METRIC

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PERFORMANCE SPECIFICATION

VECTOR PRODUCT FORMAT (VPF) PRODUCTS,
GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification defines the format for all National Geospatial-Intelligence Agency (NGA) products based on a standardized implementation of the Vector Product Format (VPF).   Feature and attribute requirements, and other information for individual products are contained in the applicable specification sheets (see 2.2.1). Additional specification sheets may be added in the future.

1.2 Purpose. This specification provides a description of the content, accuracy, data format, and design of all vector format products. Conformance to this specification will assure uniformity of treatment among all production elements engaged in a coordinated production and maintenance program for these products.

1.3 Classification. NGA Vector data can be classified as either a standard product, or as a mission-specific data set. Standard products, as listed in Section 3.1, are pre-defined VPF formatted data sets, designed to support one or multiple specific intended uses. Mission-specific data sets are not pre-defined, but are requested by the user, and tailored to meet that user's specific geospatial information requirements.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification whether or not they are listed.

2.2 Government documents

Comments, suggestions or questions on this document should be addressed to the National Geospatial-Intelligence Agency, National Center for Geospatial Intelligence Standards (NCGIS), Mail Stop P-106, 12310 Sunrise Valley Drive, Reston, VA 20191-3449, or emailed to ncgis-mail@nga.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at http://assist.daps.dla.mil/.

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2.2.1 <u>Specifications, standards, and handbooks.</u> 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 cited in the solicitation or contract.

INTERNATIONAL STANDARDIZATION AGREEMENTS

STANAG 2211	Geodetic Datums, Spheroids, Grids, and Cell References
STANAG 7074	Digital Geographic Information Exchange Standard (DIGEST)

FEDERAL INFORMATION PROCESSING STANDARDS

FIPS 10-4	Countries, Dependencies, Areas of Special Sovereignty, and Their Principal Administrative Divisions

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-600001	Mapping, Charting & Geodesy Accuracy Standard
MIL-STD-2407	Vector Product Format, 28 June 1996 Change Notice 1, 22 October 1999
MIL-STD-2414	Bar Coding for Geospatial Products

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-89049/9	Performance Specification Sheet, Vector Vertical Obstruction Data (VVOD)
MIL-PRF-89049/10	Performance Specification Sheet, Tactical Ocean Data Level 0 (TOD0)
MIL-PRF-89049/11	Performance Specification Sheet, Tactical Ocean Data Level 1 (TOD1)
MIL-PRF-89049/12	Performance Specification Sheet, Tactical Ocean Data Level 2 (TOD2)
MIL-PRF-89049/13	Performance Specification Sheet, Tactical Ocean Data Level 3 (TOD3)
MIL-PRF-89049/14	Performance Specification Sheet, Tactical Ocean Data Level 4 (TOD4)

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-9660	DOD Produced CD-ROM Products

(Copies of these documents are available online at
http://assist.daps.dla.mil/quicksearch/ or from the Standardization Document
Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 <u>Other Government documents, drawings, and publications</u>. The
following other Government documents, drawings, and publications form a part
of this document to the extent specified herein. Unless otherwise specified,
the issues of these documents are those cited in the solicitation or contract.

          DMA Technical Manual
          (DMA TM) 8358.1   Datums, Ellipsoids, Grids, and
                                           Grid Reference Systems

          NIMA Technical Report
          (NIMATR) 8350.2 WGS84   Department of Defense World
                                           Geodetic System

(Copies of these publications are available from the National Geospatial-
Intelligence Agency, Geospatial Sciences Division at http://earth-
info.nima.mil/GandG/pubs.html)

          Digital Information Geographic Exchange Standard (DIGEST) Part 4,
          Feature and Attribute Coding Catalogue (FACC)

(Copies of this publication are available at http://www.digest.org/)

          National Imagery and Mapping Agency (NIMA) Profile of the DIGEST
          Feature and Attribute Coding Catalogue (FACC)

(Copies of this publication are available from the National Geospatial-
Intelligence Agency, National Center for Geospatial Intelligence Standards
(NCGIS), Mail Stop P-106, 12310 Sunrise Valley Drive, Reston, VA 20191-3449.)

     2.3   Non-Government publications. The following documents form a
part of this document to the extent specified herein. Unless otherwise
specified, the issues of these documents are those cited in the solicitation
or contract.

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

(Copies of this publication are available from the International Organization
for Standardization (ISO) at http://www.iso.org/iso/en/prods-
services/ISOstore/store.html.)

     IEEE 754-1985. IEEE Standard for Binary Floating Point Arithemetic

(Copies of this publication are available from the American National Standards
Institute (ANSI) at http://webstore.ansi.org/ansidocstore)

(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.)

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

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3.   REQUIREMENTS

3.1   Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet (See 2.2.1). In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern. The following is a list of published or projected specification sheets that will be covered by this general specification.

    MIL-PRF-89049/9A   Vector Vertical Obstruction Data (VVOD)
    MIL-PRF-89049/10A Tactical Ocean Data Level 0 (TOD0)
    MIL-PRF-89049/11A Tactical Ocean Data Level 1 (TOD1)
    MIL-PRF-89049/12A Tactical Ocean Data Level 2 (TOD2)
    MIL-PRF-89049/13   Tactical Ocean Data Level 3 (TOD3)
    MIL-PRF-89049/14A Tactical Ocean Data Level 4 (TOD4)

3.2   First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.2.

3.3   Accuracy. Accuracy requirements for each individual VPF based product are defined in the specification sheet for that product. Individual source accuracies are located in the Data Quality coverage for each specific product. The least accurate source value for any particular source used within a VPF product library is identified in the library's Data Quality Table.

3.4 Datum.

3.4.1 Horizontal datum. The horizontal datum for VPF based products shall be WGS84 as identified in NIMA TR 8350.2.

3.4.2 Vertical datum. The vertical datum for each VPF based product is defined in the specification sheet for that product.

3.5. Data density. See specification sheets for data density information.

3.6 Database source and extent. The geographic extent of specific VPF based products is defined in the product specific specification sheet.

3.7 Continuity. All VPF data are subject to the inclusion conditions specified in the product specific specification sheet.

3.7.1 Continuity between coverages. Thematic coverages shall be constructed in such a manner as to provide a logical positioning of features in the world (i.e. contours shall not overlap into oceans, roads shall not overlap into water, etc.).

3.7.2 Continuity between libraries. VPF based product databases are divided into libraries. VPF topology is defined within individual coverages of each library, not between libraries. Product requirements for feature match between libraries are defined in the specification sheets.

3.8 Thematic layer organization. VPF products are organized into thematic layers. Each thematic layer is stored as a single coverage within a VPF library. Specific coverages for each product are defined in the specification sheet for each VPF product.

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3.8.1 <u>Reference libraries</u>. Coverages common to all reference libraries are the Library Reference (libref), Database Reference (dbref), Political Entities (polbnd), and Place Names (placenam).

3.9 <u>Dimensions</u>.

3.9.1 <u>Unit of measure</u>. The unit of measure for products covered by this specification is metric. However, some attributes in the NIMA Profile of FACC (see 3.10) are defined in other units of measure (for example, feet, nautical miles).

3.9.2 <u>Minimum sizes</u>. The minimum sizes for extraction are product specific and are found in the specification sheets. They are identified by the use of minimum portrayal criteria and/or attribute definition.

3.10 <u>Feature and attribute coding scheme</u>. NGA implements the NIMA Profile of FACC for its VPF-based products. See APPENDIX F for information regarding this profile. Refer to the specification sheets for a listing of feature codes and attributes used for specific product thematic layers.

3.10.1 <u>Null, unknown, unpopulated, not applicable, and other values</u>. In certain circumstances, it may not be possible, or relevant to populate a particular data value. A general scheme for coding these values is shown in Table 1. Although coded attributes are stored in VPF as short integers, they use the coded attribute default values, rather than the short integer default values. Coded character values and coded integer values are listed in the proper value description tables.

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TABLE 1. Standardized coded values.

Attribute Type	Null/No Value	Unknown	Unpopulated	Not Applicable	Other
Text					
Fixed Length	N/A[1]	UNK	N_P	N_A	OTH
Variable Length	0 Length	UNK	N_P	N_A	OTH
Coded	-32768^{2}	0	997	998	999
Integer					
Short	-32768^{2}	-32767	-32766	-32765	-32764
Long	-2147483648^{3}	-2147483647	-2147483646	-2147483645	-2147483644
Floating Point					
Single Precision	NaN	-32767.0	-32766.0	-32765.0	-32764.0
Double Precision	NaN	-2147483647.0	-2147483646.0	-2147483645.0	-2147483644.0

NOTES:

1. If the length for fixed length text is one or two, "-" or "--" should be used.

2. The Null value for a short integer is defined to be the bit pattern 10000000 00000000, which is equivalent to the maximum negative number in "two's complement number format." Therefore for a 16-bit length number, the corresponding value for Null is -32768.

3. The Null value for a long integer is defined to be the bit pattern 10000000 00000000 0000000 0000000, which is equivalent to the maximum negative number in "two's complement number format." Therefore for a 32-bit length number, the corresponding value for Null is -2147483648.

3.10.1.1   Null value condition. Some feature classes may have attribute columns present in the feature table that are defined for some features, but not others. In this case a null value is entered for those attribute values when they do not apply to the feature code. Null is defined per data type in MIL-STD-2407 table 62. For VPF derived from a source that does not support vertical elevation, vertical (elevation) values shall be populated with the VPF null (NaN)/no value (NaN) in the primitive tables.

3.10.1.2   Unknown value condition. During data capture, it may not be possible to determine the value of an attribute using the inclusion conditions or collateral data sources. When FACC provides an attribute value to support the "unknown" condition, it must be used. In cases where the "0" value is already used to represent a valid number, an alternative value is used to represent the unknown condition. These values are defined in the appropriate value description tables (vdt) within the specification sheets.

3.10.1.3 Unpopulated condition. Some VPF products contain "value added" data, which NGA will not collect, but a user of the data may wish to populate later. Space for this value added information has been defined in the respective product table structure, but NGA produced data will collect

this data as "unpopulated", with the data fields filled in as indicated in table 1. When used, these values are defined in the appropriate value description tables (vdt) within the specification sheets.

      3.10.1.4 <u>Not applicable condition</u>. In some cases an attribute contains a value for a "Not applicable" condition. This does not have the same meaning as "Unknown". For example, the FACC Building feature, AL015, may contain the attribute House of Worship Type (hwt). If the building has a Building Function Category (bfc) attribute value that is not equal to House of Worship (i.e., 7), then the hwt attribute value 998 is entered for the feature indicating the "Not Applicable" condition. This condition is not the same as having an unknown house of worship type. These values are defined in the appropriate value description tables (vdt) within the specification sheets.

      3.10.1.5 <u>Other value condition</u>. FACC also supports the use of an attribute value which signifies an "other" condition. An attribute of a feature may be identifiable (not qualifying for "unknown") but may not be supported by values available for the particular product. When FACC provides an attribute value to support the "other" condition, it must be used. In cases where the "999" value is already used to represent a valid number, an alternative value is used to represent the unknown condition. These values are defined in the appropriate value description tables (vdt) within the specification sheets.

