–D–89009

APPENDIX

30.3.6 <u>Hypsography coverage</u>.

a. Hypsography coverage. This coverage contains the majority of the hypsography information in the DCW. Some special case elevational information, however, is found in other coverages. For example, airport elevations are stored in the aeronautical coverage, and unclosed contours and contours at intervals other than 1000 feet are contained in the hypsography-supplemental coverage. Hypsography information is stored as area, line, and point feature tables. Attribute values are as described in the integer value description table (TABLE 82).

b. HYAREA.AFT attribute definitions. TABLE 83 describes the hypsography area feature table (HYAREA.AFT) attribution.

c. HYLINE.LFT attribute definitions. TABLE 84 describes the hypsography line feature table (HYLINE.LFT) attribution.

d. HYPOINT.PFT attribute definitions. TABLE 85 describes the hypsography point feature table (HYPOINT.PFT) attribution.

106

MIL-D-89009

APPENDIX

TABLE 82.   Hypsography integer value description table
(INT.VDT).

```
{Header length};\
Hypsography Integer Value Description Table;-;\
ID=         I,1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I,1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	HYAREA.AFT	HYPYTYPE	1	Below mean sea level
2	HYAREA.AFT	HYPYTYPE	2	0 to 1,000 feet above mean sea level
3	HYAREA.AFT	HYPYTYPE	3	1,000 - 3,000 feet above mean sea level
4	HYAREA.AFT	HYPYTYPE	4	3,000 - 7,000 feet above mean sea level
5	HYAREA.AFT	HYPYTYPE	5	7,000 - 11,000 feet above mean sea level
6	HYAREA.AFT	HYPYTYPE	6	Over 11,000 feet above mean sea level
7	HYAREA.AFT	HYPYTYPE	7	Uncontoured or unsurveyed
8	HYAREA.AFT	HYPYTYPE	8	Area does not have a 1000-foot interval (exists only on JNC)
9	HYLINE.LFT	HYLNVAL	-1000	"1000 Feet below mean sea level"
10	HYLINE.LFT	HYLNVAL	0	"Mean sea level"
11	HYLINE.LFT	HYLNVAL	1000	"feet above mean sea level"
12	HYLINE.LFT	HYLNVAL	2000	"feet above mean sea level"
13	HYLINE.LFT	HYLNVAL	3000	"feet above mean sea level"
14	HYLINE.LFT	HYLNVAL	4000	"feet above mean sea level"
15	HYLINE.LFT	HYLNVAL	5000	"feet above mean sea level"
16	HYLINE.LFT	HYLNVAL	6000	"feet above mean sea level"
17	HYLINE.LFT	HYLNVAL	7000	"feet above mean sea level"
18	HYLINE.LFT	HYLNVAL	8000	"feet above mean sea level"
19	HYLINE.LFT	HYLNVAL	9000	"feet above mean sea level"
20	HYLINE.LFT	HYLNVAL	10000	"feet above mean sea level"
21	HYLINE.LFT	HYLNVAL	11000	"feet above mean sea level"
22	HYLINE.LFT	HYLNVAL	12000	"feet above mean sea level"
23	HYLINE.LFT	HYLNVAL	13000	"feet above mean sea level"
24	HYLINE.LFT	HYLNVAL	14000	"feet above mean sea level"
25	HYLINE.LFT	HYLNVAL	15000	"feet above mean sea level"
26	HYLINE.LFT	HYLNVAL	16000	"feet above mean sea level"
27	HYLINE.LFT	HYLNVAL	17000	"feet above mean sea level"
28	HYLINE.LFT	HYLNVAL	18000	"feet above mean sea level"
29	HYLINE.LFT	HYLNVAL	19000	"feet above mean sea level"
30	HYLINE.LFT	HYLNVAL	20000	"feet above mean sea level"
31	HYLINE.LFT	HYLNVAL	21000	"feet above mean sea level"
32	HYLINE.LFT	HYLNVAL	22000	"feet above mean sea level"
33	HYLINE.LFT	HYLNVAL	23000	"feet above mean sea level"
34	HYLINE.LFT	HYLNVAL	24000	"feet above mean sea level"
35	HYLINE.LFT	HYLNVAL	25000	"feet above mean sea level"
36	HYLINE.LFT	HYLNVAL	26000	"feet above mean sea level"
37	HYLINE.LFT	HYLNVAL	27000	"feet above mean sea level"
38	HYLINE.LFT	HYLNVAL	28000	"feet above mean sea level"
39	HYLINE.LFT	HYLNVAL	29000	"feet above mean sea level"

MIL-D-89009

APPENDIX

TABLE 82. <u>Hypsography integer value description table</u>
<u>(INT.VDT</u> - Continued.

40	HYLINE.LFT	HYLNTYPE	1	Closed land contour
41	HYLINE.LFT	HYLNTYPE	2	Depression contour
42	HYLINE.LFT	HYLNTYPE	3	Closed land contour, approximate
43	HYLINE.LFT	HYLNTYPE	4	Carrying contour, where contour lines coalesce
44	HYLINE.LFT	HYLNTYPE	5	Depression contour, approximate
45	HYLINE.LFT	HYLNTYPE	8	Connector
46	HYPOINT.PFT	HYPTTYPE	1	Spot elevation
47	HYPOINT.PFT	HYPTTYPE	2	Spot elevation, questionable elevation or location
48	HYPOINT.PFT	HYPTTYPE	3	Base elevation of tower
49	HYPOINT.PFT	HYPTTYPE	4	Hydrographic elevation point

108

MIL-D-89009

APPENDIX

TABLE 83. <u>Hypsography area feature table (HYAREA.AFT)</u>.

```
{Header length};\
Hyposgraphic Areas;HYAREA.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
HYPYTYPE=I,1,N,Elevation zone,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,HYAREA.ATI,:\
FAC_ID=  I,1,F,Face Primitive Foreign Key,-,-,:;
```

1	4	176	1
2	3	201	2
:	:	:	:
n	n	n	n

HYPYTYPE	**ONC Codes**
1 = Below sea level[1]	
2 = 0 to 1,000 feet above sea level[2]	
3 = 1,000 – 3,000 ($\pm$ 1,000)[3]	
4 = 3,000 – 7,000 ($\pm$ 1,000)[3]	
5 = 7,000 – 11,000 ($\pm$ 1,000)[3]	
6 = 11,000 and above	
7 = Uncontoured	408.2
or unsurveyed	408.3
8 = Area does not have a 1000-foot	
interval (exists only on JNC)	
9 = None	

Notes
The elevation coverage does not contain the coastal shoreline. This feature is stored in the Political/oceans coverage.

Where required, connectors have been added to contours to create continuous elevation zones.

[1] This condition exists in Death Valley.

[2] Areal features include complete contours at 1000-foot intervals. The hypsography area feature table does not include the coastal shoreline as the 0 contour interval.

[3] If a standard 1000-foot contour cannot be closed, however, and the contour interval that is either 1000 feet lower or higher in elevation is present, the higher elevation value is the preferred value for coding.

The area features of HYAREA.AFT are organized to provide a useful vertical zonation. Useful signifies a few carefully selected zones rather than a more detailed classification for every 1000 feet. The criteria employed in the selection of the vertical zones were as follows:

• Zones coincide with the cartographic layer tinting decisions made on many ONC sheets. For example, on ONC sheet G-18, there are layer tints at 7,000 and 11,000 feet. Other sheets have employed other zone decisions.

109

MIL-D-89009

APPENDIX

TABLE 83. <u>Hypsography area feature table (HYAREA.AFT)</u> – Continued.

- Zones coincide approximately with elevation-vegetation zones noted in many parts of the world. The 11,000-foot zone marks the snowline and conifer limits in many parts of South America.

- Zones coincide with recognized land use and crop patterns in South America such as the tierra fria (cold land), tierra templada (temperate land), and the tierra caliente (hot land). Plantation crops such as cotton and banana are usually found in the tierra caliente while coffee is found in the tierra templada.

- Zones coincide with vehicle efficiency or performance breaks at 5000 and 9000 feet.

- The highest zone (6) coincides with the altitude at which many people are affected by high altitude sickness.

  <u>Inventory of world land areas below sea level</u>
  Al Qattarah, Egypt
  Al Fayyum, Egypt
  Caspian Depression, USSR, Iran
  Chott Melghii, Algeria, Tunisia
  Dead Sea, Israel, Jordan
  Death Valley, California (U.S.A.)
  Denmark (southern), Europe
  Holland, Europe
  Imperial Valley, California (U.S.A.), Mexico
  Lake Eyre, Australia
  Salina Gualicho, Argentina
  Turfan Depression, China
  Valdes Peninsula, Argentina

110

MIL-D-89009

APPENDIX

TABLE 84. Hypsography line feature table (HYLINE.LFT).

```
{Header length};\
Hypsographic Contours;HYLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
HYLNVAL= I,1,N,Elevation value,INT.VDT,-,:\
HYLNTYPE=I,1,N,Type of Contour,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,HYLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	4000	1	244	1
2	6000	1	234	2
:	:	:	:	:
n	n	n	n	n

HYLNVAL
The value attribute contains the elevation value of the contour line in feet above MSL, as exists for the ONC charts (403.5). The code 99999 is used to indicate that no elevation value is present. The "carrying contour" will be assigned the highest elevation value. Valid codes for the VAL attribute range from -1,000 feet to 29,000 feet in 1,000-foot increments.

HYLNTYPE	**ONC Codes**
1 = Closed land contour	403.1
	403.2
2 = Depression contour	403.4
3 = Closed land contour, approximate	403.2
4 = "Carrying contour", where two or more contour lines with different elevation values coalesce	
5 = Depression contour, approximate	

8 = Connector. This one-digit code is used to indicate that the segment is an arbitrary connector of the contour network. It appears where there are discontinuities in areas or lines. This code does not apply to gaps due to elevation value labels. This connection was added as an enhancement to the database to establish a network coverage so that elevation ranges represent complete areas that can be shaded.

9 = None (outer boundary)

Notes
ONC cut and fill features have been captured as "carrying contour". The TYPE code 4 is used to represent the ONC feature 411.2 Cut, when it passes through more than one contour interval. This code is also used to represent the ONC feature 411.4 Fill, when it is present through more than one contour interval.

111

MIL-D-89009

APPENDIX

TABLE 85. Hypsography point feature table (HYPOINT.PFT).

```
{Header length};\
Hypsographic Points;HYPOINT.DOC;\
ID=I,1,P,Row Identifier,-,-,:\
HYPTTYPE= I,1,N,Type of Spot Elevation,INT.VDT,-,:\
HYPTVAL=  I,1,N,Spot Elevation Value,-,-,:\
TILE_ID=  S,1,F,Tile Reference Identifier,-,HYPOINT.PTI,:\
END_ID=   I,1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	1	7460	189	1
2	1	11499	298	2
:	:	:	:	:
n	n	n	n	n

HYPTTYPE		**ONC Codes**
1 = Spot elevation		405.1
		405.4 Highest on chart
2 = Spot elevation, approximate		405.2
elevation or approximate location[1]		405.3

3 = New point created to define locations
for tower elevations[2]. Elevation point
is coincident with the feature, but
remains in a separate coverage (i.e.,
is not integrated).

4 = Hydrographic elevation point

HYPTVAL
This attribute contains the specific elevation value of the point
feature expressed in feet above mean sea level (e.g., a spot elevation
with a value of 7550 represents that value in feet above MSL) (405.01
405.04). The code 99999 is used for points without elevation values.

Notes
[1] Includes elevations for which there is no point.

[2] Elevation is at base of the tower.

112

MIL-D-89009

APPENDIX

30.3.7 <u>Hypsography-supplemental coverage</u>.

a. Hypsography-supplemental coverage. This coverage
   contains partial or nonclosed and intermediate contour
   information. It also includes values for point features
   representing ONC contours that were below the minimum
   capturable polygon size. This coverage contains a line
   feature table and point feature table. Attribute values
   are as described in the integer value description table
   (TABLE 86).

b. HYLINE.LFT attribute definitions. TABLE 87 describes
   the hypsography-supplemental line feature table
   (HYLINE.LFT) attribution. The transition contour lines
   mentioned in the table are depicted in Figure 5.

c. HYPOINT.PFT attribute definitions. TABLE 88 describes
   the hypsography supplemental point feature table
   (HYPOINT.PFT) attribution. The positioning of
   hypsography supplemental point features is shown in
   Figure 6.

TABLE 86. <u>Hypsography-supplemental integer value description
table (INT.VDT)</u>.

```
{Header length};\
Supplemental Hypsography Integer Value Description Table;-;\
ID=         I, 1,N,Row ID,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	HSLINE.LFT	HSLNTYPE	1	Partial intermediate or auxiliary contour
2	HSLINE.LFT	HSLNTYPE	2	Partial depression contour
3	HSLINE.LFT	HSLNTYPE	3	Partial approximate intermediate or aux. contour
4	HSLINE.LFT	HSLNTYPE	4	Carrying contour
5	HSLINE.LFT	HSLNTYPE	5	Cut or fill within one contour interval
6	HSLINE.LFT	HSLNTYPE	6	Unreliable - JNC source only
7	HSLINE.LFT	HSLNTYPE	7	Transition or mistake contour
8	HSLINE.LFT	HSLNTYPE	8	Partial approximate depression contour

113

MIL-D-89009

APPENDIX

TABLE 87. Hypsography-supplemental line feature table (HSLINE.LFT).

```
{Header length};\
Supplemental Hypsographic Contours;HSLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
HSLNTYPE=I,1,N,Type of Supplemental contour,INT.VDT,-,:\
HSLNVAL= I,1,N,Supplemental contour Elevation Value,-,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,HSLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	1	1500	245	1
2	1	2500	212	2
:	:	:	:	:
n	n	n	n	n

HSLNTYPE
The HSLNTYPE attribute contains a one-digit code attribute value to identify the specific type of the contour line. These lines supplement those in the HYAREA.AFT but do not form complete polygons.

                                                  ONC Codes

1 = Partial intermediate or
       auxiliary contour   403.1

2 = Partial depression contour   403.4

3 = Partial approximate intermediate   403.2
       or auxiliary contour   403.3

4 = "Carrying contour"

5 = Cut within one contour interval   411.1
       Fill within one contour interval   411.3

6 = Unreliable - JNC data only

7 = Transition contour (FIGURE 5)

8 = Partial approximate depression contour

HSLNVAL
The HSLNVAL attribute contains the elevation value in feet above MSL of the supplemental contour line. The code 99999 is used to indicate elevation values that cannot be determined.

114

MIL-D-89009

APPENDIX
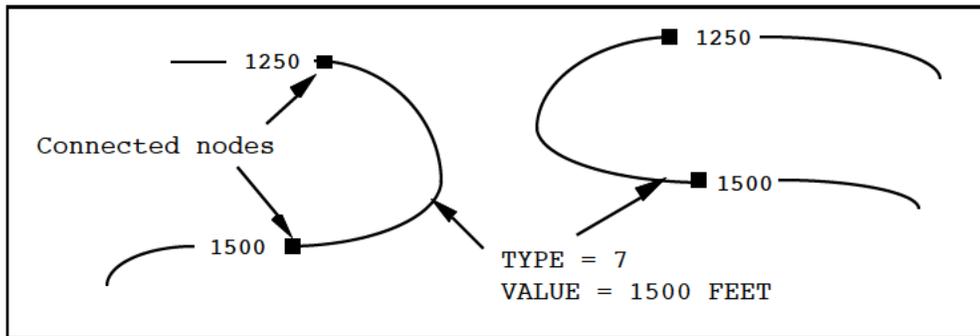
FIGURE 5.   Transition contour lines in HSLINE.LFT.

TABLE 88. Hypsography-supplemental point feature table
(HSPOINT.PFT).