      3.11 <u>Coordinate system</u>. VPF data shall be stored in decimal degrees, using either single-precision or double-precision floating point coordinates. The type of coordinate used in any particular product and the precision to which that coordinate is stored are defined in the specification sheets. Coordinates with southern and western hemispheres have a negative sign for latitude and longitude, respectively.

      3.12 <u>Data format</u>. The products defined by this specification shall be produced in Vector Product Format (VPF), which provides a standard format for storing digital vector geographic data. Refer to MIL-STD-2407 for descriptions of VPF format and structure. This general specification defines the format of VPF files that are common to all VPF-based products covered by this general specification. The specification sheets provide additional product specific implementation guidance for each product. Products generated using this general specification and the specification sheets shall adhere to the order of the columns in each VPF table as defined in this general specification and the specification sheet.

      3.13 <u>Database description</u>. All VPF based products are designed as a series of databases, libraries and coverages as defined in MIL-STD-2407 Section 5.2.2. In addition to data libraries, each product also implements a Reference Library which is included on each CD-ROM. The Reference Library contains generalized data coverages to orient the user to the database. The VPF structure levels and a generalized product implementation are depicted in figure 1. Multiple libraries may exist on one CD-ROM. Each library shall be fully contained on a single disc. Should a library exceed the maximum capacity of a CD-ROM the library shall be split into two separate libraries and may be packaged as a two CD set.
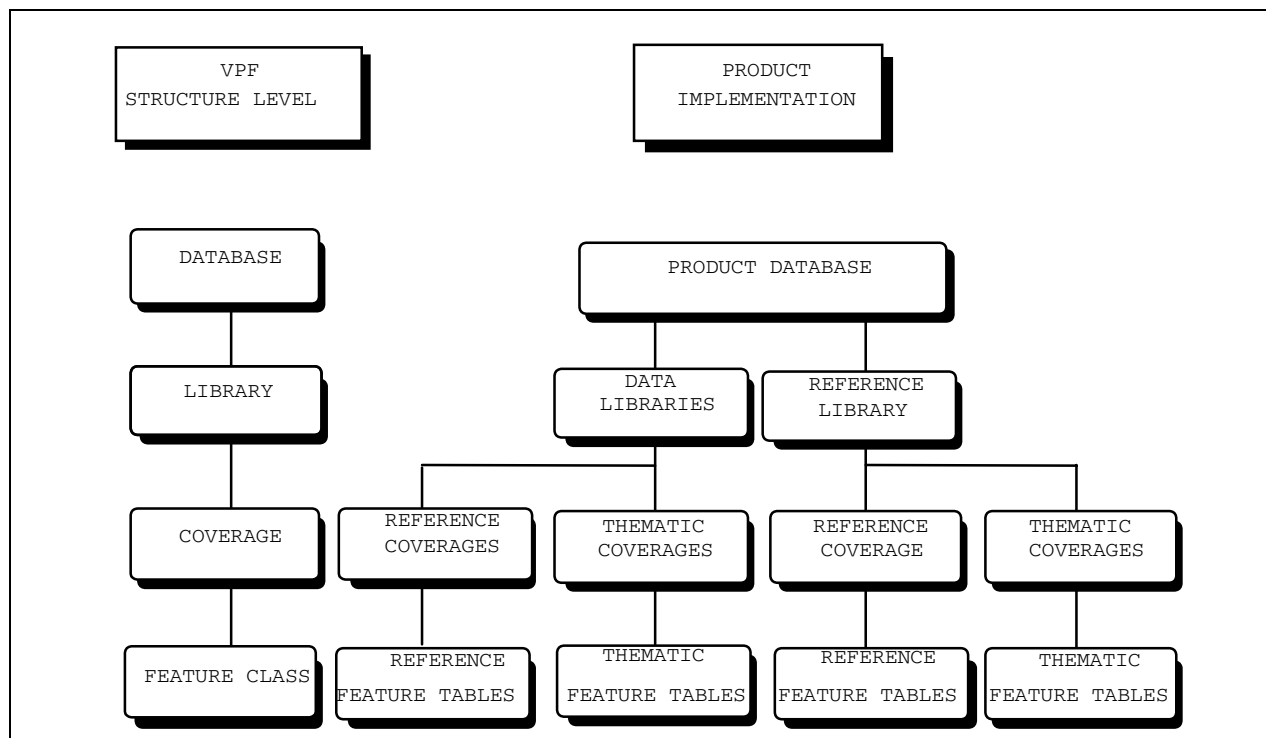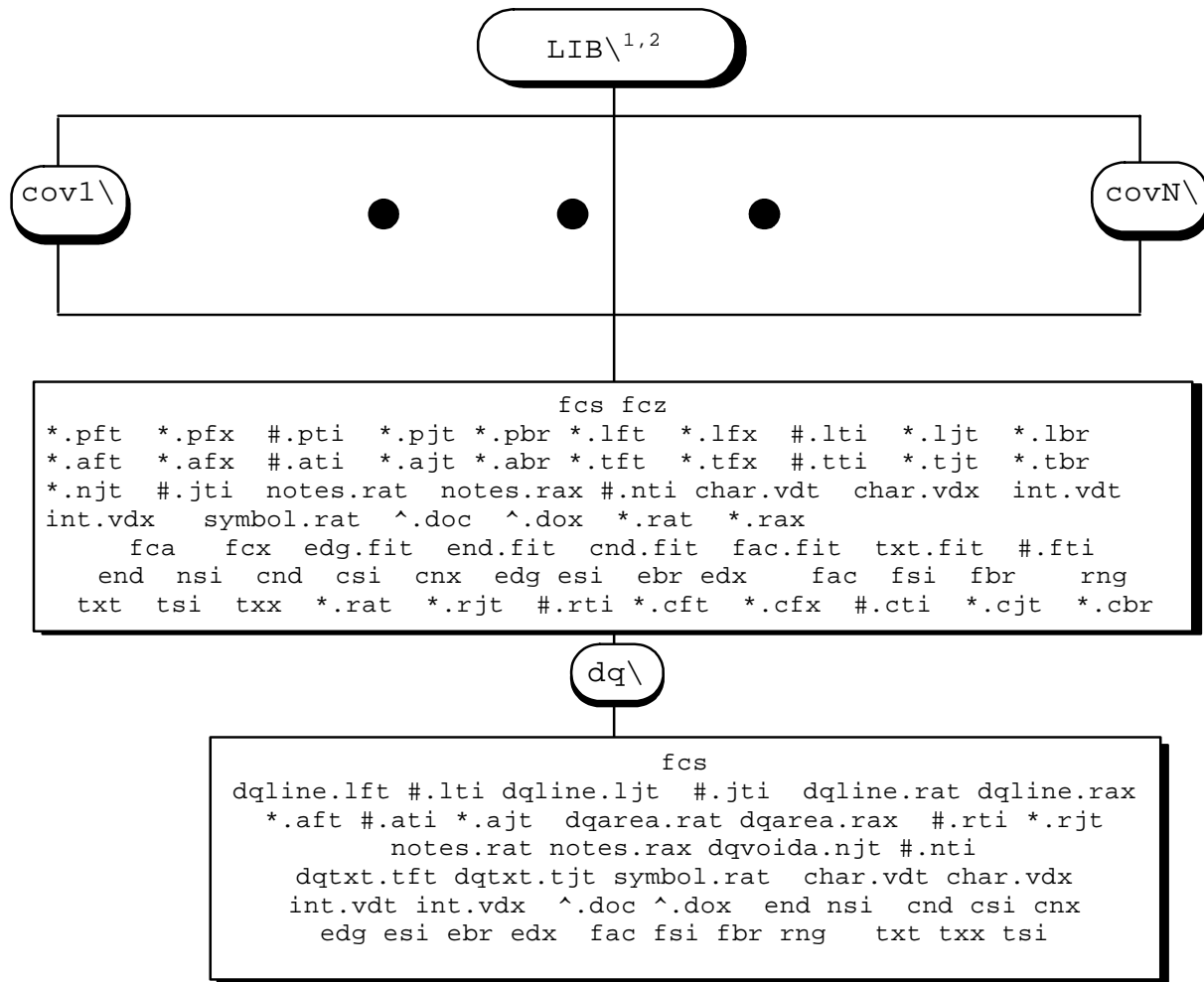
FIGURE 1. VPF structure levels and generalized implementation.

3.14   VPF file structure. VPF based products implement files as defined in MIL-STD-2407 Section 5.2.1.

3.14.1 Directories. The directory structure, tables, and indices used by each product are identified by the data level overview diagram shown in figure 2.

3.14.2 VPF tables. Implementation of VPF tables is defined in MIL-STD-2407 section 5.3, and Section 3.16 herein.

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```
                          LIB\^1,2

   cov1\          ●        ●        ●              covN\


                          fcs fcz
  *.pft  *.pfx  #.pti  *.pjt *.pbr *.lft  *.lfx  #.lti  *.ljt  *.lbr
  *.aft  *.afx  #.ati  *.ajt *.abr *.tft  *.tfx  #.tti  *.tjt  *.tbr
  *.njt  #.jti  notes.rat  notes.rax #.nti char.vdt  char.vdx  int.vdt
  int.vdx  symbol.rat  ^.doc  ^.dox  *.rat  *.rax
       fca    fcx  edg.fit  end.fit  cnd.fit  fac.fit  txt.fit  #.fti
     end  nsi  cnd  csi  cnx  edg esi  ebr edx    fac  fsi  fbr    rng
    txt  tsi  txx  *.rat  *.rjt  #.rti *.cft  *.cfx  #.cti  *.cjt  *.cbr

                          dq\

                          fcs
     dqline.lft #.lti dqline.ljt  #.jti  dqline.rat dqline.rax
       *.aft #.ati *.ajt  dqarea.rat dqarea.rax  #.rti *.rjt
            notes.rat notes.rax dqvoida.njt #.nti
       dqtxt.tft dqtxt.tjt symbol.rat  char.vdt char.vdx
       int.vdt int.vdx  ^.doc ^.dox  end nsi  cnd csi cnx
          edg esi ebr edx  fac fsi fbr rng   txt txx tsi
```

NOTES:
1 This is a representative library directory name.
2 The combination of tables and indices in each coverage defined by this
diagram represents the maximum required mix of coverages and tables/indices
within a coverage. The actual coverages and coverage table/indices will
vary by product. The coverages and mix of feature tables and, therefore,
primitives and indices for each product are defined in the associated
specifications. Within a library, coverage directories shall not be
included if data does not exist for that coverage within that library's
geographic extent.
^ The caret is replaced with the feature class name or attribute for which
the doc file was created.
* The asterisk is replaced with the prefix of the point, line or area
feature class name.
The pound is replaced with the prefix of the thematic index name, which
is based on the column name to which the index refers.

FIGURE 2.   VPF data library overview.

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3.14.3   Indices.

3.14.3.1   Thematic Indices. Encapsulation of thematic indices is defined in MIL-STD-2407 section 5.4. All inverted list indices shall be constructed using 4-byte record ids and shall contain an ordering flag of "S", which indicates an ascending order in the index directory. If NULL (e.g., NaN, -32768) is one of the possible values of the attribute being indexed, then that value shall be considered to be the smallest value for sorting purposes. Specific implementation and naming of thematic indices is defined below. Thematic indices in feature tables, feature to primitive join tables, feature to feature join tables and feature to related attribute join tables shall be named based on the column to which they apply appended with the Thematic Index ID Number defined for the base feature class table (see specification sheets). Thematic indices for feature index tables (fit) shall be named as defined in section 3.14.3.4 below. The extensions on thematic index files names will vary depending upon the type of file containing the column for which the thematic index is being defined.

3.14.3.1.1   Thematic indices in feature class tables. When multiple f_codes are defined for a single feature class table, a thematic index shall be associated with the "f_code" column in that feature class table. Thematic indices may also be placed on attributes in feature class tables to expedite queries on feature/attribute/value combinations. Thematic indices shall also be placed on tile_id and <prim>_id in feature tables that do not implement feature to primitive join tables. See tables 3 through 16 for general direction in naming thematic indices in feature tables and see Appendix E and the specification sheets for product specific implementation of additional feature table thematic indices. The thematic index file extension shall be one of .pti, .lti, .ati, .tti, or .cti depending on the type of the feature class table for which the index is being defined.

3.14.3.1.2   Thematic indices in join tables. In general, thematic indices shall be associated with all columns in the join tables (with the exception of the id column). This includes feature to primitive join tables, feature to related attribute table join tables, and feature to feature join tables (complex feature join tables). See tables 5 through 18 for general direction in naming thematic indices in join tables and see the specification sheets for additional product specific implementation of join table thematic indices. The thematic index file extension shall be as follows:
     .jti for feature-to-primitive join tables and complex feature join
      tables;
     .nti for the notes related attribute join tables;
     .rti for feature to related attribute join tables.

3.14.3.1.3   Thematic indices in feature index tables. Thematic indices shall be associated with all columns in the feature index tables (with the exception of the id column). See table 2 for direction in naming thematic indices in fit's. The thematic index file extension shall be .fti.

3.14.3.2   Variable-length indices. Encapsulation and implementation of variable-length indices is defined in MIL-STD-2407 section 5.4. Naming of variable-length indices is defined in MIL-STD-2407 section 5.3.1.2.

3.14.3.3   Spatial indices. Encapsulation of spatial indices is defined in MIL-STD-2407 section 5.4. A corresponding spatial index file shall be implemented for each type of primitive table present in the VPF directory structure. Naming of spatial indices is defined in MIL-STD-2407 section 5.3.1.2.

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3.14.3.4 Feature indices. A feature index shall be created for each
data coverage in a VPF data library except for the libref, tileref and dq
coverages. The index is composed of a Feature Class Attribute table (fca, as
defined for each coverage in the specification sheet) and a feature index
table (*.fit, see table 2) for each primitive type in a coverage that has a
feature table associated. The feature index tables shall be named as
<prim>.fit, where "prim" is replaced with one of end, cnd, edg, fac or txt.

TABLE 2. Format for feature index table.

Thematic Layer: <applicable layer> (e.g., Hydrography or
                       Elevation)
Coverage Name: <any coverage> (e.g., hyd or ele)
Table Description: Feature Index Table
Table Name: <prim>.fit (e.g., cnd.fit or fac.fit)

```
{Header length}L;
Feature Index Table;-;
id=I,1,P,Row Identifier,-,-,-,:
prim_id=I,1,N,Primitive ID,-,*pid.fti[1],-,:
tile_id[2]=S,1,N,Tile Reference ID,-,*tid.fti[1],-,:
fc_id=I,1,N,Feature Class ID,-,*fcid.fti[1],-,:
feature_id=I,1,N,Feature ID,-,*fid.fti[1],-,:;
```

NOTES:
     1. The * is replaced with the name of the primitive table for
     which the fit is being defined.
     2. This column is not present in untiled coverages.

3.14.4 Naming conventions. VPF file naming conventions are defined in
MIL-STD-2407 tables 13, 14, and 15. Product specific file names are defined
in the specification sheets.

3.15 Directory organization

3.15.1 Regional databases. VPF based products consist of one or more
regional database(s). Each CD-ROM shall contain a single database directory
and two or more library directories including one reference library and at
least one data library. Each CD-ROM within a regional database area shall
contain the database header and library attribute tables. Each data library
contains a mix of reference coverages and thematic coverages.

3.15.2 Thematic coverages. A thematic coverage is defined as a group
of features combined together which share some common relationship. The
reference library directory (rference) shall contain thematic coverage
directories which are provided to assist users in orienting themselves in
relation to the global position of the data found within that library. These
coverages are not tiled. Data library directories shall contain thematic
coverage directories which may be tiled. See section 3.17 for specific
information concerning tiling.

3.16 Vector product implementation in VPF. Vector products implement
all mandatory data structures from MIL-STD-2407 at the database level (Section
5.3.6), library level (Section 5.3.5) and at the coverage level (Section
5.3.4). Implementation guidance of mandatory metadata tables is provided in

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APPENDICES B through D of this specification. The following sections describe
table options used by VPF products. Additional product specific options are
defined in the specification sheets.

     3.16.1 <u>Database directory files</u>. VPF based products are composed of
one or more regional databases that have their own unique database directory
metadata files. Each database directory shall contain the following database
level metadata files: Database Header Table (dht), a Library Attribute Table
(lat) and Database Header Table variable length index (dhx). The content and
format of these tables is defined in MIL-STD-2407. Specific content
information is located in APPENDIX B of this document. Additional guidance
may be found in General and Technical guidance materials including product
specific extraction guides. The appropriate regional database directory shall
be present on each CD-ROM disc. A representation of the tables and files
appearing in a VPF based product database is provided in figure 3.
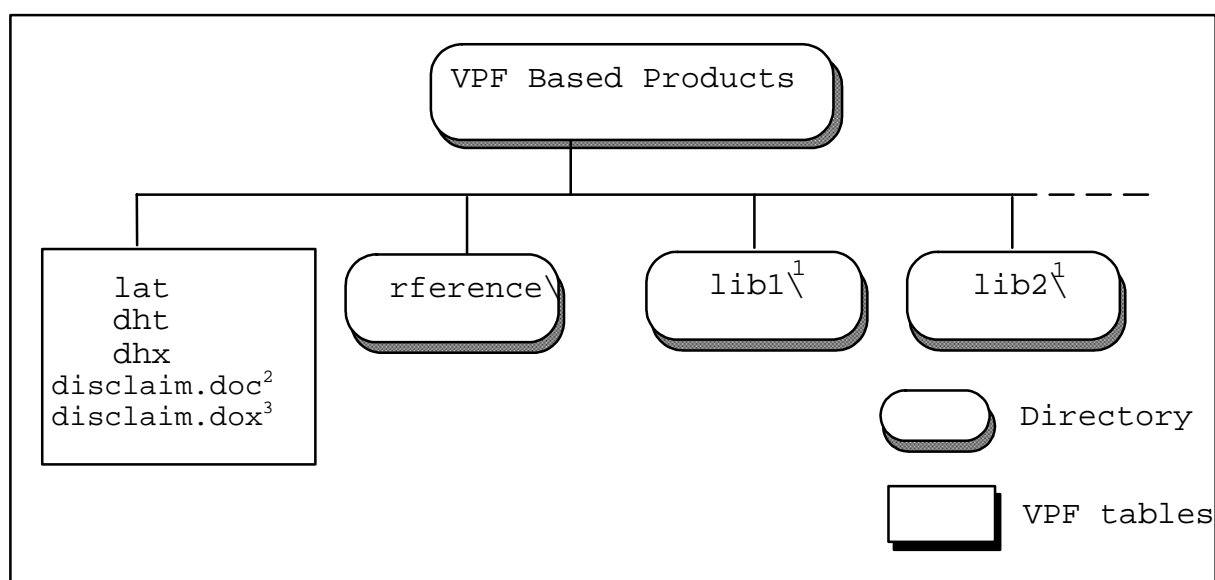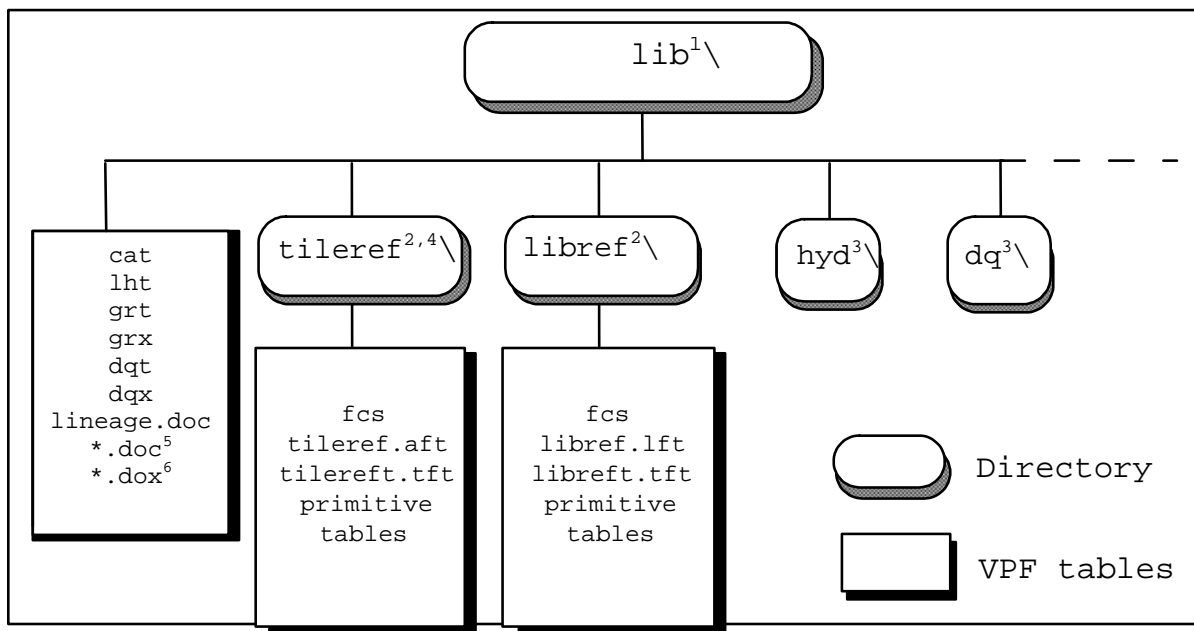

NOTES
       1. These are representative directory names for VPF based libraries.
       2. This is an optional documentation file.
       3. Required if disclaim.doc is present.

       FIGURE 3. <u>VPF based product database directory</u>.

3.16.2 <u>Library directory files</u>. The contents of each VPF based product
library are stored in a subdirectory within a database directory. The entire
contents of one or more VPF libraries shall be contained on a CD-ROM. Library
directory names reflect the content of the library and will be provided to the
producer as part of the source package. A representation of the tables and
files present in a library is given in figures 4 and 5.