```
{Header length};\
Supplemental Hypsographic Points;HSPOINT.DOC;\
ID=     I,1,P,Row Identifier,-,-,:\
HSPTVAL=I,1,N,Spot Elevation value,-,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,HSPOINT.PTI,:\
END_ID= I,1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	1250	211	1
2	1500	127	2
:	:	:	:
n	n	n	n

HSPTVAL
This attribute contains the elevation value of collapsed contours in feet above MSL that are below the minimum capturable resolution for area features on the ONC. For contours whose values cannot be determined, a code of 99999 is used. The point coincides, where possible, with the contour line itself and not with the center (FIGURE 6).
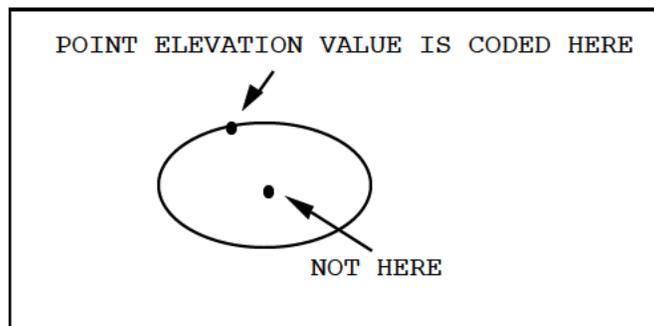
FIGURE 6.   Positioning of hypsography supplemental point features.

115

MIL-D-89009

APPENDIX

MIL-D-89009

APPENDIX

30.3.8 <u>Land cover coverage</u>.

    a. Land cover coverage. This coverage contains land cover
information and is stored in area and point feature
tables. It combines two general categories of land
surface information categorized as agricultural/
extraction and surface cover. The area and point
feature classes are described by the TYPE attribute.
Attribute values are as described in the integer value
description table (TABLE 89). Land features represented
by lines on the ONCs are stored in the Physiography
coverage.

    b. LCAREA.AFT attribute definitions. TABLE 90 describes
the land cover area feature table (LCAREA.AFT)
attribution.

    c. LCPOINT.PFT attribute definitions. TABLE 91 describes
the land cover point feature table (LCPOINT.PFT)
attribution.

    d. Text feature table. TABLE 92 provides the schema for
the land cover text feature table (LCTEXT.TFT). All
land cover text has the same height of 1.52 millimeters
(0.06 inch).

117

MIL-D-89009

APPENDIX

TABLE 89.   <u>Land cover integer value description table
(INT.VDT)</u>.

```
{Header length};\
Land Cover Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	LCAREA.AFT	LCPYTYPE	1	Rice fields
2	LCAREA.AFT	LCPYTYPE	2	Cranberry bogs
3	LCAREA.AFT	LCPYTYPE	3	Cultivated areas, gardens
4	LCAREA.AFT	LCPYTYPE	4	Peat cuttings
5	LCAREA.AFT	LCPYTYPE	5	Salt pans
6	LCAREA.AFT	LCPYTYPE	6	Fish ponds/Hatcheries
7	LCAREA.AFT	LCPYTYPE	7	Quarries/Strip mines/ Mine dumps/Blasting areas
8	LCAREA.AFT	LCPYTYPE	8	Oil/Gas fields
9	LCAREA.AFT	LCPYTYPE	10	Lava flows
10	LCAREA.AFT	LCPYTYPE	11	Distorted surface areas
11	LCAREA.AFT	LCPYTYPE	12	Unconsolidated materials
12	LCAREA.AFT	LCPYTYPE	13	Landmark areas, natural
13	LCAREA.AFT	LCPYTYPE	14	Inundated areas
14	LCAREA.AFT	LCPYTYPE	15	Undifferentiated wetlands
15	LCPOINT.PFT	LCPTTYPE	1	Mines
16	LCPOINT.PFT	LCPTTYPE	2	Quarries/Strip mines/ Mine dumps/Blasting areas
17	LCPOINT.PFT	LCPTTYPE	3	Miscellaneous land features (caves, sinkholes, etc.)
18	LCTEXT.TFT	LEVEL	1	Agriculture/Extraction
19	LCTEXT.TFT	LEVEL	2	Surface cover
20	LCTEXT.TFT	LEVEL	3	Swamp/Marsh
21	LCTEXT.TFT	LEVEL	4	Diacritical annotation
22	LCTEXT.TFT	SYMBOL	1	Black annotation

118

MIL-D-89009

APPENDIX

TABLE 90. Land cover area feature table (LCAREA.AFT).

```
{Header length};\
Land Cover areas;LCAREA.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
LCPYTYPE=I,1,N,Type of Land cover,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,LCAREA.ATI,:\
FAC_ID=  I,1,F,Face Primitive Foreign Key,-,-,:;
```

1	6	83	1
2	2	155	2
:	:	:	:
n	n	n	n

LCPYTYPE		ONC Codes	
Agriculture/Extraction			
1 =	Rice fields[1]	311.1	
2 =	Cranberry bogs	311.2	
3 =	Cultivated areas, gardens	908.11	Landmark area w/ label (some non-ONC spec symbols are used on sheet H-5)
4 =	Peat cuttings[1]	310.5	
5 =	Salt pans	309.1	
6 =	Fish ponds/hatcheries[2]	317.1	
7 =	Quarries[3]/strip mines[4]/ Mine dumps[5]/blasting areas	410.8	
8 =	Oil/Gas fields	908.11	Landmark area w/ label
		908.12	Area delimiting line
Surface Cover			
10 =	Lava flows	410.2	
11 =	Distorted surface areas	410.1	
		410.1 + 908.11	
12 =	Unconsolidated materials[5] (sand portion only)[1]	315.2	Glacial moraines
		316.1	Foreshore flats
		410.3	Sand or gravel areas
		410.4	Sand ridges
		410.5	Sand dunes
		410.6	Sand dunes
13 =	Landmark areas, natural	908.11	Landmark area w/ label
14 =	Inundated areas	312.1	Land subject to inundation
15 =	Undifferentiated wetlands	310.1	Swamps, marshes, and bogs
		310.2	Hummocks and ridges
		310.3	Mangroves and nipa
		310.4	Peat bogs
Applies to layer in general			
99 =	None (holes in land cover polys)		

Notes
Distorted surface areas (410.1) and landmark areas (908.11) are distinguished by annotation stored in the text primitive table.

MIL-D-89009

APPENDIX

TABLE 90. <u>Land cover area feature table (LCAREA.AFT)</u> –
Continued.

[1] Indicates that the feature may only be represented by text primitive
in certain cases.

[2] If the feature is represented as a point, then it is stored as a text
primitive only. If point is present, feature will be captured in
CLPOINT.

[3] When represented by a point feature, the ONC code is (902.1).

[4] When represented by a point feature, the ONC code is (902.2).

[5] All ONC feature with the sand symbol are stored with the type
attribute value or unconsolidated materials feature. Features with this
symbology are not bounded by lines on the ONC. In the ONC, for example,
sand may overlap with ice to form a glacial moraine symbol.

TABLE 91. <u>Land cover point feature table (LCPOINT.PFT)</u>.

```
{Header length};\
Land Cover points;LCPOINT.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
LCPTTYPE=I,1,N,Type of Land Cover Points,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,LCPOINT.PTI,:\
END_ID=  I,1,F,Point Primitive Foreign Key,-,-,:;
```

1	3	169	1
2	2	301	2
:	:	:	:
n	n	n	n

LCPTTYPE
Features too small for area representation are captured as points and stored
in the LCPOINT.PFT with the following LCPTTYPE attribute values.

			ONC Codes
1	=	Mines	902.1
2	=	Quarries[1,2]/Strip mines[1,2]/Mine dumps[1,2]	902.2
		Blasting areas	
3	=	Miscellaneous land features[1]	414.5

Notes
[1] Annotation will distinguish point types.

[2] Can be in point or polygon coverage depending on feature type.

120

MIL-D-89009

APPENDIX

TABLE 92. <u>Land cover text feature table (LCTEXT.TFT)</u>.

```
{Header length};\
Land Cover Text;-;\
ID=      I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=    T,*,N, "Text String",-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,LCTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01342	mine	1.27000	1	299	1
2	1	0.01342	quarry	1.27000	1	300	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes

Rice fields and peat cuttings features are represented by text in cases where there is no delineating line.

Only proper names of land cover features are stored as text (e.g., Turkey Swamp).

Any land cover textual annotation on an ONC that is not related to a specific point, line or area feature is stored as a text primitive in this coverage. Examples of these cases include: Tundra, Sand dunes and Karst. The point coordinate used to store the text will start at the same location text starts on the original ONC.

121

MIL-D-89009

APPENDIX

30.3.9 Ocean features coverage.

    a. Ocean features coverage. This coverage contains all
information, excluding shorelines, pertaining to ocean
features. These data are stored in line and point
feature tables using the TYPE attribute. Attribute
values are as described in the integer value description
table (TABLE 93). Ocean boundary features are stored in
the political/oceans coverage.

    b. OFLINE.LFT attribute definitions. TABLE 94 describes
the ocean features line feature table (OFLINE.LFT)
attribution.

    c. OFPOINT.PFT attribute definitions. TABLE 95 describes
the ocean features point feature table (OFPOINT.PFT)
attribution.

    d. Text feature table   TABLE 96 provides the schema for
the ocean features text feature table (OFTEXT.TFT). All
ocean feature text primitives have the same height of
1.52 millimeters (0.06 inch).

TABLE 93. Ocean features integer value description table
(INT.VDT).

```
{Header length};\
Ocean Features Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	OFLINE.LFT	OFLNTYPE	1	Miscellaneous Ocean Features
2	OFLINE.LFT	OFLNTYPE	2	Reefs
3	OFLINE.LFT	OFLNTYPE	3	Maritime area limits
4	OFPOINT.PFT	OFPTTYPE	1	Rocks, isolated or awash
5	OFPOINT.PFT	OFPTTYPE	2	Exposed wrecks
6	OFTEXT.TFT	LEVEL	1	Regular characters
7	OFTEXT.TFT	LEVEL	2	Diacritical characters
8	OFTEXT.TFT	SYMBOL	1	Black annotation
9	OFTEXT.TFT	SYMBOL	4	Blue annotation

MIL-D-89009

APPENDIX

TABLE 94. <u>Ocean features line feature table (OFLINE.LFT)</u>.

```
{Header length};\
Ocean Feature lines;OFLINE.DOC;\
ID=       I,1,P,Row Identifier,-,-,:\
OFLNTYPE=I,1,N,Type of Ocean Feature,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,OFLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	1	47	1
2	3	98	2
:	:	:	:
n	n	n	n

OFLNTYPE   **ONC Codes**
1 = Miscellaneous ocean features   316.2

2 = Reefs[1]   316.5
                                            316.2
3 = Maritime area limits   316.6

Notes
[1] Coral and rocky reefs are distinguished by text primitive strings.

TABLE 95. <u>Ocean features point feature table (OFPOINT.PFT)</u>.

```
{Header length};\
Ocean Feature points;OFPOINT.DOC;\
ID=       I,1,P,Row Identifier,-,-,:\
OFPTTYPE=I,1,N, Type of Ocean feature,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,OFPOINT.PTI,:\
END_ID=  I,1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	1	93	1
2	1	164	2
:	:	:	:
n	n	n	n

OFPTTYPE
The OFPTTYPE attribute contains only two attribute values.

                                            ONC Codes
1 =   Rocks, isolated or awash   316.2
2 =   Exposed wrecks   316.4

MIL-D-89009

APPENDIX

TABLE 96. <u>Ocean features text feature table (OFTEXT.TFT)</u>.

```
{Header length};\
Ocean Features Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,N,"Text String",-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,OFTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01342	reef	1.27000	1	147	1
2	1	0.01342	wreck	1.27000	1	174	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes
Rock names are captured as annotation.

MIL-D-89009

APPENDIX

30.3.10 <u>Physiography coverage</u>.

a. Physiography coverage. This coverage contains geomorphic or physiographic features. These features are described by the TYPE attribute, having six possible attribute values. Attribute values are as described in the integer value description table (TABLE 97). Features contained in this layer include levees and dikes, escarpments and bluffs, as well as faults, ice cliffs, and rock outcrop.

b. PHLINE.LFT attribute definitions. TABLE 98 describes the physiography line feature table (PHLINE.LFT) attribution.

c. Text feature table. TABLE 99 provides the schema for the physiography text feature table (PHTEXT.TFT). All physiography feature text primitives have the same height of 1.52 mm (0.06 inch).

TABLE 97. <u>Physiography integer value description table (INT.VDT)</u>.

```
{Header length};\
Physiography Integer Value Description Table;-;\
ID=         I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,10,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	PHLINE.LFT	PHLNTYPE	1	Levees, dikes and eskers
2	PHLINE.LFT	PHLNTYPE	2	Rock strata outcrops
3	PHLINE.LFT	PHLNTYPE	3	Escarpments, bluffs, cliffs
4	PHLINE.LFT	PHLNTYPE	4	Faults
5	PHLINE.LFT	PHLNTYPE	5	Ice cliffs
6	PHLINE.LFT	PHLNTYPE	6	Crater
7	PHTEXT.TFT	LEVEL	1	Regular characters
8	PHTEXT.TFT	LEVEL	2	Diacritical characters
9	PHTEXT.TFT	SYMBOL	1	Black annotation
10	PHTEXT.TFT	SYMBOL	4	Blue annotation

125

MIL-D-89009

APPENDIX

TABLE 98. <u>Physiography line feature table (PHLINE.LFT)</u>.

```
{Header length};\
Physiographic lines;PHLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
PHLNTYPE=I,1,N,Type of Physiographic Feature,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,PHLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	3	56	1
2	4	87	2
:	:	:	:
n	n	n	n

PHLNTYPE		**ONC Codes**
1 =	Levees, dikes, and eskers[1]	413.1
2 =	Rock strata outcrops	410.7
3 =	Escarpments, bluffs, cliffs, etc[1,2]	412.1
		412.2 Large escarpment
4 =	Faults	414.3
5 =	Ice cliffs[3]	315.5
6 =	Crater	414.1

Notes

[1] In some cases PHLNTYPE attribute values of 1 and 3 may be coincident with railroads or roads. These features are distinguished by textual annotation.

Point and areal information related to land features are stored in the Land Cover coverage.

[2] Where escarpments, bluffs, and cliffs coincide with contour lines, large escarpments (ONC 412.2) cannot be distinguished from the smaller features (ONC 412.1).

[3] Ice cliffs are always stored in PHLINE. If they are also part of the coastline, they are duplicated in political/oceans line feature table. If they are part of a glacier they may also be stored in drainage line feature table.

126

MIL-D-89009

APPENDIX

TABLE 99. <u>Physiography text feature table (PHTEXT.TFT)</u>.

```
{Header length};\
Physiographic Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT =  T,*,N, "Text String",-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Text Reference Identifier,-,PHTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01342	levee	1.27000	1	200	1
2	1	0.01342	crater	1.27000	1	263	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes

Unusual land features are distinguished by textual annotation and are stored in the text primitive table when annotated on an ONC.

127

MIL-D-89009

APPENDIX

30.3.11 <u>Political/oceans coverage</u>.

a. Political/oceans coverage. This coverage contains political and oceanic naming information. This is the only coverage encompassing 100 percent of the Earth's surface. This information is stored in area, line, and point feature tables. Attribute values are as described in the value description tables (TABLES 100 and 101).

b. POAREA.AFT attribute definitions. TABLE 102 describes the political/oceans area feature table (POAREA.AFT) attribution.

c. POLINE.LFT attribute definitions. TABLE 103 describes the political/oceans line feature table (POLINE.LFT) attribution.

d. Legal code combinations. TABLE 104 documents the correspondence between the DCW coding scheme and the ONC coding scheme. Since there are two combinatorial attributes in the political/oceans line coverage, TYPE and STATUS, a combination of the two must be used in order to correspond to the ONC scheme. NC means that there is no code for the ONC. For example, the boundary that is considered dejure by one country and defacto by another has no ONC code; it is only mentioned in the ONC Specifications. Some ONC codes, for example, must be combined to accommodate the terms "Approximate" or "Indefinite" with any of the boundary symbols. In this specific instance, the DCW coding scheme provides greater differentiation than the ONC scheme.

e. POPOINT.PFT attribute definitions. TABLE 105 describes the political/oceans point feature table (POPOINT.PFT) attribution. This coverage contains those island features that did not meet the minimum polygon resolution and were captured as points.

f. Text feature table. TABLE 106 provides an example of the schema for the political/oceans text feature table (POTEXT.TFT). Text stored in text primitive tables includes: land place names, ocean place names, ice status, mountains, islands, and deserts.

128

MIL-D-89009

APPENDIX

TABLE 100. Political/oceans integer value description table
(INT.VDT).