```
                              lib¹\


        cat          tileref²,⁴\     libref²\      hyd³\      dq³\
        lht
        grt
        grx          fcs            fcs
        dqt          tileref.aft    libref.lft         Directory
        dqx          tilereft.tft   libreft.tft
     lineage.doc     primitive      primitive          VPF tables
       *.doc⁵        tables         tables
       *.dox⁶
```
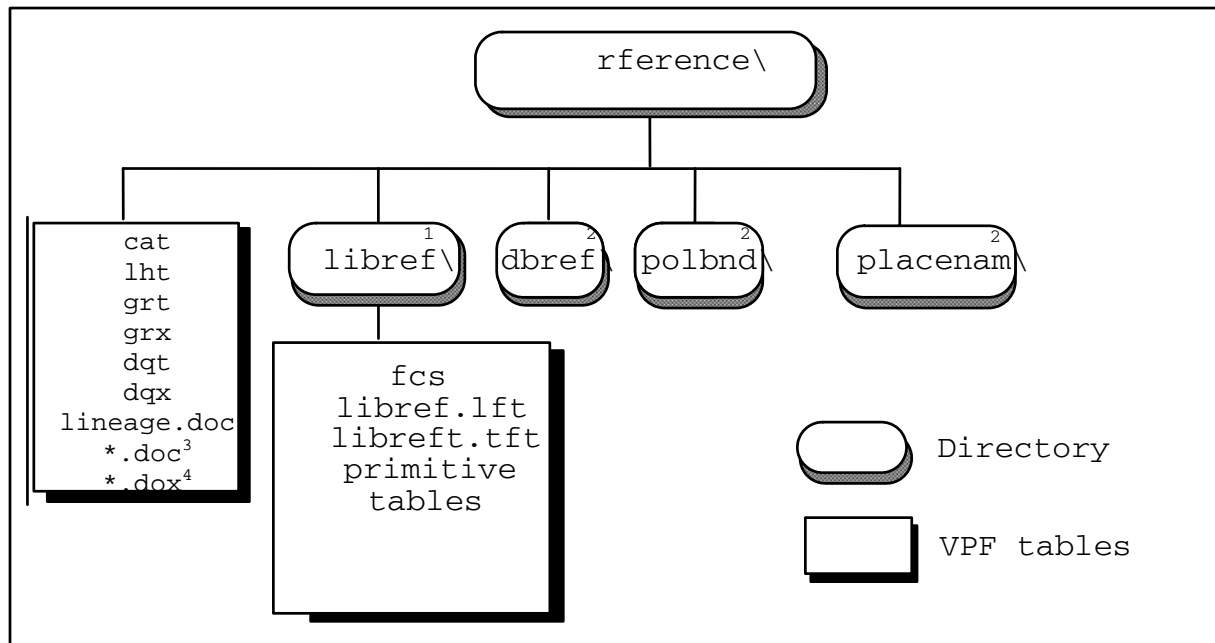
NOTES:
1.   This is a representative directory name for a VPF based product
        library.
2.   These represent reference coverage directories.
3.   These represent thematic coverage directories.
4.   This coverage is required only when a library is tiled.
5.   *.doc file allows for the implementation of an optional
        glossary.doc file for translation of non-English text.
6.   *.dox file required for variable length *.doc files.

        FIGURE 4.   <u>VPF based product data library structure</u>.

NOTES:
1. Reference coverage directories.
2. Thematic coverage directories.
3. *.doc file allows for the implementation of an optional glossary.doc file for translation of non-English text.
4. *.dox file required for variable length *.doc files.

FIGURE 5. <u>VPF based product reference library structure</u>.

     3.16.2.1   <u>Library metadata</u>. Each library directory shall contain the four mandatory metadata tables (coverage attribute table (cat), library header table (lht), geographic reference table (grt), and the data quality table (dqt)), a lineage narrative table (lineage.doc) and variable-length indices (dqx), (grx), and (*.dox), as required by tables containing variable-length fields. Content and format for the cat, lat, grt, and dqt, are defined in MIL-STD-2407 Section 5.3.5. Specific content information is located in APPENDIX D of this document. Additional guidance may be found in General and Technical guidance materials including product specific extraction guides.
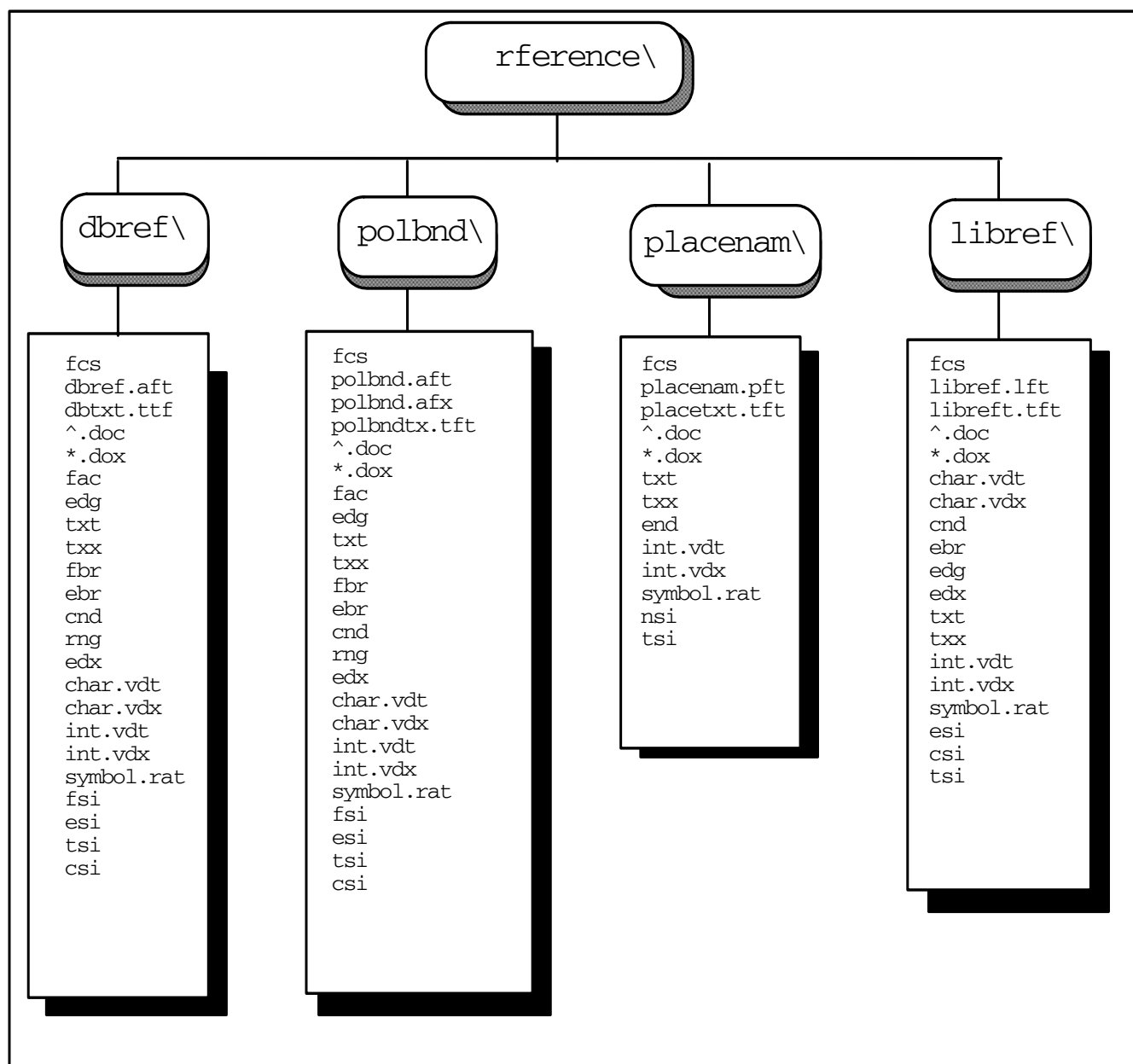
3.16.2.2   <u>Narrative documentation tables</u>.   The lineage.doc table is a data quality file related to the dqt, which describes how the data was processed. It provides a textual description of the procedures used to collect the data in each library. The lineage.doc file will contain information on special processing techniques, verification procedures, and feature integration schemes. This information is common to all coverages in the library. Additional *.doc table(s) are optional within the library level provided they contain information about the entire library. For example, some libraries may contain a glossary.doc file to provide a user with a translation of non-English terms.

3.16.2.3   <u>Libref coverage</u>. The libref coverage is defined in MIL-STD-2407 Section 5.2.2.4.4. The libref coverage shall be implemented in all libraries and will be based on representative transportation, hydrography, and political/administrative boundary information in the library area as defined in the library attribute table (lat). Reference the specification sheets and APPENDIX C and D of this specification for product requirements.

3.16.3 <u>Coverage directory files</u>. All coverages are contained within a library directory. All coverages within a library share the same coordinate system and are spatially registered to one another. Coverage directories shall not be included if data does not exist for that coverage within the library's geographic area. A library can contain a mix of tiled and untiled coverages as defined in MIL-STD-2407 Section 5.2.2.4. Specifics on tables in the data coverages are found in the specification sheets. An example of VPF Reference library coverage tables and files is depicted in figure 6.

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```
                            ┌─────────────────┐
                            │    rference\    │
                            └─────────────────┘
                                     │
          ┌──────────────┬───────────┴──────────┬──────────────┐
    ┌──────────┐   ┌──────────┐          ┌────────────┐   ┌──────────┐
    │  dbref\  │   │ polbnd\  │          │ placenam\  │   │ libref\  │
    └──────────┘   └──────────┘          └────────────┘   └──────────┘
```

dbref\	polbnd\	placenam\	libref\
fcs	fcs	fcs	fcs
dbref.aft	polbnd.aft	placenam.pft	libref.lft
dbtxt.ttf	polbnd.afx	placetxt.tft	libreft.tft
^.doc	polbndtx.tft	^.doc	^.doc
*.dox	^.doc	*.dox	*.dox
fac	*.dox	txt	char.vdt
edg	fac	txx	char.vdx
txt	edg	end	cnd
txx	txt	int.vdt	ebr
fbr	txx	int.vdx	edg
ebr	fbr	symbol.rat	edx
cnd	ebr	nsi	txt
rng	cnd	tsi	txx
edx	rng		int.vdt
char.vdt	edx		int.vdx
char.vdx	char.vdt		symbol.rat
int.vdt	char.vdx		esi
int.vdx	int.vdt		csi
symbol.rat	int.vdx		tsi
fsi	symbol.rat		
esi	fsi		
tsi	esi		
csi	tsi		
	csi		

NOTES:
    1. The asterisk (*) is replaced with the prefix of the point, line, or area feature class name.
    2. The caret (^) is replaced with the feature class name or attribute with which that doc file is associated.

FIGURE 6.   <u>Reference library overview</u>.

3.16.3.1 <u>Coverage metadata</u>. The metadata tables and their content will vary with each coverage. Each coverage directory shall contain one feature class schema table (fcs). Coverages with tables using coded attributes shall contain value description table(s): character description table (char.vdt) for character coded, for example FACC codes, and integer value description (int.vdt) for integer coded attributes (ex. building function category (bfc)). All char.vdt and int.vdt will be tailored so as to contain only features and attributes which are specifically found within the library. Other optional metadata tables include documentation tables (e.g., *.doc) that provide data quality and usability information in textual format pertaining to the coverage, a feature table, or an attribute column. Content and format for these tables are defined in MIL-STD-2407. Product-specific information is provided in the specification sheets. Additional guidance may be found in General and Technical guidance materials including product specific extraction guides.

3.16.3.1.1 <u>Documentation tables</u>. Documentation (or narrative) tables provide data quality and usability information that describes how the data was processed for a coverage. Topics can include processing tolerances, feature interpretation rules, and basic production quality assurance procedures. Three levels of documentation table may be present in a coverage. These levels include coverage, feature class, and attribute. The presence of documentation tables will vary with each coverage based on sources and data.

a.   <u>\<Coverage> documentation table</u>. Each coverage may have an optional documentation table. If present, this table shall be named so that the prefix contains the same name as the coverage, and the suffix is doc. This table may contain information that pertains to the lineage and data quality characteristics in general for all features for the coverage.

b.   <u>\<Feature class> documentation table</u>. Any feature class table may have an associated documentation table, \<feature class>.doc, which is referenced in the feature class table header. Information in this table will pertain to all features in the feature class. The documentation table prefix will reflect the appropriate feature class.

c.   <u>\<Attribute> documentation table</u>. Any attribute column defined in a feature table may have an associated documentation table, \<attribute>X.doc, which is referenced in the table header and associated with the particular attribute column definition. This documentation table contains information pertaining to that attribute or its values for all features in the feature table. The documentation table prefix will reflect the appropriate attribute column name, followed by the thematic index ID number of the feature table within which the attribute exists.

3.16.3.2 <u>Coverage topology</u>. The topology level of each coverage is specified in the coverage attribute table (cat) within each library. Topology is not supported between coverages.

3.16.4 <u>Feature class structure level</u>.

3.16.4.1 <u>Feature class definition</u>. Feature class definitions with their associated features and attributes are provided in the specification sheets.

a. <u>Number of feature classes</u>. The complete set of possible feature classes within each coverage is described in the specification sheets;

however, only those feature classes containing data shall be present in a coverage.

b. <u>Text feature class</u>. The text feature class may have an associated related attribute table called the symbol.rat. This table contains information that may be used to define the font, style, and point size of text strings. All text (both at the feature and primitive level) shall conform to MIL-STD-2407, Section 5.5.4.

3.16.4.2 <u>Feature table structure and contents</u>. All feature tables have the same structure. Each contains a row identifier column (or id) followed by an "f_code" attribute column. An exception to this rule is found in the reference coverages (dbref.aft, polbnd.aft, placenam.pft, placetxt.tft, tileref.aft, and tileref.tft) which do not have an f_code. The f_code field for each record contains a five-character code value. The heading of subsequent attribute columns, if present, is a three-character attribute code. The attribute fields for each record will contain representative values for the corresponding f_code. For the Reference library coverages and the tileref and libref coverages in the data library, the last column in every feature table is a primitive identifier column which contains primitive record identifier for the feature record. This column is identified as *_id (the * is replaced with the end, cnd, edg, fac, or txt primitive table name). Examples of feature class tables for tiled and untiled coverages, and their associated join tables are illustrated in tables 3-16. All area and line feature classes in the data library thematic coverages shall implement the feature-to-primitive link using join tables per MIL-STD-2407 Section 5.3.3.2. For these feature classes, the tile_id and prim_id columns are located in the associated join table and not in the feature table. Point feature classes and text feature classes in the data library thematic coverages may or may not implement the feature-to-primitive link using join tables (see specification sheets). For point/text feature classes that implement join tables, the tile_id and prim_id columns are located in the associated join table, the same as for area and line feature classes. On point/text feature classes that do not implement join tables, the tile_id and prim_id columns are located in the feature table.

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TABLE 3. <u>Format for a point feature table (lndfrmp.pft) in a tiled coverage</u>.

```
{Header length}L;
Landform Point Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,Facc Feature Code,char.vdt,f_codeX.pti²,-,:
mcc=S,1,N,Material Composition Category,int.vdt,-,-,:
rkf=S,1,N,Rock Formation Type,int.vdt,-,-,:;
```

NOTES:
     1. tile_id and primitive id (either end_id or cnd_id) are found in the associated join table.
     2. The "X" is replaced with the Thematic Index ID Number for the point feature table as defined in the specification sheet.

TABLE 4. <u>Format for a point feature table (lndfrmp.pft) in an untiled coverage</u>.

```
{Header length}L;
Landform Point Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,Facc Feature Code,char.vdt,f_codeX.pti²,-,:
mcc=S,1,N,Material Composition Category,int.vdt,-,-,:
rkf=S,1,N,Rock Formation Type,int.vdt,-,-,:
<prim>³_id=I,1,N,<xxxxx>⁴ Node Primitive ID,-,<prim>³X_id.pti²,-,:;
```

NOTES:
     1. Primitive Id rows will not be present when join tables are implemented.
     2. The "X" is replaced with the Thematic Index ID Number for the point feature table as defined in the specification sheet.
     3. Replace "<prim>" with either "end" or "cnd" depending upon whether the point feature is an entity node or a connected node.
     4. Replace "<xxxxx>" with either "Entity" or "Connected" depending upon whether the point feature is an entity node or a connected node.

TABLE 5. <u>Format for a point join table (lndfrmp.pjt)</u>.

```
{Header length}L;
Landform Point Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
lndfrmp.pft_id=I,1,N,Feature Key,-,lndfrmp.jti,-,:
tile_id=S,1,N,Tile Reference ID,-,tilX_id.jti¹,-,:
<prim>²_id=I,1,N, <xxxxx>³ Node Primitive ID,-,<prim>²X_id.jti¹,-,:;
```

NOTES:
     1. The "X" is replaced with the Thematic Index ID Number for the associated point feature table as defined in the specification sheet.
     2. Replace "<prim>" with either "end" or "cnd" depending upon whether the point feature is an entity node or a connected node.
     3. Replace "<xxxxx>" with either "Entity" or "Connected" depending upon whether the point feature is an entity node or a connected node.

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TABLE 6. Format for a line feature table(bluffl.lft) in a tiled
          coverage.

```
{Header length}L;
Bluff Line Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
hgt=I,1,N,Height Above Surface Level (meters),int.vdt,-,-,:;
```

NOTES:
     1.   tile_id and edg_id are found in the associated join table.

TABLE 7. Format for a line feature table(bluffl.lft) in an untiled
          coverage.

```
{Header length}L;
Bluff Line Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
hgt=I,1,N,Height Above Surface Level (meters),int.vdt,-,-,:
edg_id=I,1,N,Edge Primitive ID,-,edgX_id.lti[2],-,:;
```

NOTES:
     1. Primitive Id rows will not be present when join tables are
implemented.
     2. The "X" is replaced with the Thematic Index ID Number for the line
feature table as defined in the specification sheet.

TABLE 8. Format for a line join table (bluffl.ljt).

```
{Header length}L;
Bluff Line Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
bluffl.lft_id=I,1,N,Feature Key,-,bluffl.jti,-,:
tile_id=S,1,N,Tile Reference ID,-,tilX_id.jti[1],-,:
edg_id=I,1,N,Edge Primitive ID,-,edgX_id.jti[1],-,:;
```

NOTES:
     1. The "X" is replaced with the Thematic Index ID Number for the
associated line feature table as defined in the specification sheet.

TABLE 9. Format for a area feature table (grounda.aft) in a tiled
          coverage.

```
{Header length}L;
Ground Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,f_codeX.ati[2],-,:
mcc=S,1,N,Material Composition Category,int.vdt,-,-,:;
```

NOTES:
     1. tile_id and fac_id are found in the associated join table.
     2. The "X" is replaced with the Thematic Index ID Number for the area
feature table as defined in the specification sheet.

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TABLE 10.   Format for an area feature table (grounda.aft) in an untiled
            coverage.

```
{Header length}L;
Ground Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,f_codeX.ati²,-,:
mcc=S,1,N,Material Composition,int.vdt,-,-,:
fac_id=I,1,N,Face Primitive ID,-,facX_id.ati²,-,:;
```

NOTES:
      1.   Primitive Id rows will not be present when join tables are
implemented.
      2.   The "X" is replaced with the Thematic Index ID Number for the area
feature table as defined in the specification sheet.

TABLE 11.   Format for an area join table (grounda.ajt).

```
{Header length}L;
Ground Area Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
grounda.aft_id=I,1,N,Feature Key,-,grounda.jti,-,:
tile_id=S,1,N,Tile Reference ID,-,tilX_id.jti¹,-,:
fac_id=I,1,N,Face Primitive ID,-,facX_id.jti¹,-,:;
```

NOTES:
      1.   The "X" is replaced with the Thematic Index ID Number for the
associated area feature table as defined in the specification sheet.

TABLE 12.   Format for a text feature table (hydrotxt.tft) in a tiled
            coverage.

```
{Header length}L;
Hydrography Text Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,f_codeX.tti²,-,:
symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;
```

NOTES:
      1.   The tile_id and txt_id are found in the associated join table.
      2.   The "X" is replaced with the Thematic Index ID Number for the text
feature table as defined in the specification sheet.

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TABLE 13.   Format for a text feature table (hydrotxt.tft) in an untiled coverage.

```
{Header length}L;
Hydrography Text Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,f_codeX.tti2,-,:
symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:
txt_id1=I,1,N,Text Primitive ID,-,txtX_id.tti2,-,:;
```

NOTES:
     1. Primitive Id rows will not be present when join tables are implemented.
     2. The "X" is replaced with the Thematic Index ID Number for the text feature table as defined in the specification sheet.

TABLE 14.   Format for a text join table (hydrotxt.tjt).

```
{Header length}L;
Hydrography Text Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
hydrotxt.tft_id=I,1,N,Feature Key,-,hydrotxt.jti,-,:
tile_id=S,1,N,Tile Reference ID,-,tilX_id.jti1,-,:
txt_id=I,1,N,Text Primitive ID,-,txtX_id.jti1,-,:;
```

NOTES:
     1. The "X" is replaced with the Thematic Index ID Number for the associated text feature table as defined in the specification sheet.

TABLE 15.   Format for a complex feature table (mtrc.cft)

```
{Header length}L;
Military Training Route Complex Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,f_codeX.cti1,-,:
eft=T,*,N,Effective Times (From-To),char.vdt,-,-,:
ora=T,*,N,Originating Activity,-,-,-,:
sca=T,*,N,Scheduling Activity,-,-,-,:;
```

NOTES:
     1. The "X" is replaced with the Thematic Index ID Number for the complex feature table as defined in the specification sheet.