```
{Header length};\
Political/Oceans Integer Value Description Table;-;\
ID=        I,1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I,1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	POAREA.AFT	POPYTYPE	1	Land
2	POAREA.AFT	POPYTYPE	2	Open Water
3	POAREA.AFT	POPYTYPE	3	Polar ice
4	POAREA.AFT	POPYTYPE	4	Pack ice
5	POAREA.AFT	POPYTYPE	5	Shelf ice
6	POLINE.LFT	POLNTYPE	1	International boundary, dejure
7	POLINE.LFT	POLNTYPE	2	International boundary, defacto
8	POLINE.LFT	POLNTYPE	3	International boundary, dejure and defacto
9	POLINE.LFT	POLNTYPE	4	Administrative boundary, primary
10	POLINE.LFT	POLNTYPE	5	Administrative boundary, major
11	POLINE.LFT	POLNTYPE	6	Treaty or occupancy line
12	POLINE.LFT	POLNTYPE	7	Coastal closure line
13	POLINE.LFT	POLNTYPE	8	Ocean demarcation line
14	POLINE.LFT	POLNTYPE	9	Ice line
15	POLINE.LFT	POLNTYPE	10	Coastline
16	POLINE.LFT	POLNTYPE	11	Ice/water line
17	POLINE.LFT	POLNTYPE	12	Seawall
18	POLINE.LFT	POLNTYPE	13	International Date Line
19	POLINE.LFT	POLNTYPE	88	Connector
20	POLINE.LFT	POLNSTAT	1	Definite (boundary or coastline)
21	POLINE.LFT	POLNSTAT	2	Approximate (boundary) or Fluctuating (coastline)
22	POLINE.LFT	POLNSTAT	3	Indefinite (boundary) or unsurveyed (coastline)
23	POLINE.LFT	POLNSTAT	4	Manmade (coastline)
24	POLINE.LFT	POLNSTAT	5	Undetermined (coastline)
25	POLINE.LFT	POLNSTAT	6	Ice cliff (coastline or ice line)
26	POLINE.LFT	POLNSTAT	7	River, when boundary (single line river or stream)
27	POLINE.LFT	POLNSTAT	8	Polygon closure line (boundary through inland body)
28	POLINE.LFT	POLNSTAT	88	Edgematch
29	POPOINT.PFT	POPTTYPE	1	Small island
30	POTEXT.TFT	LEVEL	1	Land place names
31	POTEXT.TFT	LEVEL	2	Ocean place names
32	POTEXT.TFT	LEVEL	3	Ice Status
33	POTEXT.TFT	LEVEL	4	Land place names (diacritical)
34	POTEXT.TFT	LEVEL	5	Ocean Place names (diacritical)
35	POTEXT.TFT	LEVEL	6	Mountain names
36	POTEXT.TFT	LEVEL	7	Mountain names (diacritical)
37	POTEXT.TFT	LEVEL	8	Island names
38	POTEXT.TFT	LEVEL	9	Island names (diacritical)

129

MIL-D-89009

APPENDIX

TABLE 100. Political/oceans integer value description table
(INT.VDT) - Continued.

39	POTEXT.TFT	LEVEL	10	Desert names
40	POTEXT.TFT	LEVEL	11	Desert names (diacritical)
41	POTEXT.TFT	SYMBOL	1	Black annotation
42	POTEXT.TFT	SYMBOL	4	Blue annotation

TABLE 101. Political/oceans character value description
table (CHAR.VDT).

```
{Header length};\
Political/Ocean Character Value Description Table;-;\
ID=        I,1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,10,P,Attribute Name,-,-,:\
VALUE=     T,5,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	POAREA.AFT	POPYREG	A	Asia
2	POAREA.AFT	POPYREG	E	Europe
3	POAREA.AFT	POPYREG	F	Africa
4	POAREA.AFT	POPYREG	N	North America
5	POAREA.AFT	POPYREG	S	South America
6	POAREA.AFT	POPYREG	T	Antarctic Area
7	POAREA.AFT	POPYREG	U	Australian Area
8	POAREA.AFT	POPYREG	1	North Atlantic Ocean Aggregation
9	POAREA.AFT	POPYREG	2	South Atlantic Ocean Aggregation
10	POAREA.AFT	POPYREG	3	North Pacific Ocean Aggregation
11	POAREA.AFT	POPYREG	4	South Pacific Ocean Aggregation
12	POAREA.AFT	POPYREG	5	Arctic Ocean Aggregation
13	POAREA.AFT	POPYREG	6	Indian Ocean Aggregation
14	POAREA.AFT	POPYREG	7	Baltic Sea Aggregation
15	POAREA.AFT	POPYREG	8	Mediterranean Sea Aggregation
16	POAREA.AFT	POPYREG	9	Great Lakes Aggregation
17	POAREA.AFT	POPYCOUN	AC	Antigua and Barbuda
18	POAREA.AFT	POPYCOUN	AF	Afghanistan
19	POAREA.AFT	POPYCOUN	AG	Algeria
20	POAREA.AFT	POPYCOUN	AL	Albania
21	POAREA.AFT	POPYCOUN	AN	Andorra
22	POAREA.AFT	POPYCOUN	AO	Angola
23	POAREA.AFT	POPYCOUN	AQ	American Samoa
24	POAREA.AFT	POPYCOUN	AR	Argentina
25	POAREA.AFT	POPYCOUN	AS	Australia
26	POAREA.AFT	POPYCOUN	AT	Ashmore and Cartier Islands
27	POAREA.AFT	POPYCOUN	AU	Austria
28	POAREA.AFT	POPYCOUN	AV	Anguilla
29	POAREA.AFT	POPYCOUN	AY	Antarctica
30	POAREA.AFT	POPYCOUN	BA	Bahrain
31	POAREA.AFT	POPYCOUN	BB	Barbados
32	POAREA.AFT	POPYCOUN	BC	Botswana
33	POAREA.AFT	POPYCOUN	BD	Bermuda
34	POAREA.AFT	POPYCOUN	BE	Belgium
35	POAREA.AFT	POPYCOUN	BF	Bahamas, The
36	POAREA.AFT	POPYCOUN	BG	Bangladesh

MIL-D-89009

TABLE 101. Political/oceans character value description
table (CHAR.VDT) - Continued.

37	POAREA.AFT	POPYCOUN	BH	Belize
38	POAREA.AFT	POPYCOUN	BL	Bolivia
39	POAREA.AFT	POPYCOUN	BM	Burma
40	POAREA.AFT	POPYCOUN	BN	Benin
41	POAREA.AFT	POPYCOUN	BP	Solomon Island
42	POAREA.AFT	POPYCOUN	BQ	Navassa Island
43	POAREA.AFT	POPYCOUN	BR	Brazil
44	POAREA.AFT	POPYCOUN	BS	Bassas Da India
45	POAREA.AFT	POPYCOUN	BT	Bhutan
46	POAREA.AFT	POPYCOUN	BU	Bulgaria
47	POAREA.AFT	POPYCOUN	BV	Bouvet Island
48	POAREA.AFT	POPYCOUN	BX	Brunei
49	POAREA.AFT	POPYCOUN	BY	Burundi
50	POAREA.AFT	POPYCOUN	CA	Canada
51	POAREA.AFT	POPYCOUN	CB	Cambodia (Formerly Kampuchea)
52	POAREA.AFT	POPYCOUN	CD	Chad
53	POAREA.AFT	POPYCOUN	CE	Sri Lanka
54	POAREA.AFT	POPYCOUN	CF	Congo
55	POAREA.AFT	POPYCOUN	CG	Zaire
56	POAREA.AFT	POPYCOUN	CH	China
57	POAREA.AFT	POPYCOUN	CI	Chile
58	POAREA.AFT	POPYCOUN	CJ	Cayman Islands
59	POAREA.AFT	POPYCOUN	CK	Cocos (Keeling) Islands
60	POAREA.AFT	POPYCOUN	CM	Cameroon
61	POAREA.AFT	POPYCOUN	CN	Comoros
62	POAREA.AFT	POPYCOUN	CO	Colombia
63	POAREA.AFT	POPYCOUN	CQ	Northern Mariana Islands
64	POAREA.AFT	POPYCOUN	CR	Coral Sea Islands
65	POAREA.AFT	POPYCOUN	CS	Costa Rica
66	POAREA.AFT	POPYCOUN	CT	Central African Republic
67	POAREA.AFT	POPYCOUN	CU	Cuba
68	POAREA.AFT	POPYCOUN	CV	Cape Verde
69	POAREA.AFT	POPYCOUN	CW	Cook Islands
70	POAREA.AFT	POPYCOUN	CY	Cyprus
71	POAREA.AFT	POPYCOUN	CZ	Czechoslovakia
72	POAREA.AFT	POPYCOUN	DA	Denmark
73	POAREA.AFT	POPYCOUN	DJ	Djibouti
74	POAREA.AFT	POPYCOUN	DO	Dominica
75	POAREA.AFT	POPYCOUN	DQ	Jarvis Island
76	POAREA.AFT	POPYCOUN	DR	Dominican Republic
77	POAREA.AFT	POPYCOUN	EC	Ecuador
78	POAREA.AFT	POPYCOUN	EG	Egypt
79	POAREA.AFT	POPYCOUN	EI	Ireland
80	POAREA.AFT	POPYCOUN	EK	Equatorial Guinea
81	POAREA.AFT	POPYCOUN	EN	Estonia
82	POAREA.AFT	POPYCOUN	ES	El Salvador
83	POAREA.AFT	POPYCOUN	ET	Ethiopia
84	POAREA.AFT	POPYCOUN	EU	Europa Island
85	POAREA.AFT	POPYCOUN	FA	Falkland Islands (Islas Malvinas)
86	POAREA.AFT	POPYCOUN	FG	French Guiana
87	POAREA.AFT	POPYCOUN	FI	Finland
88	POAREA.AFT	POPYCOUN	FJ	Fiji
89	POAREA.AFT	POPYCOUN	FM	Federated States of Micronesia

MIL-D-89009

APPENDIX

TABLE 101.   Political/oceans character value description
table (CHAR.VDT) - Continued.

90	POAREA.AFT	POPYCOUN	FO	Faeroe Islands
91	POAREA.AFT	POPYCOUN	FP	French Polynesia
92	POAREA.AFT	POPYCOUN	FQ	Baker Island
93	POAREA.AFT	POPYCOUN	FR	France
94	POAREA.AFT	POPYCOUN	FS	French Southern & Antarctic Islands
95	POAREA.AFT	POPYCOUN	GA	Gambia, The
96	POAREA.AFT	POPYCOUN	GB	Gabon
97	POAREA.AFT	POPYCOUN	GM	Germany
98	POAREA.AFT	POPYCOUN	GH	Ghana
99	POAREA.AFT	POPYCOUN	GI	Gibraltar
100	POAREA.AFT	POPYCOUN	GJ	Grenada
101	POAREA.AFT	POPYCOUN	GK	Guernsey
102	POAREA.AFT	POPYCOUN	GL	Greenland
103	POAREA.AFT	POPYCOUN	GO	Glorioso Islands
104	POAREA.AFT	POPYCOUN	GP	Guadeloupe
105	POAREA.AFT	POPYCOUN	GQ	Guam
106	POAREA.AFT	POPYCOUN	GR	Greece
107	POAREA.AFT	POPYCOUN	GT	Guatemala
108	POAREA.AFT	POPYCOUN	GV	Guinea
109	POAREA.AFT	POPYCOUN	GY	Guyana
110	POAREA.AFT	POPYCOUN	GZ	Gaza Strip
111	POAREA.AFT	POPYCOUN	HA	Haiti
112	POAREA.AFT	POPYCOUN	HK	Hong Kong
113	POAREA.AFT	POPYCOUN	HM	Heard Island & McDonald Islands
114	POAREA.AFT	POPYCOUN	HO	Honduras
115	POAREA.AFT	POPYCOUN	HQ	Howland Island
116	POAREA.AFT	POPYCOUN	HU	Hungary
117	POAREA.AFT	POPYCOUN	IC	Iceland
118	POAREA.AFT	POPYCOUN	ID	Indonesia
119	POAREA.AFT	POPYCOUN	IM	Man, Isle of
120	POAREA.AFT	POPYCOUN	IN	India
121	POAREA.AFT	POPYCOUN	IO	British Indian Ocean Territory
122	POAREA.AFT	POPYCOUN	IP	Clipperton Island
123	POAREA.AFT	POPYCOUN	IR	Iran
124	POAREA.AFT	POPYCOUN	IS	Israel
125	POAREA.AFT	POPYCOUN	IT	Italy
126	POAREA.AFT	POPYCOUN	IV	Ivory Coast
127	POAREA.AFT	POPYCOUN	IY	Iraq—Saudi Arabia Neutral Zone
128	POAREA.AFT	POPYCOUN	IZ	Iraq
129	POAREA.AFT	POPYCOUN	JA	Japan
130	POAREA.AFT	POPYCOUN	JE	Jersey
131	POAREA.AFT	POPYCOUN	JM	Jamaica
132	POAREA.AFT	POPYCOUN	JN	Jan Mayen
133	POAREA.AFT	POPYCOUN	JO	Jordan
134	POAREA.AFT	POPYCOUN	JQ	Johnston Atoll
135	POAREA.AFT	POPYCOUN	JU	Juan De Nova Island
136	POAREA.AFT	POPYCOUN	KE	Kenya
137	POAREA.AFT	POPYCOUN	KN	Korea, Democratic Peoples Republic
138	POAREA.AFT	POPYCOUN	KQ	Kingman Reef
139	POAREA.AFT	POPYCOUN	KR	Kiribati
140	POAREA.AFT	POPYCOUN	KS	Korea, Republic of
141	POAREA.AFT	POPYCOUN	KT	Christmas Island
142	POAREA.AFT	POPYCOUN	KU	Kuwait

MIL–D–89009

APPENDIX

TABLE 101.   Political/oceans character value description
table (CHAR.VDT) – Continued.

143	POAREA.AFT	POPYCOUN	LA	Laos
144	POAREA.AFT	POPYCOUN	LE	Lebanon
145	POAREA.AFT	POPYCOUN	LG	Latvia
146	POAREA.AFT	POPYCOUN	LH	Lithuania
147	POAREA.AFT	POPYCOUN	LI	Liberia
148	POAREA.AFT	POPYCOUN	LQ	Palmyra Atoll
149	POAREA.AFT	POPYCOUN	LS	Liechtenstein
150	POAREA.AFT	POPYCOUN	LT	Lesotho
151	POAREA.AFT	POPYCOUN	LU	Luxembourg
152	POAREA.AFT	POPYCOUN	LY	Libya
153	POAREA.AFT	POPYCOUN	MA	Madagascar
154	POAREA.AFT	POPYCOUN	MB	Martinique
155	POAREA.AFT	POPYCOUN	MC	Macau
156	POAREA.AFT	POPYCOUN	MF	Mayotte
157	POAREA.AFT	POPYCOUN	MG	Mongolia
158	POAREA.AFT	POPYCOUN	MH	Montserrat
159	POAREA.AFT	POPYCOUN	MI	Malawi
160	POAREA.AFT	POPYCOUN	ML	Mali
161	POAREA.AFT	POPYCOUN	MN	Monaco
162	POAREA.AFT	POPYCOUN	MO	Morocco
163	POAREA.AFT	POPYCOUN	MP	Mauritius
164	POAREA.AFT	POPYCOUN	MQ	Midway Islands
165	POAREA.AFT	POPYCOUN	MR	Mauritania
166	POAREA.AFT	POPYCOUN	MT	Malta
167	POAREA.AFT	POPYCOUN	MU	Oman
168	POAREA.AFT	POPYCOUN	MV	Maldives
169	POAREA.AFT	POPYCOUN	MX	Mexico
170	POAREA.AFT	POPYCOUN	MY	Malaysia
171	POAREA.AFT	POPYCOUN	MZ	Mozambique
172	POAREA.AFT	POPYCOUN	NA	Netherlands Antilles
173	POAREA.AFT	POPYCOUN	NC	New Caledonia
174	POAREA.AFT	POPYCOUN	NE	Niue
175	POAREA.AFT	POPYCOUN	NF	Norfolk Island
176	POAREA.AFT	POPYCOUN	NG	Niger
177	POAREA.AFT	POPYCOUN	NH	Vanuatu
178	POAREA.AFT	POPYCOUN	NI	Nigeria
179	POAREA.AFT	POPYCOUN	NL	Netherlands
180	POAREA.AFT	POPYCOUN	NO	Norway
181	POAREA.AFT	POPYCOUN	NP	Nepal
182	POAREA.AFT	POPYCOUN	NQ	Trust Territory of the Pacific Islands
183	POAREA.AFT	POPYCOUN	NR	Naura
184	POAREA.AFT	POPYCOUN	NS	Suriname
185	POAREA.AFT	POPYCOUN	NU	Nicaragua
186	POAREA.AFT	POPYCOUN	NZ	New Zealand
187	POAREA.AFT	POPYCOUN	OO	Open Ocean
188	POAREA.AFT	POPYCOUN	PA	Paraguay
189	POAREA.AFT	POPYCOUN	PC	Pitcairn Island
190	POAREA.AFT	POPYCOUN	PE	Peru
191	POAREA.AFT	POPYCOUN	PF	Paracel Islands
192	POAREA.AFT	POPYCOUN	PG	Spratly Islands
193	POAREA.AFT	POPYCOUN	PK	Pakistan
194	POAREA.AFT	POPYCOUN	PL	Poland

MIL-D-89009

APPENDIX

TABLE 101. <u>Political/oceans character value description</u>
<u>table (CHAR.VDT)</u> - Continued.

195	POAREA.AFT	POPYCOUN	PM	Panama
196	POAREA.AFT	POPYCOUN	PO	Portugal
197	POAREA.AFT	POPYCOUN	PP	Papua New Guinea
198	POAREA.AFT	POPYCOUN	PS	Republic of Palau
199	POAREA.AFT	POPYCOUN	PU	Guinea—Bissau
200	POAREA.AFT	POPYCOUN	QA	Qatar
201	POAREA.AFT	POPYCOUN	RE	Reunion
202	POAREA.AFT	POPYCOUN	RO	Romania
203	POAREA.AFT	POPYCOUN	RM	Marshall Islands
204	POAREA.AFT	POPYCOUN	RP	Philippines
205	POAREA.AFT	POPYCOUN	RQ	Puerto Rico
206	POAREA.AFT	POPYCOUN	RW	Rwanda
207	POAREA.AFT	POPYCOUN	SA	Saudi Arabia
208	POAREA.AFT	POPYCOUN	SB	St. Pierre and Miquelon
209	POAREA.AFT	POPYCOUN	SC	St. Christopher and Nevis
210	POAREA.AFT	POPYCOUN	SE	Seychelles
211	POAREA.AFT	POPYCOUN	SF	South Africa
212	POAREA.AFT	POPYCOUN	SG	Senegal
213	POAREA.AFT	POPYCOUN	SH	St. Helena
214	POAREA.AFT	POPYCOUN	SL	Sierra Leone
215	POAREA.AFT	POPYCOUN	SM	San Marino
216	POAREA.AFT	POPYCOUN	SN	Singapore
217	POAREA.AFT	POPYCOUN	SO	Somalia
218	POAREA.AFT	POPYCOUN	SP	Spain
219	POAREA.AFT	POPYCOUN	ST	St. Lucia
220	POAREA.AFT	POPYCOUN	SU	Sudan
221	POAREA.AFT	POPYCOUN	SV	Svalbard
222	POAREA.AFT	POPYCOUN	SW	Sweden
223	POAREA.AFT	POPYCOUN	SY	Syria
224	POAREA.AFT	POPYCOUN	SZ	Switzerland
225	POAREA.AFT	POPYCOUN	TC	United Arab Emirates
226	POAREA.AFT	POPYCOUN	TD	Trinidad and Tobago
227	POAREA.AFT	POPYCOUN	TE	Tromelin Island
228	POAREA.AFT	POPYCOUN	TH	Thailand
229	POAREA.AFT	POPYCOUN	TK	Turks and Caicos Islands
230	POAREA.AFT	POPYCOUN	TL	Tokelau
231	POAREA.AFT	POPYCOUN	TN	Tonga
232	POAREA.AFT	POPYCOUN	TO	Togo
233	POAREA.AFT	POPYCOUN	TP	Sao Tome and Principe
234	POAREA.AFT	POPYCOUN	TS	Tunisia
235	POAREA.AFT	POPYCOUN	TU	Turkey
236	POAREA.AFT	POPYCOUN	TV	Tuvalu
237	POAREA.AFT	POPYCOUN	TW	Taiwan
238	POAREA.AFT	POPYCOUN	TZ	Tanzania, United Republic of
239	POAREA.AFT	POPYCOUN	UG	Uganda
240	POAREA.AFT	POPYCOUN	UK	United Kingdom
241	POAREA.AFT	POPYCOUN	UR	Union of Soviet Socialist Republics
242	POAREA.AFT	POPYCOUN	US	United States
243	POAREA.AFT	POPYCOUN	UV	Upper Volta - Burkina Faso
244	POAREA.AFT	POPYCOUN	UY	Uruguay
245	POAREA.AFT	POPYCOUN	VC	St. Vincent and the Grenadines
246	POAREA.AFT	POPYCOUN	VE	Venezuela
247	POAREA.AFT	POPYCOUN	VI	British Virgin Islands

134

MIL–D–89009

APPENDIX

TABLE 101.   Political/oceans character value description
table (CHAR.VDT) – Continued.

248	POAREA.AFT	POPYCOUN	VM	Vietnam
249	POAREA.AFT	POPYCOUN	VQ	Virgin Islands
250	POAREA.AFT	POPYCOUN	VT	Vatican City
251	POAREA.AFT	POPYCOUN	WA	Namibia
252	POAREA.AFT	POPYCOUN	WF	Wallis and Futuna
253	POAREA.AFT	POPYCOUN	WI	Western Sahara
254	POAREA.AFT	POPYCOUN	WQ	Wake Island
255	POAREA.AFT	POPYCOUN	WS	Western Samoa
256	POAREA.AFT	POPYCOUN	WZ	Swaziland
257	POAREA.AFT	POPYCOUN	XX	Area under dispute
258	POAREA.AFT	POPYCOUN	YM	Yemen
259	POAREA.AFT	POPYCOUN	YO	Yugoslavia
260	POAREA.AFT	POPYCOUN	ZA	Zambia
261	POAREA.AFT	POPYCOUN	ZI	Zimbabwe

135

MIL-D-89009

APPENDIX

TABLE 102. Political/oceans area feature table (POAREA.AFT).