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TABLE 16.   <u>Format for a complex join table (*.cjt).</u>

*There will be a cjt for each base feature table that is a component of
the complex feature. The prefix of the cjt tables will be the prefix of
the base feature table (e.g., mtractc.cjt).

```
{Header length}L;
MTR Action Node Complex Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
mtrc.cft_id=I,1,N,Complex Feature Key,-,cftX_Y.jti[1,2],-,:
mtractc.pft_id=I,1,N,Base Feature Key,-,*ftY_X.jti[1,2,3],_,:;
```

NOTES:
     1. The "X" is replaced with the Thematic Index ID Number for the
associated complex feature table as defined in the specification sheet.
     2. The "Y" is replaced with the Thematic Index ID Number for the
associated base feature table as defined in the specification sheet.
     3. The "*" is replaced with one of p, l, a, c, or t depending on the
type of the base feature table.

     3.16.4.3 <u>Related attribute tables</u>.

     3.16.4.3.1 <u>Notes related attribute tables</u>. Notes related attribute
tables (notes.rat) can be present in any data library thematic coverage when
appropriate. These tables may appear in multiple coverages. The purpose of
the notes related attribute table (notes.rat) is to capture, for each
coverage, feature information not otherwise addressed in the existing point,
line, or area feature attributes. Features are associated with entries in the
notes.rat through an associated join table (*.njt where * is the feature class
name). If the content of a particular notes.rat record applies to more than
one feature in a coverage, the note should exist only once in the notes.rat
and be referenced by its ID in the applicable join table records. Similarly,
if more than one note applies to a feature, the feature_id will be referenced
in the appropriate join table records. No more than one notes.rat shall exist
for each thematic coverage in the Data Library. If, within a feature class,
no features reference the notes.rat, no *.njt shall exist for that feature
class. If no features in a coverage reference the notes.rat, no notes.rat
shall exist for that coverage.

     Within the Data Quality coverage, notes.rat will not be associated with
the dqline.lft or dqarea.aft as these tables have their own associated related
attribute tables and join tables. The notes.rat may, however, be associated
with the dqvoida.aft. Tables 17 and 18 provide format information for the
notes.rat and *.njt tables.

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TABLE 17.   Format for notes related attribute table.

```
Thematic Layer:        <applicable layer> (e.g., Hydrography or Elevation)
Coverage Name:         <any coverage> (e.g., hyd or ele)
Table Description:     Notes Related Attribute Table
Table Name:            notes.rat
```

```
{Header length}L;
Notes Related Attribute Table;-;
id=I,1,P,Row Identifier,-,-,-,:
note=T,*,N,Additional Feature Attribute Information,-,-,-,:;
```

TABLE 18.   Format for notes related join table.

```
Thematic Layer:        <applicable layer> (e.g., Hydrography or Elevation)
Coverage Name:         <any coverage> (e.g., hyd or ele)
Table Description:     Notes Related Join Table
Table Name:            *.njt  (e.g., markersp.njt or elevp.njt)
```

```
{Header length}L;
Notes Related Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
*_id[1]=I,1,N,Feature Key,-,fidX.nti[2],-,:
notes.rat_id=I,1,N, Related Attribute Table Row Identifier,-,notesX.nti[2],-,:;
```

NOTES:
     1. The "*" is replaced with the associated feature table name (e.g. markersp.pft or elevp.pft)
     2. The "X" is replaced with the Thematic Index ID Number for the associated feature table.

     3.16.4.3.2 Feature-specific related attribute tables. Related attribute tables may also be used to associate other information, such as a common name, with multiple features. See specification sheets for details concerning implementation of feature-specific related attribute tables.

     3.16.4.3.3 Symbology. Feature symbology information is not stored in VPF. The symbology for the geometric features in a database is defined in application software. The text feature table in each coverage has an associated symbol related attribute table (symbol.rat), which provides information on how to symbolize text for representation on a plot or lithograph.

The symbol related attribute table (TABLE 19) may be present whenever a text feature table is present in a data coverage. The symbol.rat defines the fonts, font sizes, text style, and color for each text record specified in a text feature table. There is a many-to-one correspondence between the records in the text feature table and the symbol.rat.

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TABLE 19. <u>Symbol related attribute table.</u>

```
Thematic Layer:      <applicable layer>
Coverage Name:       <any coverage> (e.g., clb or ele)
Table Description:   Symbol Related Attribute Table
Table Name:          symbol.rat
```

```
{Header length}L;
Symbol Related Attribute Table;-;
id=I,1,P,Row Identifier,-,-,-,:
clt=S,1,N,Color of Text,int.vdt,-,-,:
fon=S,1,N,Type of Font,int.vdt,-,-,:
size=S,1,N,Font Size in Points,-,-,-,:
sty=S,1,N,Style of Text,int.vdt,-,-,:;
```

Column	Description	Value	Value Meaning
id	Row Identifier	Sequential beginning with 1	
clt	Color of Text	1	Black
		2	Blue
		3	Red-brown
		4	Magenta
fon	Type of Font	1	Machine Default
size	Font Size in Points		
		4	
		5	
		6	
		7	
		8	
		9	
		10	
		12	
		14	
		16	
sty	Style of Text	1	Kern
		2	Proportional
		3	Constant

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3.16.5 Primitive tables and associated files. The primitive tables contained in any coverage are dependent on the coverage's topology level as defined in the coverage attribute table (cat) and the feature classes present in that coverage, and are illustrated in figure 2. The foreign key columns contained in primitive tables shall be tailored to the coverage's topology level according to MIL-STD-2407 Section 5.3.2.   Primitive level supporting files, defined in MIL-STD-2407 Section 5.4, are implemented as shown in the data level overview, figure 2, and defined in section 3.14 and below. Tables 20 through 25 define the format to be used for VPF primitive tables in both tiled and untiled coverages. Table 26 defines the format to be used for all minimum bounding rectangle tables, either at the primitive level (ebr, fbr) or the feature level (*.pbr, *.lbr, *.abr, *.cbr, *.tbr).

TABLE 20.   Format for an entity node primitive table (end).

```
{Header length}L;
Entity Node Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
*.pft_id1=I,1,N,Feature ID,-,-,-,:
containing_face2=I,1,N,Foreign Key to Face Table,-,-,-,:
coordinate=Z/C/Y/B3,1,N,Coordinate of Entity Node,-,-,-,:;
```

NOTES:
1. This column is only carried for point feature tables in the reference library coverages and in the tileref and libref coverages in the data library.
2. This column shall exist only for coverages of level 3 topology
3. The Z or Y coordinate type shall be used for coverages defined as 3-dimensional and the C or B coordinate type shall be used for coverages defined as 2-dimensional, respectively for short floating point or long floating point coordinate types. See the appendices herein and the specification sheets for the appropriate product-specific definitions.

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TABLE 21. Format for a connected node primitive table (cnd).

```
{Header length}L;
Connected Node Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
*.pft_id¹=I,1,N,Feature ID,-,-,-,:
first_edge=I/K²,1,N,Foreign Key to Edge Table,-,-,-,:
coordinate=Z/C/Y/B³,1,N,Coordinate of Connected Node,-,-,-,:;
```

NOTES:
    1. This column is only carried for node feature tables in the reference library coverages and in the tileref and libref coverages in the data library.
    2. Column type "K" is implemented for coverages that are tiled. Column type "I" is implemented for coverages that are untiled.
    3. The Z or Y coordinate type shall be used for coverages defined as 3-dimensional and the C or B coordinate type shall be used for coverages defined as 2-dimensional, respectively for short floating point or long floating point coordinate types. See the appendices herein and the specification sheets for the appropriate product-specific definitions.

TABLE 22. Format for an edge primitive table (edg).

```
{Header length}L;
Edge Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
*.lft_id¹=I,1,N,Feature ID,-,-,-,:
start_node=I,1,N,Start Node,-,-,-,:
end_node=I,1,N,End Node,-,-,-,:
right_face²=K/I³,1,N,Right Face,-,-,-,:
left_face²=K/I³,1,N,Left Face,-,-,-,:
right_edge=K/I³,1,N,Right Edge from End Node,-,-,-,:
left_edge=K/I³,1,N,Left Edge from Start Node,-,-,-,:
coordinates=Z/C/Y/B⁴,*,N,Coordinates of Edge,-,-,-,:;
```

NOTES:
    1. This column is only carried for line feature tables in the reference library coverages and in the tileref and libref coverages in the data library.
    2. This column shall exist only for coverages of level 3 topology
    3. Column type "K" is implemented for coverages that are tiled. Column type "I" is implemented for coverages that are untiled.
    4. The Z or Y coordinate type shall be used for coverages defined as 3-dimensional and the C or B coordinate type shall be used for coverages defined as 2-dimensional, respectively for short floating point or long floating point coordinate types. See the appendices herein and the specification sheets for the appropriate product-specific definitions.

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TABLE 23. Format for a face primitive table (fac).

```
{Header length}L;
Face Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
*.aft_id¹=I,1,N,Feature ID,-,-,-,:
ring_ptr=I,1,N,Foreign Key to Ring Table,-,-,-,:;
```

NOTES:
   1. This column is only carried for area feature tables in the reference
library coverages and in the tileref and libref coverages in the data library.

TABLE 24. Format for a ring table (rng).

```
{Header length}L;
Ring Table;-;
id=I,1,P,Row Identifier,-,-,-,:
face_id=I,1,N,Foreign Key to Face Table,-,-,-,:
start_edge=I,1,N,Foreign Key to Edge Table,-,-,-,:;
```

TABLE 25. Format for a text primitive table (txt).

```
{Header length}L;
Text Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
string=T,*,N,Text String,-,-,-,:
shape_line=C/B¹,*,N,Shape of Text String,-,-,-,:;
```

Notes:
   1. The C coordinate type shall be used for short floating point
coordinates and the B coordinate type shall be used for long floating point
coordinates.

TABLE 26. Format for a bounding rectangle table (ebr, fbr,
            *.pbr, *.lbr, *.abr, *.cbr, *.tbr).

```
{Header length}L;
Bounding Rectangle Table;-;
id=I,1,P,Row Identifier,-,-,-,:
xmin=F/R¹,1,N,Minimum X Coordinate,-,-,-,:
ymin=F/R¹,1,N,Minimum Y Coordinate,-,-,-,:
xmax=F/R¹,1,N,Maximum X Coordinate,-,-,-,:
ymax=F/R¹,1,N,Maximum Y Coordinate,-,-,-,:;
```

Notes:
   1. F/R as defined by the specification sheet. Data type is equivalent
to the associated primitives.

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3.17 Tiling. Thematic data at the coverage level in each data library may be tiled in order to manage the large amounts of data. Tiling is defined in MIL-STD-2407 Sections 5.2.2.3.3 and 5.2.2.3.4. In current VPF based products, the reference library coverages as well as the data library reference coverages (tileref and libref) are not tiled. All data library thematic coverages may be tiled. Product specific tiling requirements are defined in each specification sheet. The tileref coverage defines the tiling scheme for all tiled coverages in the library. Tile names are derived from linked pairs of GEOREF alphanumeric characters which represent the tile's coordinate location. When tiled, libraries shall be partitioned in a systematic tile structure based upon expected data density.