```
{Header length};\
Political/Ocean areas;POAREA.DOC;\
ID=       I,1,P,Row Identifier,-,-,:\
POPYTYPE= I,1,N,Land or Water Feature Type,INT.VDT,-,:\
POPYREG=  T,2,N,Region or Continent,CHAR.VDT,-,:\
POPYCOUN= T,2,N,Country or ocean Identifier,CHAR.VDT,-,:\
POPYADMIN=T,40,N,Administrative units,-,-,:\
TILE_ID=  S,1,F,Tile Reference Identifier,-,POAREA.ATI,:\
FAC_ID=   I,1,F,Face Primitive Foreign Key,-,-,:;
```

1	1	N	US	New York	125	1
2	1	E	UK	NA	117	2
:	:	:	:	:	:	:
n	n	n	n	n	n	n

POPYTYPE		**ONC Codes**
1 =	Land	
2 =	Open ocean	
3 =	Polar ice[1]	315.7
4 =	Pack ice[1]	315.7
5 =	Shelf ice[1]	315.6

POPYREG
This attribute contains 16 values representing divisions of the world contained in DIAM 65-18, dated 15 Mar 84, Data Standard No. 3. These codes include the seven continents and nine principal ocean aggregations. Every place in the world is associated with one and only one division so that there are no overlapping areas. Each continental region is designated with a letter, and ocean aggregation is designated with a number, as follows:

A =	Asia
E =	Europe
F =	Africa
N =	North America
S =	South America
T =	Antarctic Area
U =	Australian Area
1 =	North Atlantic Ocean Aggregation
2 =	South Atlantic Ocean Aggregation
3 =	North Pacific Ocean Aggregation
4 =	South Pacific Ocean Aggregation
5 =	Arctic Ocean Aggregation
6 =	Indian Ocean Aggregation
7 =	Baltic Sea Aggregation
8 =	Mediterranean Sea Aggregation
9 =	Great Lakes Aggregation

POPYCOUN
This attribute represents the subdivisions of the world's land and water masses according to DIAM 65-18, dated 15 Mar 84. Each country or world subdivision is represented by a two-letter code (CHAR.VDT, TABLE 101).

136

MIL-D-89009

APPENDIX

TABLE 102.   <u>Political/oceans area feature table (POAREA.AFT)</u> -
             Continued.

POPYADMIN
This attribute contains the names of the first order administrative
units for the following countries (those which are delimited on the
ONC): U.S. (i.e., states), Canada (i.e., provinces), USSR, Brazil, and
Australia. Other territorial units (such as those in the UK) may also
be shown. Some countries are only partially divided into administrative

units; in Mexico, for example, the state of Baja California Norte is
separated from Sonora on G-18.

Notes
[1] This coverage contains only ocean ice. Ice upon the land, polar ice
and shelf ice, is in the physiography coverage. Pack ice is afloat and
is, therefore, captured in the political/oceans coverage.
_____

MIL-D-89009

APPENDIX

TABLE 103. <u>Political/oceans line feature table with header (POLINE.LFT)</u>.

```
{Header length};\
Political/Ocean Boundaries;POLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
POLNTYPE=I,1,N,Type of Political/Ocean Boundary,INT.VDT,-,:\
POLNSTAT=I,1,N,Status of Political/Ocean Boundary,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,POLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	1	3	175	1
2	4	1	140	2
:	:	:	:	:
n	n	n	n	n

POLNTYPE   **ONC/JNC**
1 =   International boundary, dejure   909.1
2 =   International boundary, defacto   909.2
3 =   Both 1 and 2*   909.1
                                                         909.2
4 =   Administrative boundary, primary[1]   909.3
5 =   Administrative boundary, major   909.4
6 =   Treaty or occupancy line (DMZ)   909.5
7 =   Coastal closure line
       (used to close rivers and glaciers at
       coastline)
8 =   Ocean demarcation line
       (used to separate oceanic subareas)
9 =   Ice line (used to separate types of ice)   315.6
                                                         315.7
10 =   Coastline   302.1
                                                         302.2
                                                         302.3
                                                         302.4
11 =   Ice/water line   315.6
                                                         315.7
12   =   Seawall   906.1
13 =   International Date Line   910.1
88 =   Connector (if needed)
99 =   None or unknown (used for module border)

POLNSTAT
The status attribute is associated with line features and is used to
indicate whether boundaries and shorelines are definite, indefinite, or
approximate. The status attribute will indicate whether a shoreline is
manmade, undetermined, or designated an ice cliff.

                                                         ONC/JNC
1 =   Definite[2] (boundary or coastline)   302.1
2 =   Approximate (boundary) or   907.7
       Fluctuating (coastline)   302.2
3 =   Indefinite (boundary) or   907.7
       unsurveyed (coastline)   302.3
4 =   Manmade (coastline)   302.4
5 =   Undetermined (coastline) (only on JNC)

138

MIL-D-89009

APPENDIX

TABLE 103. <u>Political/oceans line feature table with header (POLINE.LFT)</u> - Continued.

```
        Symbol not in spec
6   =   Ice cliff (coastline or ice line)
7   =   River, when boundary                                315.5
        (e.g., single line river or stream)
8   =   Poly closure line (e.g., boundary
        through water body)
9   =   Null or unknown
```

Notes
[1] Use for first-order administrative boundaries.

[2] The term "Definite" is not used in Appendix I of the ONC Specification; rather, the term "Indefinite" is used. Therefore, the term "Definite" is used for attribute value descriptions as a substitute for all terms that mean something other than "Indefinite."

MIL-D-89009

APPENDIX

TABLE 104. Legal DCW code combinations and ONC code
correspondence table for political/oceans
line features and ONC codes*.

POLNTYPE	POLNSTAT	ONC Code	Description
1	1	909.1	INTERNATIONAL BOUNDARY, DEJURE, DEFINITE
1	2	909.1+909.7	INTERNATIONAL BOUNDARY, DEJURE, APPROXIMATE
1	3	909.1+909.7	INTERNATIONAL BOUNDARY, DEJURE, INDEFINITE
1	7	NC	INTERNATIONAL BOUNDARY, RIVER
1	8	NC	INTERNATIONAL BOUNDARY, CLOSURE LINE
2	1	909.2	INTERNATIONAL BOUNDARY, DEFACTO, DEFINITE
2	2	909.2+909.7	INTERNATIONAL BOUNDARY, DEFACTO, APPROXIMATE
2	3	909.2+909.7	INTERNATIONAL BOUNDARY, DEFACTO, INDEFINITE
2	7	NC	INTERNATIONAL BOUNDARY, RIVER
2	8	NC	INTERNATIONAL BOUNDARY, CLOSURE LINE
3	1	NC	BOTH DEJURE AND DEFACTO, DEFINITE(ONC SPECIFICATIONS P.65)
3	2	NC+909.7	BOTH DEJURE AND DEFACTO, APPROXIMATE
3	3	NC+909.7	BOTH DEJURE AND DEFACTO, INDEFINITE
3	7	NC	BOTH DEJURE AND DEFACTO, RIVER
3	8	NC	BOTH DEJURE AND DEFACTO, CLOSURE LINE
4	1	909.3	ADMINISTRATIVE, PRIMARY, DEFINITE
4	2	909.3+909.7	ADMINISTRATIVE, PRIMARY, APPROXIMATE
4	3	909.3+909.7	ADMINISTRATIVE, PRIMARY, INDEFINITE
4	7	NC	ADMINISTRATIVE, PRIMARY, RIVER
4	8	NC	ADMINISTRATIVE, PRIMARY, CLOSURE LINE
5	1	909.4	ADMINISTRATIVE, MAJOR, DEFINITE
5	2	909.4+909.7	ADMINISTRATIVE, MAJOR, APPROXIMATE
5	3	909.4+909.7	ADMINISTRATIVE, MAJOR, INDEFINITE
5	7	NC	ADMINISTRATIVE, RIVER
5	8	NC	ADMINISTRATIVE, CLOSURE LINE

140

MIL-D-89009

APPENDIX

| 6 | 1 | 909.5 | TREATY OR OCCUPANCY LINE, DEFINITE |

TABLE 104. Legal DCW code combinations and ONC code correspondence table for political/oceans line features and ONC codes* – Continued.