All coverages in a library share the same coordinate system. All tiled coverages in a library share the same tiling structure and GEOREF naming convention. Any coverage within a tiled library may be untiled. This would, typically, occur when that coverage only contains a limited number of feature occurrences for that library's geographic area. Although a coverage is said to be tiled, tiling of data actually occurs at the primitive level. Feature tables are stored intact directly under the coverage directory. Tile directories are located directly under the coverage directories. The primitive tables are created separately for each tile and are stored under the tile directories. There shall be no subdirectory carried in a coverage directory for any tile that is devoid of data in that coverage (topology levels 0,1,2). However, for topology level 3 coverages, the existence of face 1 requires a tile subdirectory. See MIL-STD-2407 Section 5.2.2.3.3. An example of the table and file organization for a tiled coverage is depicted in figure 7.

3.17.1 Tiling schemes. Libraries in a database will contain data in variable sized tiles as defined in the tileref of each library.   A tiling scheme with tiles of various sizes is illustrated in this section. Typically, uniform tiles of a standard size will be used. A preferred tile size for each product is defined in the specification sheets. However, the tiling scheme may change by library when data density indicates that smaller or larger tiles are desirable. A combination of small and large tiles may be used within a library when appropriate. In addition, data coverages within a tiled library which contain a limited number of feature occurrences could be untiled, resulting in a combination of tiled and untiled data coverages for that library.

Data sets stored in short floating point coordinates place a constraint on the minimum tile size due to the normalization equations used to compute spatial indices. These equations use coordinate values truncated to 3 decimal places (0.001 degrees). This requires that the minimum difference in the minimum and maximum tile (or data set) minimum bounding rectangle coordinates must be greater than or equal to 0.001 degrees. If extremely small tile sizes are required, it is recommended that coordinates be stored using the long floating point data type to overcome this limitation.

3.17.2   Tile directory description and naming. The first pair of letters in a tile name represents the coarsest, 15° by 15° standard GEOREF division (see DMA TM 8358.1 DMA Technical Manual, Datums, Ellipsoids, Grids, and Grid Reference Systems), and represents the first coordinate pair identifying the tile name. The first letter represents the southwest coordinate in the x direction (longitude). The second letter represents the southwest coordinate in the y direction (latitude). There are a total of 288 15° by 15° cells globally (figure 8).

The second pair of letters represents the l˚ by l˚ standard GEOREF divisions, and represents the second coordinate pair of the tile name. The first letter of this pair represents the x coordinate (longitude) of the southwest corner of the tile. There are a maximum of 15 subdivisions lettered from A to Q (omitting I and O) according to the l˚ bands of GEOREF longitude zones. The second letter represents the y coordinate (latitude) of the southwest corner of the tile. There are a maximum of 15 subdivisions lettered from A to Q (omitting I and O) according to the l˚ bands of GEOREF latitude zones. These letters partition each 15˚ by 15˚ GEOREF cell into a total of 225 l˚ by 1˚ cells (figures 8 and 9).
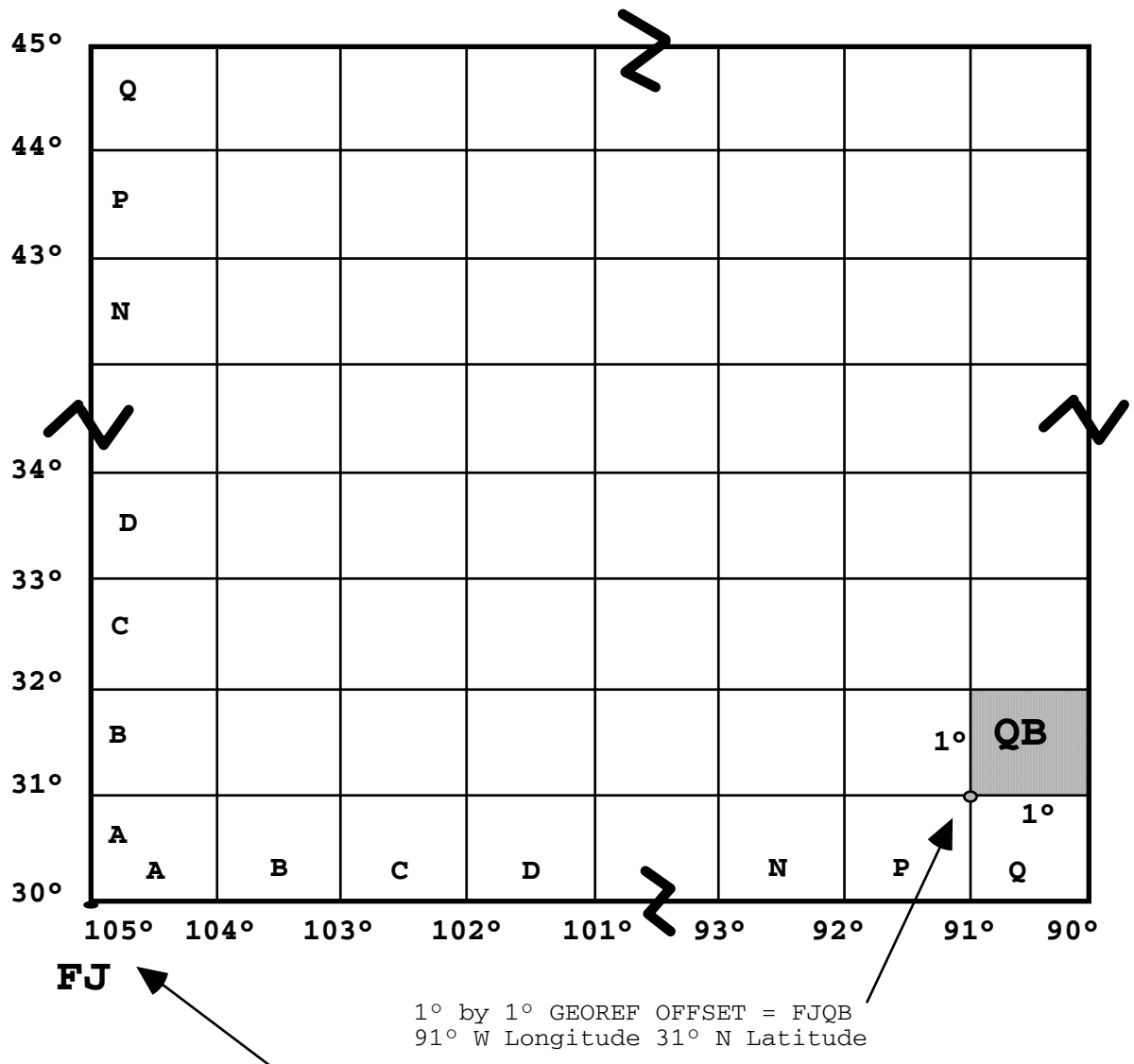
The fifth, sixth, seventh, and eighth characters in the name represent a GEOREF coordinate pair for the southwest corner of the tile. The coordinates are equivalent to arc minute values. These numbers use the GEOREF concept to represent this division. Both numbers of the coordinate pair are two characters in length. The first number in the pair represents the x coordinate (longitude) of the southwest corner of the tile. The second number represents the y coordinate (latitude) of the southwest corner of the tile. Note that the x and y GEOREF coordinates are always positive, increasing from the southwest corner (origin) of the l˚ by l˚ cell. Therefore, in the western hemisphere, this x value is the "inverse" of the geographic longitude. Similarly in the southern hemisphere, the y value is the "inverse" of the latitude value. For example, the 15' by 15' tile name containing data located at 90˚45' west longitude and 31˚00' north latitude is FJQBl5OO (figures 7, 8 and 9). For irregular areas (for example, FJQB4530 in figure 9), the southernmost point of the most western boundary is considered the southwest corner. Directory names shall be tailored by product, if required, in order to maintain an eight character limit. Directory names shall be subdivided into the minimal number of subdirectories to adequately define the directory path name. Directory hierarchy must be structured in such a manner that a directory filename does not exceed eight characters. In order to maintain this eight character limit additional directory levels may be required. A limit of 8 directory levels has been established by ISO 9660.

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**Coverage
Directories**

Tile subdirectories:
Implementing GEOREF
naming convention
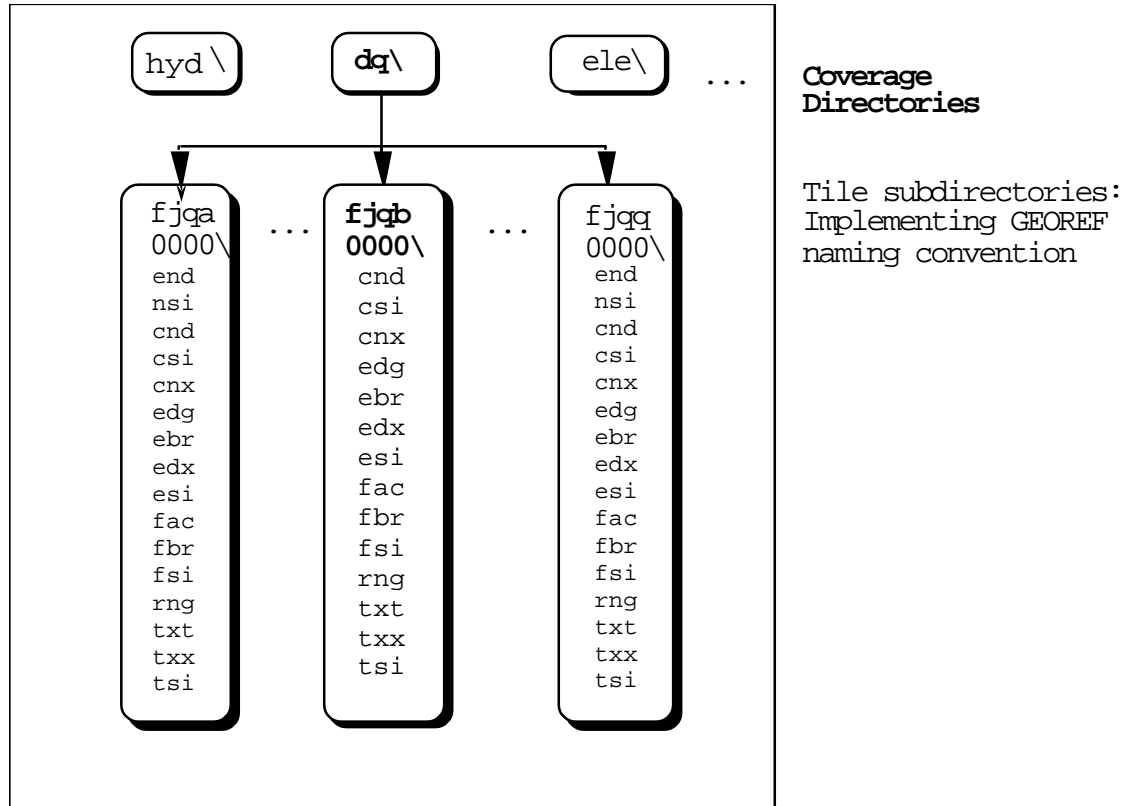
FIGURE 7. <u>Tile directory hierarchy</u>