POLNTYPE	POLNSTAT	ONC Code	Description
6	2	909.5+909.7	TREATY OR OCCUPANCY LINE, APPROXIMATE
6	3	909.5+909.7	TREATY OR OCCUPANCY LINE, INDEFINITE
6	7	NC	TREATY OR OCCUPANCY LINE, RIVER
6	8	NC	TREATY OR OCCUPANCY LINE, CLOSURE LINE
7	9	NC	COASTAL CLOSURE LINE, NULL
8	8	NC	OCEAN DEMARCATION LINE, CLOSURE LINE
9	2	NC	ICE LINE, APPROXIMATE
10	1	302.1	COASTLINE, DEFINITE
10	2	302.2	COASTLINE, FLUCTUATING
10	3	302.3	COASTLINE, UNSURVEYED
10	4	302.4	COASTLINE, MANMADE
10	5	NC	COASTLINE, UNDETERMINED (JNC ONLY)
10	6	315.5	ICE CLIFF SHORELINE (ENTIRE ICE CLIFF IN LC.LFT)
11	2		ICE/WATER LINE, APPROXIMATE
11	6		ICE/WATER LINE, ICE CLIFF (COASTLINE OR ICE LINE)
12	4		SEAWALL, MANMADE
13	9		INTERNATIONAL DATE LINE
88	9	NC	CONNECTOR, NULL
99	9	NC	NONE, NULL

*Note: NC = no code. Some ONC codes, such as "Approximate" and "Indefinite," are combined with boundary symbols. DCW coding provides greater differentiation than ONC coding scheme.

141

MIL-D-89009

APPENDIX

TABLE 105. <u>Political/oceans point feature table</u>
<u>(POPOINT.PFT)</u>.

```
{Header length};\
Political/Ocean points;POPOINT.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
POPTTYPE=I,1,N,Type of Land or water feature,INT.VDT,-,:\
POPTREG= T,2,N,Region or continent Identifier,CHAR.VDT,-,:\
POPTCOUN=T,2,N,Country or ocean Identifier,CHAR.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,POPOINT.PTI,:\
END_ID=  I,1,F,Point Primitive Foreign Key,-,-,:;
```

1	1	A	HK	34	1
2	1	N	CA	22	2
:	:	:	:	:	:
n	n	n	n	n	n

POPTTYPE
There is only one type of political/oceans point feature: small
islands.

1 =   Small island

POPTREG
This attribute contains 16 values representing divisions of the world
contained in DIAM 65-18, dated 15 Mar 84, Data Standard No. 3. These
codes include the seven continents and nine principal ocean
aggregations. Every place in the world is associated with one and only
one division so that there are no overlapping faces. Each continental
region is designated with a letter, and ocean aggregation is as shown
for POAREA.AFT (see 3.3.11 b).

POPTCOUN
This attribute represents the subdivisions of the world's land and water
masses according to DIAM 65-18, dated 15 Mar 84. Each country or world
subdivision is represented by a two-letter code as shown in the CHAR.VDT
(see TABLE 101).

MIL-D-89009

APPENDIX

TABLE 106. <u>Political/oceans text feature table (POTEXT.TFT)</u>.

```
{Header length};\
Political/Oceans Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,N,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,POTEXT,TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01342	England	1.27000	1	95	1
2	1	0.01342	France	1.27000	1	110	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes
When the country names appear on both sides of a dejure or defacto
international boundary as for POLINE.LFT POLNTYPE = 3, the names are
captured as textual annotation.

Text heights are defined in inches for the following text primitives:

Land Place Names	Large	7.62 mm (0.30 inch)
	Medium	5.84 mm (0.23 inch)
	Small	2.54 mm (0.10 inch)
	Very Small	1.52 mm (0.06 inch)
Ocean Place Names	Large	7.62 mm (0.30 inch)
	Medium	3.81 mm (0.15 inch)
	Small	2.54 mm (0.10 inch)
	Very Small	1.52 mm (0.06 inch)
Ice Status[1]	Small	1.52 mm (0.06 inch)
Mountain Names	Large	7.62 mm (0.30 inch)
	Medium	5.84 mm (0.23 inch)
	Small	2.54 mm (0.10 inch)
	Very Small	1.52 mm (0.06 inch)
Island Names	Large	7.62 mm (0.30 inch)
	Medium	5.84 mm (0.23 inch)
	Small	2.54 mm (0.10 inch)
	Very Small	1.52 mm (0.06 inch)
Desert Names	Large	7.62 mm (0.30 inch)
	Medium	5.84 mm (0.23 inch)
	Small	2.54 mm (0.10 inch)
	Very Small	1.52 mm (0.06 inch)

[1] Ice status is typically a note about the temporal limits of the ice.

143

MIL-D-89009

APPENDIX

30.3.12 Populated places coverage.

a. This coverage contains populated places information
    stored in area and point feature tables. Attribute
    values are as described in the integer value description
    table (TABLE 107).

b. PPAREA.AFT attribute definitions. TABLE 108 describes
    populated place area feature table (PPAREA.AFT)
    attribution.

c. PPPOINT.PFT attribute definitions. TABLE 109 describes
    populated places point feature table (PPPOINT.PFT)
    attribution.

d. Text feature table. TABLE 110 provides the schema for
    the populated places text feature table (PPTEXT.TFT).
    Text stored in text primitive tables includes place
    names.

144

MIL-D-89009

APPENDIX

TABLE 107. <u>Populated places integer value description table</u>
<u>(INT.VDT)</u>.

```
{Header length};\
Populated Places Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

ID	TABLE	ATTRIBUTE	VALUE	DESCRIPTION
1	PPAREA.AFT	PPPYTYPE	1	Built-up areas
2	PPAREA.AFT	PPPYTYPE	2	Kampongs
3	PPPOINT.PFT	PPPTTYPE	1	Populated places (no subcategories)
4	PPPOINT.PFT	PPPTTYPE	2	Populated places associated with place names in city tints
5	PPPOINT.PFT	PPPTTYPE	3	Villages, strategic or landmark places
6	PPPOINT.PFT	PPPTTYPE	4	Kampong
7	PPPOINT.PFT	PPPTTYPE	5	Circular village
8	PPPOINT.PFT	PPPTFLAG	1	Regular Characters
9	PPPOINT.PFT	PPPTFLAG	2	Annotation that requires diacritical marks
10	PPTEXT.TFT	LEVEL	1	Regular characters, small size
11	PPTEXT.TFT	LEVEL	2	Regular characters, medium size
12	PPTEXT.TFT	LEVEL	3	Regular characters, large size
13	PPTEXT.TFT	LEVEL	4	Diacritical characters, small
14	PPTEXT.TFT	LEVEL	5	Diacritical characters, medium size
15	PPTEXT.TFT	LEVEL	6	Diacritical characters, large size
16	PPTEXT.TFT	SYMBOL	1	Black annotation

145

MIL-D-89009

APPENDIX

TABLE 108. <u>Populated places area feature table (PPAREA.AFT)</u>.

```
{Header length};\
Populated Place areas;PPAREA.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
PPPYTYPE=I,1,N,Type of Populated Place,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,PPAREA.ATI,:\
FAC_ID=  I,1,F,Face Primitive Foreign Key,-,-,:;
```

1	1	99	1
2	1	132	2
:	:	:	:
n	n	n	n

PPPYTYPE			ONC Codes
1	=	Built-up areas	704.1
2	=	Kampongs	706.2

Notes

The PPPYTYPE attribute contains information concerning the types of populated places. Populated place types consist of undifferentiated built-up areas and kampongs, which are characteristic native villages typically found in Southeast Asia.

146

MIL-D-89009

APPENDIX

TABLE 109. Populated places point feature table (PPPOINT.PFT).

```
{Header length};\
Populated Place points;PPPOINT.DOC;\
ID=      I, 1,P,Row Identifier,-,-,:\
PPPTTYPE=I, 1,N,Type of Populated Place,INT.VDT,-,:\
PPPTNAME=T,40,N,Populated Place name,-,-,:\
PPPTFLAG=I, 1,N,Flag to indicate Special Fonts,INT.VDT,-,:\
TILE_ID= S, 1,F,Tile Reference Identifier,-,PPPOINT.PTI,:\
END_ID=  I, 1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	2	Denver	1	126	1
2	2	Chicago	1	128	2
:	:	:	:	:	:
n	n	n	n	n	n

PPPTTYPE

There are two types of point features: 1) points extracted from their symbolized locations on the source map, and 2) points assigned a location based on an approximation of the text location for their names. The second type of point feature applies only to undifferentiated populated places within a built-up area symbol on the source map.

                                                            ONC Codes
1 = Populated places (no subcategories[1])   704.2
2 = Populated places
       (associated with place names in city tints)
3 = Villages, strategic or landmark places
       in conjunction with marginal note[2]
4 = Kampong   706.2
5 = Circular village (not in
       specifications but on ONC sheet G-4)

PPPTNAME   703.1
This attribute contains a 40-character text field to represent the name of individual populated place feature identified as points as they appear on the ONC. Names are entered as an attribute in the populated place point feature table (PPPOINT.PFT) and as annotation in the populated place text primitive table (TXT).

Notes
[1] There are multiple point symbols for populated places. Since the usage of these symbols varies with ONC map sheet, these symbols have been categorized under one code (i.e., populated places code = 1).

[2] In cases where villages, strategic or landmark places are represented by a solid square and referred to as villages in the marginal notes area of the ONC, these features are coded in the Populated Places point feature table.

In some instances, the location to which the name is associated cannot be determined, which may result in an incorrect name assignment. A blank entry in this attribute indicates that no name was associated with that populated place on the source map. When a populated place feature contains multiple names without any city boundaries, the name selected

147

MIL-D-89009

APPENDIX

TABLE 109. <u>Populated places point feature table (PPPOINT.PFT</u> - Continued.

for the area is determined on the basis of text size or "common
knowledge." If associating a place name with an area is not possible
by this criterion, then no name is associated with that area. If those
criteria fail to provide a solution to naming the face in a tinted area,
no name is associated with that face. Such areas on the ONC charts
typically contain many points which are attributed with names, but there
are no delineations for the named places within the tinted area.

TABLE 110. <u>Populated places text feature table (PPTEXT.TFT)</u>.

```
{Header length};\
Populated Places Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,N,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,PPTEXT.TTI,:\
TXT_ID= I,1,N,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01342	Paris	1.27000	1	236	1
2	1	0.01342	Berlin	1.27000	1	300	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes
There are three sizes of textual annotation for place names, as follows:

        Large Place Names   2.54 mm (0.10 inch)
        Medium Place Names   2.16 mm (0.085 inch)
        Small Place Names   1.78 mm (0.07 inch)

Generic labels (e.g., circular villages) are not annotated.

MIL-D-89009

APPENDIX

30.3.13 <u>Railroads coverage</u>.

    a. Railroads coverage. This coverage contains all railroad
       information and is stored in a line feature table.
       Attribute values are as described in the integer value
       description table (TABLE 111).

    b. Attribute definitions. TABLE 112 describes the
       railroads line feature table attribution (RRLINE.LFT).

    c. Legal code combinations. TABLE 113 documents the
       railroads coverage RRLNTYPE and RRLNSTAT legal code
       combinations.

    d. Text feature table. TABLE 114 provides the schema for
       the railroads text feature table (RRTEXT.TFT).

TABLE 111. <u>Railroads integer value description table
(INT.VDT)</u>.

```
{Header length};\
Railroads Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	RRLINE.LFT	RRLNTYPE	1	Single track railroads
2	RRLINE.LFT	RRLNTYPE	2	Multiple track railroads
3	RRLINE.LFT	RRLNTYPE	3	Light railroads
4	RRLINE.LFT	RRLNTYPE	8	Connectors
5	RRLINE.LFT	RRLNSTAT	1	Functional
6	RRLINE.LFT	RRLNSTAT	2	Non-operating
7	RRLINE.LFT	RRLNSTAT	3	Existence doubtful or reported
8	RRLINE.LFT	RRLNSTAT	4	Compiled railroads
9	RRLINE.LFT	RRLNSTAT	5	Compiled from adjacent, more recent sheet
10	RRLINE.LFT	RRLNSTAT	6	Compiled, under construction
11	RRTEXT.TFT	LEVEL	1	Railroad annotation
12	RRTEXT.TFT	SYMBOL	1	Black annotation

MIL-D-89009

APPENDIX

TABLE 112. <u>Railroads line feature table (RRLINE.LFT)</u>.

```
{Header length};\
Railroad lines;RRLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
RRLNTYPE=I,1,N,Railroad type,INT.VDT,-,:\
RRLNSTAT=I,1,N,Railroad status,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,RRLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	2	1	68	1
2	2	5	80	2
:	:	:	:	:
n	n	n	n	n

RRLNTYPE
The RRLNTYPE attribute identifies the type of the railroad as single
track, multiple track, light railroads, or connectors.

ONC Codes

				ONC Codes	
1	=	Single track	602.1	Single track
		railroads	602.4	Electric
			602.5	Railroads in juxtaposition
			602.6	Railroads nonoperating
			602.7	Railroads, approximate alignment
			602.8	Railroads, existence doubtful
			602.9	Railroad sidings and short spurs
			602.11	Railroad in street
			608.1	Overpasses and underpasses
2	=	Multiple track	602.2	Double track
		railroads	602.3	More than two tracks
			602.4	Electric
			602.5	Railroads in juxtaposition
			602.6	Railroads nonoperating
			602.7	Railroads, approximate alignment
			602.8	Railroads, existence doubtful
			602.9	Railroad sidings and short spurs
			602.11	Railroad in street
			608.1	Overpasses and underpasses
3	=	Light railroads	602.11	Carlines, tramways and similar light load-bearing railways
8	=	Connectors		

RRLNSTAT			**ONC Codes**
1	=	Functional[1]	n/a
2	=	Nonoperating, abandoned, destroyed, or under construction	602.6
3	=	Existence doubtful or reported	602.8
4	=	Compiled railroads	
5	=	Compiled from adjacent, more recent sheet[2]	
6	=	Compiled, under construction	
9	=	Null or unknown	

150

MIL-D-89009

APPENDIX

TABLE 112. <u>Railroads line feature table (RRLINE.LFT)</u> -
Continued.

Notes
[1]Status code 1 has been included so that all lines contain a code. No
special symbolization or marking is associated with a functional
railroad.

[2] For edgematching purposes.

TABLE 113. <u>Legal code combinations for railroads line features.</u>

RRLNTYPE	RRLNSTAT	Description
1	1	SINGLE TRACK RR, FUNCTIONAL
1	2	SINGLE TRACK RR, NONOPERATING, ABANDONED, DESTROYED, OR UNDER CONSTRUCTION
1	3	SINGLE TRACK RR, EXISTENCE DOUBTFUL OR REPORTED
1	5	SINGLE TRACK RR, COMPILED FROM ADJACENT, MORE RECENT SHEET
2	1	MULTIPLE TRACK RR, FUNCTIONAL
2	2	MULTIPLE TRACK RR, NONOPERATING, ABANDONED, DESTROYED OR UNDER CONSTRUCTION
2	3	MULTIPLE TRACK RR, EXISTENCE DOUBTFUL OR REPORTED
2	5	MULTIPLE TRACK RR, COMPILED FROM ADJACENT, MORE RECENT SHEET
3	1	LIGHT RR, FUNCTIONAL
3	2	LIGHT RR, NONOPERATING, ABANDONED, DESTROYED, OR UNDER CONSTRUCTION
3	3	LIGHT RR, EXISTENCE DOUBTFUL OR REPORTED
3	5	LIGHT RR, COMPILED FROM ADJACENT, MORE RECENT SHEET
8	4	CONNECTORS, COMPILED RAILROADS
8	6	CONNECTORS, COMPILED, UNDER CONSTRUCTION
8	9	CONNECTORS, NULL OR UNKNOWN

151

MIL-D-89009

APPENDIX

TABLE 114. <u>Railroads text feature table (RRTEXT.TFT)</u>.

```
{Header length};\
Railroad Text;-;\
ID=      I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=    T,*,N,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,RRTEXT.TTI,:\
TXT_ID= I,1,N,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01375	electrified	1.27000	1	122	1
2	1	0.01375	abandoned	1.27000	1	160	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes
There is one text size of 1.52 mm (0.06 inch) for all annotation (e.g.,
electric). When it is not obvious from line symbology to what portion
of an arc the annotation applies, annotation is used for clarification.
The beginning and end of an electric portion of a railroad cannot be
determined from the line symbol.

Railroad yards and stations exist as annotation as well as any notes
written along railroad tracks that are not included by the coding scheme
[e.g., electric (602.4), approximate alignment (602.7)].

152

MIL-D-89009

APPENDIX

30.3.14 Roads coverage.

a. Roads coverage. This coverage contains all road
   information stored in a line feature table. Attribute
   values are as described in the integer value description
   table (TABLE 115).

b. RDLINE.LFT attribute definitions. TABLE 116 describes
   the roads line feature table attribution (RDLINE.LFT).

c. Legal code combinations. TABLE 117 documents the roads
   coverage RDLNTYPE and RDLNSTAT legal code combinations.

d. Text feature table. TABLE 118 provides the schema for
   the roads text feature table (RDTEXT.TFT).

TABLE 115.   Roads integer value description table (INT.VDT).

```
{Header length};\
Roads Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

ID	TABLE	ATTRIBUTE	VALUE	DESCRIPTION
1	RDLINE.LFT	RDLNTYPE	1	Dual lane divided highways
2	RDLINE.LFT	RDLNTYPE	2	Primary or secondary roads or highways
3	RDLINE.LFT	RDLNTYPE	3	Tracks, trails or footpaths
4	RDLINE.LFT	RDLNTYPE	8	Connectors
5	RDLINE.LFT	RDLNSTAT	1	Functional
6	RDLINE.LFT	RDLNSTAT	2	Under construction
7	RDLINE.LFT	RDLNSTAT	3	Existence doubtful or reported
8	RDLINE.LFT	RDLNSTAT	4	Compiled road connector
9	RDLINE.LFT	RDLNSTAT	5	Compiled from adjacent, more recent sheet
10	RDLINE.LFT	RDLNSTAT	6	Compiled, under construction
11	RDTEXT.TFT	LEVEL	1	Roads annotation
12	RDTEXT.TFT	SYMBOL	1	Black annotation

153

MIL-D-89009

APPENDIX

TABLE 116. <u>Roads line feature table with header</u>
<u>(RDLINE.LFT).</u>

```
{Header length};\
Road Lines;RDLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
RDLNTYPE=I,1,N,Road type,INT.VDT,-,:\
RDLNSTAT=I,1,N,Road status,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,RDLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	3	3	17	1
2	1	5	45	2
:	:	:	:	:
n	n	n	n	n

RDLNTYPE

The RDLNTYPE attribute identifies the type of the road as either a dual
lane highway, primary road, or secondary road.

		ONC Codes
1 =	Dual land (divided) highways	606.1 Dual lane (divide)
		606.5 Roads, existence doubtful
		606.6 Roads, approximate alignment
		606.7 Roads, under construction
		602.11 Railroad in road
		608.2 Cloverleaf
2 =	Primary or secondary roads or highways	606.2 Roads, primary
		606.3 Roads, exceeding two lanes
		606.4 Roads, secondary
		606.5 Roads, existence doubtful
		606.6 Roads, approximate alignment
		606.7 Roads, under construction
		606.11 Railroad in road
		608.2 Cloverleaf
3 =	Tracks, trails, or footpaths	N/A – not in ONC product spec, but is presented on some sheets
8 =	Connectors	

RDLNSTAT   **ONC Codes**
1 = Functional[1]   n/a
2 = Under construction   606.7
3 = Existence doubtful or reported   606.5
4 = Compiled road connector
5 = Compiled from adjacent, more recent sheet
6 = Compiled, under construction
9 = Null or unknown

154

MIL–D–89009

APPENDIX

TABLE 116. <u>Roads line feature table with header
(RDLINE.LFT)</u> – Continued.

Notes
Because of inconsistent treatment on the ONC charts, ferries and fords
features are included in the Transportation Structure coverage. For
example, ferries across the Great Lakes and in Washington State are not
shown on the ONCs.

[1]Status code 1 has been included so that all lines contain a
code. No special symbolization or marking is associated with
a functional road.

155

MIL-D-89009

APPENDIX

TABLE 117. Legal code combinations for road line features.

RDLNTYPE	RDLNSTAT	Description
1	1	DUAL LANE (DIVIDED) HIGHWAYS, FUNCTIONAL
1	2	DUAL LANE (DIVIDED) HIGHWAYS, UNDER CONSTRUCTION
1	3	DUAL LANE (DIVIDED) HIGHWAYS, EXISTENCE DOUBTFUL OR REPORTED
1	5	DUAL LANE (DIVIDED) HIGHWAYS, COMPILED FROM ADJACENT, MORE RECENT SHEET
2	1	PRIMARY OR SECONDARY ROADS OR HIGHWAYS, FUNCTIONAL
2	2	PRIMARY OR SECONDARY ROADS OR HIGHWAYS, UNDER CONSTRUCTION
2	3	PRIMARY OR SECONDARY ROADS OR HIGHWAYS, EXISTENCE DOUBTFUL OR REPORTED
2	5	PRIMARY OR SECONDARY ROADS OR HIGHWAYS, COMPILED FROM ADJACENT, MORE RECENT SHEET
3	1	TRACKS, TRAILS OR FOOTPATHS, FUNCTIONAL
3	2	TRACKS, TRAILS OR FOOTPATHS, UNDER CONSTRUCTION
3	3	TRACKS, TRAILS OR FOOTPATHS, EXISTENCE DOUBTFUL OR REPORTED
3	5	TRACKS, TRAILS OR FOOTPATHS, COMPILED FROM ADJACENT, MORE RECENT SHEET
8	4	CONNECTORS, COMPILED
8	6	CONNECTORS, COMPILED, UNDER CONSTRUCTION
8	9	CONNECTORS, NULL OR UNKNOWN

Notes
Connector lines have been added to the database to establish a network of roads through the city tinted areas. Where roads are broken by text on the ONC, connectors have been added where gaps due to text are greater than 2.54 mm (0.1 inch). Gaps in roads that are less than 2.54 mm (0.1 inch) are coded using type and status codes as implied by connecting roads.

156

MIL-D-89009

APPENDIX

TABLE 118. <u>Roads text feature table (RDTEXT.TFT)</u>.

```
{Header length};\
Roads Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,F,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,RDTEXT.TTI,:\
TXT_ID= I,1,N,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01365	winter route	1.17478	1	147	1
2	1	0.01365	winter route	1.17478	1	148	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes
The text size is 1.52 mm (0.06 inch) for all roads annotation.

Annotation used when there is a note along a road that is not covered by the coding scheme (e.g., approximate alignment).

157

MIL-D-89009

APPENDIX

30.3.15   <u>Transportation structure coverage</u>.

  a. Transportation structure coverage. This coverage
     includes road and railroad type features whose status is
     represented by snowsheds, bridges, ferries, and fords.
     These data are stored in line and point feature tables.
     Attribute values are as described in the integer value
     description table (TABLE 119).

  b. TSLINE.LFT attribute definitions. TABLE 120 describes
     the transportation structure line feature table
     (TSLINE.LFT) attribution.

  c. TSLNTYPE and TSLNSTAT legal code combinations. TABLE
     121 documents the transportation structure coverage
     TSLNTYPE and TSLNSTAT legal code combinations.

  d. TSPOINT.PFT attribute definitions. TABLE 122 describes
     the attribution for the transportation structure point
     feature table (TSPOINT.PFT).

  e. TSPTTYPE and TSPTSTAT legal code combinations.
     TABLE 123 documents the transportation structure
     coverage TSPTTYPE and TSPTSTAT legal code combinations.

  f. Text feature table. TABLE 124 provides the schema for
     the transportation text feature table (TSTEXT.TFT).

158

MIL-D-89009

APPENDIX

TABLE 119.   Transportation structure integer value
description table (INT.VDT).

```
{Header length};\
Transportation Structure Integer Value Description Table;-;\
ID=        I,1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I,1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

ID	TABLE	ATTRIBUTE	VALUE	DESCRIPTION
1	TSLINE.LFT	TSLNTYPE	1	Roads
2	TSLINE.LFT	TSLNTYPE	2	Railroads
3	TSLINE.LFT	TSLNSTAT	1	Snowsheds
4	TSLINE.LFT	TSLNSTAT	2	Bridges
5	TSLINE.LFT	TSLNSTAT	3	Causeways
6	TSLINE.LFT	TSLNSTAT	4	Tunnels
7	TSLINE.LFT	TSLNSTAT	5	Ferries
8	TSLINE.LFT	TSLNSTAT	6	Fords
9	TSPOINT.PFT	TSPTTYPE	1	Roads
10	TSPOINT.PFT	TSPTTYPE	2	Railroads
11	TSPOINT.PFT	TSPTSTAT	1	Snowsheds
12	TSPOINT.PFT	TSPTSTAT	2	Bridges
13	TSPOINT.PFT	TSPTSTAT	3	Causeways
14	TSPOINT.PFT	TSPTSTAT	4	Tunnels
15	TSPOINT.PFT	TSPTSTAT	5	Ferries
16	TSPOINT.PFT	TSPTSTAT	6	Fords
17	TSPOINT.PFT	TSPTSTAT	7	Railroad yards
18	TSPOINT.PFT	TSPTSTAT	8	Railroad stations
19	TSTEXT.TFT	LEVEL	1	TSLINE annotation
20	TSTEXT.TFT	LEVEL	2	TSPOINT annotation

159

MIL-D-89009

APPENDIX

TABLE 120.   Transportation line feature table with header
(TSLINE.LFT).

```
{Header length};\
Transportation Structure lines;TSLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
TSLNTYPE=I,1,N,Transportation type,INT.VDT,-,:\
TSLNSTAT=I,1,N,Transportation structure,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,TSLINE.LTI,:\
EDG_ID=  I,1,F,Edge Primitive Foreign Key,-,-,:;
```

1	1	4	99	1
2	1	5	79	2
:	:	:	:	:
n	n	n	n	n

TSLNTYPE		**ONC Codes**
1	= Roads	
2	= Railroads	

TSLNSTAT		
1	= Snowsheds	604.1
2	= Bridges	607.1
3	= Causeways	609.1
4	= Tunnels	610.1
5	= Ferries	611.1
6	= Fords	612.1

TABLE 121. Legal code combinations for transportation line
features.

TSLNTYPE	**TSLNSTAT**	**Description**
1	1	ROAD SNOWSHEDS
1	2	ROAD BRIDGES
1	3	ROAD CAUSEWAYS
1	4	ROAD TUNNELS
1	5	ROAD FERRIES
1	6	ROAD FORDS
2	1	RAILROAD SNOWSHEDS
2	2	RAILROAD BRIDGES
2	3	RAILROAD CAUSEWAYS
2	4	RAILROAD TUNNELS

160

MIL-D-89009

APPENDIX

TABLE 122.   <u>Transportation structure point feature table</u>
             <u>(TSPOINT.PFT)</u>.

```
{Header length};\
Transportation Structure points;TSPOINT.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
TSPTTYPE=I,1,N,Transportation type,INT.VDT,-,:\
TSPTSTAT=I,1,N,Transportation structure,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,TSPOINT.PTI,:\
END_ID=  I,1,F,Entity Node Primitive Foreign Key,-,-,:;
```

1	1	4	188	1
2	2	7	222	2
:	:	:	:	:
n	n	n	n	n

TSPTTYPE			**ONC Codes**
1	=	Roads	
2	=	Railroads	

TSPTSTAT			
1	=	Snowsheds	604.1
2	=	Bridges	607.1
3	=	Causeways	609.1
4	=	Tunnels	610.1
5	=	Ferries	611.1
6	=	Fords	612.1
7	=	Railroad yards	603.2
8	=	Railroad stations	605.1

TABLE 123.   <u>Legal code combinations for transportation point</u>
             <u>features.</u>

TSPTTYPE	TSPTSTAT	Description
1	1	ROAD SNOWSHEDS
1	2	ROAD BRIDGES
1	3	ROAD CAUSEWAYS
1	4	ROAD TUNNELS
1	5	ROAD FERRIES
1	6	ROAD FORDS
2	1	RAILROAD SNOWSHEDS
2	2	RAILROAD BRIDGES
2	3	RAILROAD CAUSEWAYS
2	4	RAILROAD TUNNELS
2	7	RAILROAD YARDS
2	8	RAILROAD STATIONS

161

MIL-D-89009

APPENDIX

TABLE 124. <u>Transportation structure text feature table (TSTEXT.TFT)</u>.

```
{Header length};\
Transportation Structure Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,F,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,TSTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.01773	Tunnel	1.17478	1	148	1
2	1	0.01773	Ferry	1.17478	1	152	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes

The text size is 1.52 mm (0.06 inch) for all transportation structure annotation.

When labeled, railroad delimiting yards are annotated in the text primitive table.

162

MIL-D-89009

APPENDIX

30.3.16 Utilities coverage.

   a. Utilities coverage. This coverage contains all
      utilities information and is stored in a line feature
      table. Attribute values are as described in the integer
      value description table (TABLE 125).

   b. Attribute definitions. The following describes the
      utilities line feature table attribution (UTLINE.LFT)
      (TABLE 126).

   c. Text feature table. TABLE 127 provides the schema for
      the utilities text primitive table (UTTEXT.TFT).

TABLE 125. Utilities integer value description table
(INT.VDT).

```
{Header length};\
Utilities Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	UTLINE.LFT	UTLNTYPE	1	Power transmission lines
2	UTLINE.LFT	UTLNTYPE	2	Telephone or telegraph lines
3	UTLINE.LFT	UTLNTYPE	3	Above-ground pipelines
4	UTLINE.LFT	UTLNTYPE	4	Underground pipelines
5	UTTEXT.LFT	LEVEL	1	Utility annotation
6	UTTEXT.TFT	SYMBOL	1	Black annotation

163

MIL-D-89009

APPENDIX

TABLE 126. <u>Utilities line feature table (UTLINE.LFT).</u>

```
{Header length};\
Utilities lines;UTLINE.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
UTLNTYPE=I,1,N,Type of Utility,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,UTLINE.LTI,:\
EDG_ID=  I,1,F Edge Primitive Foreign Key,-,-,:;
```

1	4	155	1
2	1	231	2
:	:	:	:
n	n	n	n

UTLNTYPE
The types of utilities are power transmission lines, telephone or
regional lines, above-ground pipelines, and underground pipelines.

			ONC Codes
1	=	Power transmission lines	903.1
2	=	Telephone or telegraph lines	903.2
3	=	Above-ground pipelines	904.1
4	=	Underground pipelines	904.2

TABLE 127. <u>Utilities text feature table (UTTEXT.TFT).</u>

```
{Header length};\
Utilities Text;-;\
ID=      I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of Text,INT.VDT,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=    T,*,F,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,INT.VDT,-,:\
TILE_ID=S,1,F,Tile Reference Identifier,-,UTTEXT.TTI,:\
TXT_ID= I,1,F,Text Primitive Foreign Key,-,-,:;
```

1	1	0.00931	Pipeline	1.27000	1	275	1
2	1	0.00931	Pipeline	1.27000	1	310	2
:	:	:	:	:	:	:	:
n	n	n	n	n	n	n	n

Notes
The text size is 1.52 mm (0.06 inch) for all utilities annotation.

Annotation is used for any description not covered by the codes or only
partially covered by ONC codes. An example of the latter is the term
"Oil Pipeline". Codes exist for pipelines but not for Oil Pipelines.
The term "Oil Pipeline" would be included in annotation.

164

MIL–D–89009

APPENDIX

30.3.17 <u>Vegetation coverage</u>

a. Vegetation coverage. This coverage contains vegetation data that were vectorized from Advanced Very High Resolution Radiometer (AVHRR) raster satellite imagery information, and are stored in an area feature table. The area feature table implements the TYPE attribute to describe the vegetation area information. The values for VGPYTYPE are based on Level II categories of the USGS Land Use and Land Cover Classification System (Anderson et.al., 1976). Attribute values are as described in the integer value description table (TABLE 128).

b. VGAREA.AFT attribute definitions. TABLE 129 describes the vegetation area feature table (VGAREA.AFT) attribution.

TABLE 128. <u>Vegetation integer value description table (INT.VDT)</u>.

```
{Header length};\
Vegetation Integer Value Description Table;-;\
ID=         I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	VGAREA.AFT	VGPYTYPE	31	Herbaceous Rangeland
2	VGAREA.AFT	VGPYTYPE	32	Shrub and Brush Rangeland
3	VGAREA.AFT	VGPYTYPE	33	Mixed Rangeland
4	VGAREA.AFT	VGPYTYPE	41	Deciduous Forest
5	VGAREA.AFT	VGPYTYPE	42	Coniferous Forest
6	VGAREA.AFT	VGPYTYPE	43	Mixed Forest
7	VGAREA.AFT	VGPYTYPE	83	Alpine Tundra

165

MIL-D-89009

APPENDIX

TABLE 129. <u>Vegetation area feature table (VGAREA.AFT).</u>

```
{Header length};\
Vegetation areas;VGAREA.DOC;\
ID=      I,1,P,Row Identifier,-,-,:\
VGPYTYPE=I,1,N,Vegetation type,INT.VDT,-,:\
TILE_ID= S,1,F,Tile Reference Identifier,-,VGAREA.ATI,:\
FAC_ID=  I,1,F,Face Primitive Foreign Key,-,-,:;
```

1	33	211	1
2	31	199	2
:	:	:	:
n	n	n	n

VGPYTYPE
The types of vegetation identified are in accordance with the Level II
categories of the USGS Land Use and Land Cover Classification System
(Anderson et.al., 1976).

31=   Herbaceous Rangeland
32=   Shrub and Brush Rangeland
33=   Mixed Rangeland
41=   Deciduous Forest Land
42=   Evergreen Forest Land
43=   Mixed Forest Land
83=   Bare Ground Tundra
99=   Other

Notes
The Vegetation coverage has been initially populated using a dataset
consisting of a 3138 row by 6764 column scene of classified AVHRR data
over North America at approximately one kilometer resolution.

166

MIL-D-89009

APPENDIX

30.3.18 Gazetteer coverage.

    a. Gazetteer coverage. This coverage contains information about the named features in the gazetteer.

    b. GAZETTE.PFT attribute definitions. TABLE 130 describes the gazetteer point feature table (GAZETTE.PFT) attribution.

TABLE 10. Gazetteer point feature table (GAZETTE.PFT).

```
{Header length};\
Library Gazetteer;-;\
ID=          I, 1,P,Row Identifier,-,-,:\
PLACE_NAME= T,50,N,Gazetteer Text,-,GAZETTE.PTI,:\
TYPE=        T,40,N,Database Layer Name,-,-,:;
```

1	Arctic Ocean	Ocean place name
2	Ostrov Rudolfa	Land place name
:	:	:
n	n	n

167

MIL–D–89009

APPENDIX

30.3.19   <u>Tile reference coverage</u>

a. Tile reference coverage. This coverage contains an area
   feature layer that identifies the tiles used to
   subdivide the library.

b. TILEREF.AFT attribute definitions. TABLE 131 describes
   the tile reference area feature table (TILEREF.AFT)
   attribution.

TABLE 131.   <u>Tile reference area feature table (TILEREF.AFT)</u>.

```
{Header length};\
Tile Reference Areas;-;\
ID=        I,1,P,Row Identifier,-,-,:\
TILE_NAME= T,6,N,Tile Name,-,-,:;
```

1	M\K\33
2	M\M\23
:	:
n	n

168

MIL-D-89009

APPENDIX

30.3.20 <u>Library reference coverage</u>.

   a. Library reference coverage. This coverage contains a
      generalized line map over the extent of the library for
      use in determining a reference position.

   b. LIBREF.LFT attribute definitions. TABLE 132 describes
      the library reference line feature table (LIBREF.LFT)
      attribution.

TABLE 132. <u>Library reference line feature table (LIBREF.LFT)</u>.

```
{Header length};\
Library Reference Lines;-;\
ID=I,1,P,Row Identifier,-,-,:;
```

```
                              1
                              2
                              :
                              n
```

169

MIL-D-89009

APPENDIX

30.4 <u>BROWSE library coverages</u>. The BROWSE map for the DCW database contains eight coverages. These coverages and the feature and primitive tables comprising the BROWSE library are listed in TABLE 133. A brief description is provided for each coverage. The coverage description is followed by value description tables. The feature tables within each coverage are ordered by area, line, and point when present. The value description tables define the attribute values for that coverage and the attribute description. The feature tables provide the field definition and field size required to store the attribute data.

TABLE 133. <u>BROWSE library feature and primitive tables by coverage</u>.

Theme number	Thematic layer	Coverage name	Feature table(s)	Primitive table(s)	Sections
1	ONC Compilation Date	CO	COAREA.AFT	FAC,RNG	30.4.1
2	Data Volume	DV	DVAREA.AFT	FAC,RNG	30.4.2
3	Drainage	DN	DNAREA.AFT DNLINE.LFT	FAC,RNG EDG	30.4.3
4	Geographic Regions	GR	GRAREA.AFT GRLINE.LFT GRTEXT.TFT	FAC,RNG EDG TXT	30.4.4
5	Hypsographic Data Availability	DA	DAAREA.AFT	FAC,RNG	30.4.5
6	ONC Index	IN	INAREA.AFT INTEXT.TFT	FAC,RNG TXT	30.4.6
7	Political/oceans	PO	POAREA.AFT POLINE.LFT POTEXT.TFT	FAC,RNG EDG TXT	30.4.7
8	Populated Places	PP	PPPOINT.PFT PPTEXT.TFT	END TXT	30.4.8

30.4.1 <u>Compilation date coverage</u>.

a. Coverage contents. This coverage contains a code representing the compilation dates of the ONC sheets. Attribute values are as described in the integer value description table (TABLE 134).

b. COAREA.AFT attribute definitions. TABLE 135 describes the attribution for the compilation date area feature table (COAREA.AFT).

MIL–D–89009

APPENDIX

TABLE 134.   Compilation date value description table
                (INT.VDT).

```
{Header length};\
Compilation Date Value Description Table;-;\
ID=         I,1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,N,Attribute Name,-,-,:\
VALUE=      I,1,N,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,;
```

1	COAREA.AFT	COPYTYPE	1	Compiled after 1980
2	COAREA.AFT	COPYTYPE	2	Compiled between 1970 and 1979
3	COAREA.AFT	COPYTYPE	3	Compile before 1970

TABLE 135.   Compilation date area feature table (COAREA.AFT).

```
{Header length};\
Compilation Date areas;-;\
ID=     I,1,P,Row Identifier,-,-,:\
COPYTYPE=I,1,N,Compilation date,INT.VDT,-,:;
```

1	2
2	2
:	:
n	n

COPYTYPE
1 = Compiled after 1980
2 = Compiled between 1970 and 1979
3 = Compiled before 1970

171

MIL-D-89009

APPENDIX

30.4.2 <u>Data volume coverage</u>.

    a. Coverage contents. The data volume coverage contains a code representing a compilation data volume. Attribute values are as described in the integer value description table (TABLE 136).

    b. DVAREA.AFT attribute definitions. TABLE 138 describes the attribution for the data volume feature table (DVAREA.AFT).

TABLE 136. <u>Data volume integer value description table (INT.VDT)</u>.

```
{Header length};\
Data Volume Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	DVAREA.AFT	DVPYTYPE	1	0-5 MB
2	DVAREA.AFT	DVPYTYPE	2	5-10 MB
3	DVAREA.AFT	DVPYTYPE	3	10-20 MB
4	DVAREA.AFT	DVPYTYPE	4	Over 20 MB
5	DVAREA.AFT	DVPYTYPE	9	Area not covered by source material

TABLE 137. <u>Data volume area feature table (DVAREA.AFT)</u>.

```
{Header length};\
Data Volume areas;-;\
ID=      I,1,P,Row Identifier,-,-,:\
DVPYTYPE=I,1,N,Data volume categories,INT.VDT,-,:;
```

1	4
2	3
:	:
n	n

DVPYTYPE

```
1  =  0-5 MB
2  =  5-10 MB
3  =  10-20 MB
4  =  Over 20 MB
9  =  Area not covered by source material
```

172

MIL-D-89009

APPENDIX

30.4.3 Drainage system coverage.

a. Coverage contents. This coverage contains generalized drainage system information. Attribute values are as described in the integer value description table (TABLE 138).

b. DNAREA.AFT attribute definitions. TABLE 139 describes the attribution for drainage system area feature table (DNAREA.AFT).

c. DNLINE.LFT attribute definitions. TABLE 140 describes the attribution for the drainage system line feature table (DNLINE.LFT).

TABLE 138. Drainage system integer value description table (INT.VDT).

```
{Header length};\
Drainage System Integer Value Description Table;-;\
ID=        I, 1,N,Row Identifier,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	DNAREA.AFT	DNPYTYPE	1	Inland Water - perennial
2	DNAREA.AFT	DNPYTYPE	2	Inland Water - non-perennial
3	DNLINE.LFT	DNLNTYPE	1	Streams, rivers, channelized rivers
4	DNLINE.LFT	DNLNTYPE	2	Inland shorelines

TABLE 139. Drainage system area feature table (DNAREA.AFT).

```
{Header length};\
Drainage System areas;-;\
ID=      I,1,P,Row Identifier,-,-,:\
DNPYTYPE=I,1,N,Type of Drainage Area,INT.VDT,-,:;
```

1	2
2	2
:	:
n	n

DNPYTYPE
1 = Inland water - perennial
2 = Inland water - non-perennial

173

MIL-D-89009

APPENDIX

TABLE 140. Drainage system line feature table (DNLINE.LFT).

```
{Header length};\
Drainage Systems lines;-;\
ID=      I,1,P,Row Identifier,-,-,:\
DNLNTYPE=I,1,N,Type of Drainage line,INT.VDT,-,:;
```

1	2
2	1
:	:
n	n

DNLNTYPE
1 = Streams, rivers, channelized rivers
2 = Inland shorelines

MIL-D-89009

APPENDIX

30.4.4 <u>Geographic regions coverage</u>.

a. Coverage contents. This coverage contains the regional
    organization of the four DCW "detailed dataset"
    libraries. Attribute values are as described in the
    character and integer value description tables
    (TABLES 141 and 142).

b. GRAREA.AFT attribute definitions. TABLE 143 describes
    the attribution for the geographic regions area feature
    table (GRAREA.AFT).

c. GRLINE.LFT attribute definitions. TABLE 144 describes
    the attribution for the geographic regions line feature
    table (GRLINE.LFT).

d. GRTEXT.TFT attribute definitions. TABLE 145 describes
    the attribution for the geographic regions text feature
    table (GRTEXT.TFT).

175

MIL-D-89009

APPENDIX

TABLE 141. Geographic regions character value description
table (CHAR.VDT).

```
{Header length};\
Geographic Regions Character Value Description Table;-;\
ID=         I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      T, 3,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

ID	TABLE	ATTRIBUTE	VALUE	DESCRIPTION
1	GRAREA.AFT	GRPYDSK1	Y	Area is present on Disc 1 - North America
2	GRAREA.AFT	GRPYDSK1	N	Area is not present on Disc 1 - North America
3	GRAREA.AFT	GRPYDSK2	Y	Area is present on Disc 2 - Europe and North Asia
4	GRAREA.AFT	GRPYDSK2	N	Area is not present on Disc 2 - Europe and North Asia
5	GRAREA.AFT	GRPYDSK3	Y	Area is present on Disc 3 - South America and Africa
6	GRAREA.AFT	GRPYDSK3	N	Area is not present on Disc 3 - South America and Africa
7	GRAREA.AFT	GRPYDSK4	Y	Area is present on Disc 4 - South Asia and Australia
8	GRAREA.AFT	GRPYDSK4	N	Area is not present on Disc 4 - South Asia and Australia
9	GRLINE.LFT	GRLNDSK1	Y	Area is present on Disc 1 - North America
10	GRLINE.LFT	GRLNDSK1	N	Area is not present on Disc 1 - North America
11	GRLINE.LFT	GRLNDSK2	Y	Area is present on Disc 2 - Europe and North Asia
12	GRLINE.LFT	GRLNDSK2	N	Area is not present on Disc 2 - Europe and North Asia
13	GRLINE.LFT	GRLNDSK3	Y	Area is present on Disc 3 - South America and Africa
14	GRLINE.LFT	GRLNDSK3	N	Area is not present on Disc 3 - South America and Africa
15	GRLINE.LFT	GRLNDSK4	Y	Area is present on Disc 4 - South Asia and Australia
16	GRLINE.LFT	GRLNDSK4	N	Area is not present on Disc 4 - South Asia and Australia

176

MIL-D-89009

APPENDIX

TABLE 142. Geographic regions integer value description
table (INT.VDT).

```
{Header length};\
Geographic Regions Integer Value Description Table;-;\
ID=         I, 1,N,Row ID,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

| 1 | GRTEXT.TFT | LEVEL | 1 | Geographic Region annotation |
| 2 | GRTEXT.TFT | SYMBOL | 1 | Black annotation |

TABLE 143. Geographic regions area feature table
(GRAREA.AFT).

```
{Header length};\
Geographic Regions areas;-;\
ID=      I,1,P,Row Identifier,-,-,:\
GRPYDSK1=T,1,N,Geographic Region 1,CHAR.VDT,-,:\
GRPYDSK2=T,1,N,Geographic Region 2,CHAR.VDT,-,:\
GRPYDSK3=T,1,N,Geographic Region 3,CHAR.VDT,-,:\
GRPYDSK4=T,1,N,Geographic Region 4,CHAR.VDT,-,:;
```

1	Y	N	N	Y
2	Y	N	N	N
:	:	:	:	:
n	n	n	n	n

GRPYDSK1
GRPYDSK2
GRPYDSK3
GRPYDSK4
Each of these attributes contains a character value of either Y for yes
or N for no to indicate whether or not an area is contained within that
geographic region.

177

MIL-D-89009

APPENDIX

TABLE 144. <u>Geographic regions line feature table</u>
<u>(GRLINE.LFT)</u>.

```
{Header length};\
Geographic Region lines;-;\
ID=      I,1,P,Row Identifier,-,-,:\
GRLNDSK1=T,1,N,Geographic Region 1,CHAR.VDT,-,:\
GRLNDSK2=T,1,N,Geographic Region 2,CHAR.VDT,-,:\
GRLNDSK3=T,1,N,Geographic Region 3,CHAR.VDT,-,:\
GRLNDSK4=T,1,N,Geographic Region 4,CHAR.VDT,-,:;
```

1	Y	N	N	Y
2	Y	N	N	N
:	:	:	:	:
n	n	n	n	n

GRLNDSK1
GRLNDSK2
GRLNDSK3
GRLNDSK4
Each of these attributes contains a character value of either Y for yes
or N for no to indicate whether or not a line is contained within that
geographic region.

TABLE 145. <u>Geographic regions text feature table</u>

```
{Header length};\
 Geographic Regions Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of text,-,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,F,Text String,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,-,-,:;
```

1	1	0.01342	Disc 4	1.27000	1
2	1	0.01342	Disc 3	1.27000	1
:	:	:	:	:	:
n	n	n	n	n	n

178

MIL-D-89009

APPENDIX

30.4.5 Hypsographic data availability coverage.

   a. Coverage contents. The hypsographic data availability coverage contains codes representing whether hypsographic data are available. Attribute values are as described in the integer value description table (TABLE 146).

   b. Attribute definitions. TABLE 147 describes the attribution for the hypsographic data availability area feature table (DAAREA.AFT).

TABLE 146. Hypsographic data availability integer value description table (INT.VDT).

```
{Header length};\
Hypsographic Data availability Integer Value Description Table;-;\
ID=        I, 1,N,Row ID,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	DAAREA.AFT	DAPYTYPE	1	Hypsographic data are available
2	DAAREA.AFT	DAPYTYPE	2	Hypsographic data are partially available
3	DAAREA.AFT	DAPYTYPE	3	Hypsographic data are not available
4	DAAREA.AFT	DAPYTYPE	9	Area not covered by source material

TABLE 147. Hypsographic data availability area feature table (DAAREA.AFT).

```
{Header length};\
Hypsographic data availability;-;\
ID=      I,1,P,Row Identifier,-,-,:\
DAPYTYPE=I,1,N,Hypsographic data availability,INT.VDT,-,:;
```

1	1
2	1
:	:
n	n

DAPYTYPE
1 = Hypsographic data are available
2 = Hypsographic data are partially available
3 = Hypsographic data are not available

MIL-D-89009

APPENDIX

30.4.6 <u>ONC index coverage</u>.

a. Coverage contents. The ONC index coverage contains the number of each ONC sheet.

b. INAREA.AFT attribute definitions. TABLE 148 describes the attribution for the ONC index area feature table (INAREA.AFT).

c. Text feature table. TABLE 149 provides the schema for the ONC index text primitive table (INTEXT.TFT).

TABLE 148. <u>ONC index area feature table (INAREA.AFT)</u>.

```
{Header length};\
ONC index;-;\
ID=     I,1,P,Row Identifier,-,-,:\
INPYSID=T,6,N,ONC sheet identifier,-,-,:;
```

1	G18
2	E18
:	:
n	n

INPYSID
Contains the one-letter plus one or two-number code representing an ONC sheet (e.g., G18 or E18) or a three-digit numeric code representing the JNC sheets for Antarctica.

TABLE 149. <u>ONC index text feature table (INTEXT.TFT)</u>.

```
{Header length};\
ONC index Text;-;\
ID=     I,1,P,Row Identifier,-,-,:\
LEVEL=  I,1,N,Type of text,-,-,:\
HEIGHT= F,1,N,Height of text,-,-,:\
TEXT=   T,*,F,Text String,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL= I,1,N,Text symbol,-,-,:;
```

1	1	0.01342	G18	1.27000	1
2	1	0.01342	E18	1.27000	1
:	:	:	:	:	:
n	n	n	n	n	n

Notes
All annotation is the same size of 1.52 mm (0.06 inch).

180

MIL-D-89009

APPENDIX

30.4.7 <u>Political/oceans coverage</u>.

   a. Coverage contents. This coverage contains political and
      oceanic naming information stored in area, and line
      feature tables. Attribute values are as described in
      the integer value description table (TABLE 150).

   b. POAREA.AFT attribute definitions. TABLE 151 describes
      the attribution for the political/oceans area feature
      table (POAREA.AFT).

   c. POLINE.LFT attribute definitions. TABLE 152 describes
      the attribution for the political/oceans line feature
      table (POLINE.LFT).

   d. Text feature table. TABLE 153 provides the schema for
      the political/oceans text primitive table (POTEXT.TFT).

TABLE 150. <u>Political/oceans integer value description table</u>
<u>(INT.VDT)</u>.

```
{Header length};\
Political/oceans Integer Value Description Table;-;\
ID=        I, 1,N,Row ID,-,-,:\
TABLE=     T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE= T,16,P,Attribute Name,-,-,:\
VALUE=     I, 1,P,Attribute Value,-,-,:\
DESCRIPTION=T,50,N,Attribute Value Description,-,-,:;
```

1	POAREA.AFT	POPYTYPE	1	Land
2	POAREA.AFT	POPYTYPE	2	Ocean
3	POLINE.LFT	POLNTYPE	1	International boundary
4	POLINE.LFT	POLNTYPE	2	Coastline
5	POTEXT.TFT	LEVEL	1	Land place names
6	POTEXT.TFT	LEVEL	2	Ocean place names
7	POTEXT.TFT	LEVEL	3	Ice Status
8	POTEXT.TFT	LEVEL	4	Land place names (diacritical)
9	POTEXT.TFT	LEVEL	5	Ocean place names (diacritical)
10	POTEXT.TFT	LEVEL	6	Mountain names
11	POTEXT.TFT	LEVEL	7	Mountain names (diacritical)
12	POTEXT.TFT	LEVEL	8	Island names
13	POTEXT.TFT	LEVEL	9	Island names (diacritical)
14	POTEXT.TFT	LEVEL	10	Desert names
15	POTEXT.TFT	LEVEL	11	Desert names (diacritical)
16	POTEXT.TFT	SYMBOL	1	Black annotation
17	POTEXT.TFT	SYMBOL	4	Blue annotation

MIL–D–89009

APPENDIX

TABLE 151. <u>Political/oceans area feature table (POAREA.AFT).</u>

```
{Header length};\
Political/oceans areas;-;\
ID=      I,1,P,Row Identifier,-,-,:\
POPYTYPE=I,1,N,Land or water feature type,INT.VDT,-,:;
```

1	2
2	1
:	:
n	n

POPYTYPE
1 = Land
2 = Ocean

TABLE 152. <u>Political/oceans line feature table (POLINE.LFT).</u>

```
{Header length};\
Political/oceans lines;-;\
ID=      I,1,P,Row Identifier,-,-,:\
POLNTYPE=I,1,N,Boundary or coastline type,INT.VDT,-,:;
```

1	1
2	1
:	:
n	n

POLNTYPE
1 = International boundary
2 = Coastline

182

MIL-D-89009

APPENDIX

TABLE 153. Political/oceans text feature table (POTEXT.TFT).

```
{Header length};\
Political/Oceans Text;-;\
ID=I,1,P,Row Identifier,-,-,:\
LEVEL=I,1,N,Type of Text,-,INT.VDT,:\
HEIGHT=F,1,N,Height of text,-,-,:\
TEXT=T,*,F,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL=I,1,N,Text symbol,-,INT.VDT,:;
```

1	1	0.01342	Atlantic	1.2700	1
2	1	0.01342	Pacific	1.2700	1
:	:	:	:	:	:
n	n	n	n	n	n

Notes
There are 8 annotation sizes for land place names:

        1.78 mm (0.07 inch)
        2.03 mm (0.08 inch)
        2.29 mm (0.09 inch)
        2.54 mm (0.10 inch)
        3.05 mm (0.12 inch)
        5.08 mm (0.20 inch)
        5.84 mm (0.23 inch)
        7.62 mm (0.30 inch)

Ocean place names have two possible text sizes:

        3.81 mm (0.15 inch)
        7.62 mm (0.30 inch)

MIL-D-89009

APPENDIX

30.4.8 Populated places coverage.

   a. Coverage contents. This coverage contains the name of a populated place stored in a point feature table. Attribute values are as described in the integer value description table (TABLE 154).

   b. Attribute definitions. TABLE 155 describes the attribution for the populated places point feature table (PPPOINT.PFT).

   c. Text feature table. TABLE 156 provides the schema for the populated places text primitive table (PPTEXT.TFT).

TABLE 154. Populated places integer value description table (INT.VDT).

```
{Header length};\
Populated places Integer Value Description Table;-;\
ID=         I, 1,N,Row Identifier,-,-,:\
TABLE=      T,12,P,Name of Feature Table,-,-,:\
ATTRIBUTE=  T,16,P,Attribute Name,-,-,:\
VALUE=      I, 1,P,Attribute Value,-,-,:\
DESCRIPTION= T,50,N,Attribute Value Description,-,-,:;
```

1	PPPOINT.PFT	PPPTTYPE	1	Populated Place (no subcategories)
2	PPTEXT.TFT	LEVEL	1	Regular characters, small size
3	PPTEXT.TFT	SYMBOL	1	Black annotation

TABLE 155. Populated places point feature table (PPPOINT.PFT).

```
{Header length};\
Populated places;-;\
ID=      I, 1,P,Row Identifier,-,-,:\
PPPTTYPE=I, 1,N,Populated Place type,INT.VDT,-,:\
PPPTNAME=T,40,N,Populated Place name,-,-,:;
```

1	1	London
2	1	Hong Kong
:	:	:
n	n	n

TYPE
1 = Populated place

NAME
This attribute contains a 40-character field containing the name of the populated place.

184

MIL-D-89009

APPENDIX

TABLE 156. Populated places text feature table (PPTEXT.TFT).

```
{Header length};\
Populated places Text;-;\
ID=I,1,P,Row Identifier,-,-,:\
LEVEL=I,1,N,Type of Text,-,INT.VDT,:\
HEIGHT=F,1,N,Height of text,-,-,:\
TEXT=T,*,F,Text String,-,-,:\
TEXTGAP=F,1,N,Gap between Text Strings,-,-,:\
SYMBOL=I,1,N,Text symbol,-,INT.VDT,:;
```

1	1	0.01342	New York	1.2700	1
2	1	0.01342	Toronto	1.2700	1
:	:	:	:	:	:
n	n	n	n	n	n

APPENDIX

40. DATA QUALITY

The DCW database contains Data Quality (DQ) information at a variety of levels, including: (1) library, (2) coverage, (3) feature, and (4) primitive. In general, the information is organized around concepts of spatial and thematic extent. Consistent with the VPF standard, the available information becomes increasingly more detailed at lower levels in the library structure. All DCW data quality information can be viewed through the VPFVIEW software with the exception of the data quality coverage Relate Attribute Tables (RATs), which can be viewed using the VPFTBL command from the DOS operating system.

40.1 Data quality table. The most general source of data quality information within the DCW database is the VPF data quality table (TABLE 9) resident at the library level. This standard VPF table is present in all DCW libraries. The table documents source data characteristics, date status, and general data accuracy. The DCW database also includes a narrative file associated with the data quality table called "LINEAGE.DOC". This table contains data lineage information common to all DCW coverages, including automation histories and standard processing tolerances.

40.2 Data quality coverage. Data quality information that varies spatially across the library is described by the data quality coverage. The data quality coverage consists of the effective data area borders of each ONC from which the data were extracted. The data quality coverage allows the user, through visual display, to determine which DCW data were extracted from which chart. Implicit within this information is any date status information, sheet specific positional accuracy characteristics, and chart marginalia that may be available. Existing source marginalia is commonly augmented with additional comments based on observations made during the automation process. All of this information is stored in data quality area feature tables and in DQAREA relate attribute tables. Attributes of borders between sheets are maintained in data quality line feature tables and DQLINE relate attribute tables. Border attributes maintain information on edgematch characteristics between adjacent coverages. There exists a one-to-many relationship between both types of coverage feature tables and their respective RATs. Finally, text features are used to document regional phenomena of interest to the database user. These are typically comments describing localized problems, such as irreconcilable registration offsets between data types.

APPENDIX

40.3 <u>Feature table narrative files</u>. While the DQ coverage
describes problems varying spatially across the database, feature
table narrative files describe issues specific to entire feature
classes within coverages. All DCW coverage feature tables have
narrative files associated with them. These are readily
identifiable through their naming conventions, which include the
coverage name combined with the feature class to form the file
prefix, and a ".doc" suffix (e.g., the narrative file associated
with drainage lines is called "DNLINE.DOC"). Feature table
narrative files are divided into four sections: (1) general
information, (2) special automation techniques, (3) feature
coincidence, and (4) database design issues. The first section
contains general comments about a given feature type relating to
its fitness for use. The second section provides information on
any special processing techniques or tools that were used when
constructing the data. The third section, feature coincidence,
describes the positional relationships between feature types both
within the same coverage and with those contained in other
coverages. The fourth section, database design issues, relates
primarily to decision rules employed when translating hardcopy
features into digital ones.

40.4 <u>Feature table attributes</u>. The most detailed source of
DQ information within the DCW database is found on the primitive
attribute level. Most DCW coverages contain a "STAT" field in
their primitive feature tables that serves as a modifier to a
standard "TYPE" field. Many of the STAT fields include values for
expressing data reliability (e.g., "approximate alignment" in the
roads coverage), although most features do not have a specific
reliability code associated with them. The existence of "no data"
areas (e.g. hypsography information is absent or incomplete in
some areas) is defined primarily through TYPE fields.

40.5 <u>Using DCW data quality</u> <u>information</u>. Users of the DCW
will interact with the data quality information in a variety of
ways. The data quality tables, their lineage.doc files, and the
feature table narrative files are designed for interactive use
with VPFVIEW. Although they may be reviewed through the software,
their main purpose is to provide the serious database user with
in-depth information on database history and detailed database
characteristics. The data quality coverage is more useful to the
interactive user in that it provides a graphic framework
consistent with the other data types. A DCW user in VPFVIEW can
interactively display and query the data quality coverage to
better understand the characteristics of the database within any
defined region. Finally, the user can readily identify and
display explicitly stored unreliable data elements or "no data"

MIL-D-89009

APPENDIX

areas on the feature primitive level in any manner desired through the interactive use of the software.

MIL-D-89009

APPENDIX

50. DCW TREE STRUCTURE

The DCW tree structure is presented in FIGURE 7.

MIL-D-89009

APPENDIX

FIGURE 7A.   Tree structure for BROWSE library.

MIL-D-89009

APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

FIGURE 7B.   <u>Tree structure for DCW library</u>.

MIL-D-89009

APPENDIX

MIL-D-89009

APPENDIX

FIGURE 7B. <u>Tree structure for DCW library</u> - Continued.

MIL-D-89009

APPENDIX

60. GEOREF TILING SYSTEM

     The GEOREF tiling system is presented in FIGURE 8. The first
15° by 15° division of GEOREF is used for the DCW. The next
division (into 5° by 5° tiles) is presented in FIGURE 3.

MIL-D-89009

APPENDIX

FIGURE 8.   GEOREF system of 15° quadrangle identification letters.

MIL-D-89009

APPENDIX

70. DCW-TO-FACC/FACS CODE CONVERSION TABLES

        The following tables provide a cross-reference between the
DCW product specific DCW TYPE and STATUS codes and FACC
(Feature/Attribute Coding Catalog) and FACS (Feature/Attribute
Coding System) codes. The column headings are defined as follows:

        Type = DCW Feature attribute TYPE code
        Status = DCW Feature attribute STATUS code
        ONC/JNC Feat = ONC/JNC Feature Name
        ONC/JNC Description = ONC/JNC Feature description/status
        FACSFeat1 = First FACS feature code translation
        FACSAtr1 = First FACS attribute code translation
        FACSFeat2 = Second FACS feature code translation
        FACSAtr2 = Second FACS attribute code translation
        FACCFeat1 = First FACC feature code translation
        FACCAtr1 = First FACC attribute code translation
        FACCFeat2 = Second FACC feature code translation
        FACCAtr2 = Second FACC attribute code translation

197

MIL-D-89009

APPENDIX

198

MIL-D-89009

APPENDIX

MIL-D-89009

199

MIL-D-89009

APPENDIX

200

MIL-D-89009

APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

204

MIL-D-89009

APPENDIX

MIL-D-89009

APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

MIL-D-89009

APPENDIX

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APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

MIL-D-89009

MIL-D-89009

APPENDIX

MIL-D-89009

INDEX

MIL-D-89009

INDEX

MIL-D-89009

INDEX

MIL-D-89009

INDEX

MIL-D-89009

INDEX

218

MIL-D-89009

INDEX

219

MIL-D-89009

INDEX