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TILING SCHEME BASED ON GEOREF

GEOREF 15° x 15° OFFSET = FJ
105° W Longitude, 30° N Latitude

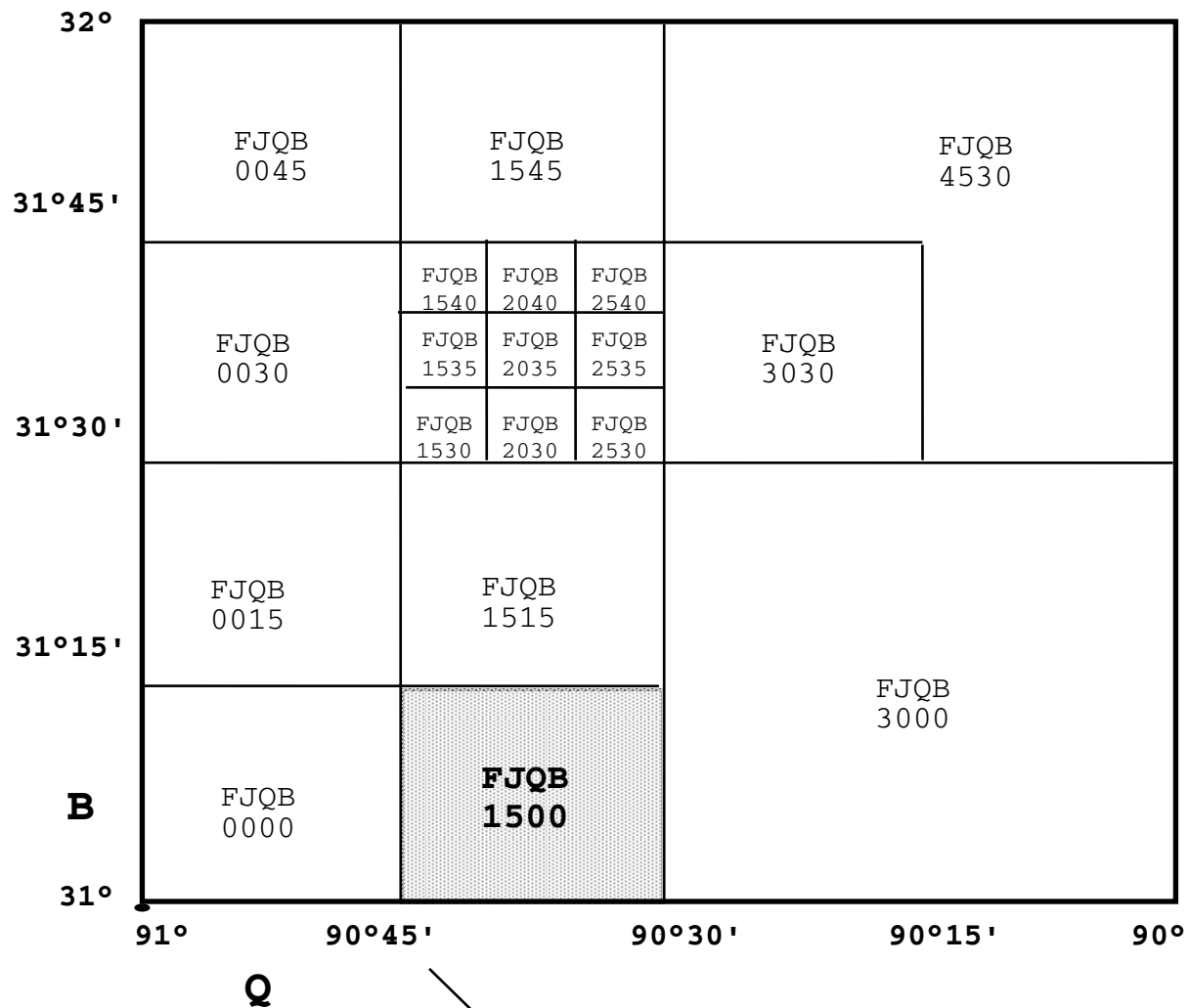1° by 1° GEOREF OFFSET = FJQB
91° W Longitude 31° N Latitude

FIGURE 8.   Coordinates for a 15° by 15° cell of GEOREF system (FJ).

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1° by 1° GEOREF OFFSET = FJQB
91° W Longitude 31° N Latitude

FIGURE 9.   Example tiles (FJQB1500) coordinates for GEOREF
1° by 1° cell of (FJQB).

3.18   Distribution medium. VPF based products will normally be distributed on CD-ROM disc implementing ISO 9660 for CD-ROM formatting. Data may also be distributed via web services (i.e., NGA Gateway), or other media such as Digital Versatile Disc (DVD), as required to support customer needs.

3.18.1 CD ROM labeling and packaging. CD ROM labeling, and labeling on the cardboard sleeve, or jewel case liner/information booklet, as applicable, shall be as specified in the contract. Method of packaging (cardboard sleeve or jewel case) shall be as specified in the contract (see 5.1).

3.18.2   CD labeling. Labeling of VPF based product CDs shall be as specified in the contract in accordance with NI 8955.1.

3.18.2.1   Product specific items. The CD label shall contain the specific information as identified in individual source packages or the specification sheets.

3.18.2.2   Volume identifier. This should be identical to the eleven characters of the Volume Identifier (first eleven characters of the ISO 9660 Volume Identifier (32 characters available)) written on the header of the disk (see MIL-HDBK-9660).

3.18.3   Information booklet. Information booklets shall be provided for all VPF based product CDs. Labeling of the information booklet covers shall be in accordance with the contract. When used in conjunction with the jewel case, the front cover of the information booklet also serves as the front cover of the case.

3.18.3.1   Information booklet text. Information contained in the information booklet is as specified in the specification sheets and contract. The information booklet text shall contain the current NGA User's note, directing users of NGA products to refer corrections, additions, and comments to the official NGA point of contact for such information.

3.18.4   Jewel case liner (back cover of case). Labeling of the jewel case liner shall be in accordance with the contract.

3.18.5   Cardboard sleeve mailer. If a cardboard mailing sleeve is specified in the contract, it shall be labeled in accordance with the contract.

3.18.6   Bar coding on CD-ROM cases. The National Stock Number (NSN) bar code, NGA Reference Number, and edition/effective date on the front of the CD-ROM case shall be shown in accordance with the contract and MIL-STD-2414.

3.19   CD ROM Packaging.

3.19.1   Packaging container. The outer container shall be used to distribute and store VPF based product materials. The outer container shall consist of a cushioned plastic. The database name and a bar code shall be present on the outer container. The entire outer container shall be shrink-wrapped prior to shipping.

3.19.2   Package information. A packing list shall be included in the product package to notify a user of the contents of the VPF based data.

3.19.3   Installation instructions. Installation instructions shall be provided on a separate sheet in the package, or as part of the jewel case insert.

3.20   Security.

3.20.1   Security classification. The security classification of the products generated by the use of these specifications will be the lowest category practicable. When it is necessary to assign a security classification to the product, it shall be in accordance with established national security procedures.

Specific classification of data is dependent on the geographic location of the data portrayed. When multiple areas (i.e. tiles, libraries) are written to a CD, the compact disc will carry the classification of the highest classified dataset contained by that CD.

4.   VERIFICATION

4.1   Classification of inspection. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.2)

b. Conformance inspection (see 4.3)

4.2   First article inspection. When a first article inspection is required, the extraction record shall be examined as specified in 4.3.1, and the digital data reviewed for compliance with 4.3.2, 4.3.3, and 4.3.4.

4.3   Conformance inspection. Conformance inspection shall include the examinations of 4.3.1, 4.3.2, 4.3.3, and 4.3.4.

4.3.1   Review of data extraction records. Records relevant to the data extraction shall be maintained, if required (see specification sheets). The records shall document sources, decisions regarding reconciliation of conflicting data, etc. Records shall be reviewed concurrently with visual examinations (see 4.3.2) to ensure that proper cartographic procedures have been followed.

4.3.2   Visual review. Digital data shall be examined for defects and errors as specified in the contract and special instructions, using current Geographic Information System (GIS) software and cartographic procedures. Defects in the digital file shall be corrected as directed by the Government. All metadata shall be visually examined and digitally validated.

4.3.3   Digital data review. The digital data extraction process shall be documented and maintained. A data extraction history and lineage documenting sources and special guidance shall be maintained and recorded within metadata. An inspection of the digital data against the source shall be accomplished as a quality assurance process.

4.3.4   VPF compliance. Digital data shall be validated for conformance to the product specifications and VPF Format defined in MIL-STD-2407. Defects detected by validation software and production evaluation toolsets shall be documented and corrective action taken.

4.3.5   ISO 9660 compliance. Digital data shall be validated for conformance to ISO 9660 by ensuring it can be read in an ISO 9660-comliant CD drive.

5.   PACKAGING

5.1   Packaging.   For acquisitions purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6.   NOTES

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

6.1.   Intended use. VPF based products are intended for use as general purpose databases which can support GIS applications. Individual products provide a wide range of resolutions from high resolution to low resolution to support specific user needs. Refer to the individual product specification sheets for a more detailed description of intended use.

Some of the products covered by this general specification will be military unique, because they are intended to support the planning and execution of military operations, and will contain data that is either classified, or that will have a distribution restricted to DoD only. Others may be made available to the public. Regardless of whether or not the product has application in the commercial sector, the format (directory structures, libraries, coverages, tables, table header information, etc.) of VPF data sets must be defined for application software to access and use the data.

6.2   Acquisition requirements. Acquisition documents must specify the following:

a.   Title, number and date of this specification.

b.   Issue of the DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).

c.   When a first article is required (see 3.1 and 4.2).

d.   Packaging requirements (see 5.1).

6.3   Supersession. This specification supersedes the interim specification MIL-PRF-0089049(NIMA), dated 24 November 1998.

6.4   Definitions. Refer to MIL-STD-2407 for definition of terms used in this specification that are not defined below.

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6.4.1   <u>Absolute horizontal accuracy</u>. This represents the difference between the recorded horizontal coordinates of features and their true positions with respect to the World Geodetic System (WGS). Absolute horizontal accuracy is expressed as a circular error at 90 percent probability (.9p).

6.4.2   <u>Absolute vertical accuracy</u>. This represents the difference between an assigned elevation and the true elevation at a specific point. In this comparison, both elevations must be referenced to the same vertical datum. Absolute vertical accuracy is expressed as a linear error at 90 percent probability (.9p).

6.4.3   <u>Circular error (CE)</u>. An accuracy figure representing the stated percentage of probability that any point expressed as a function of two linear components (e.g., horizontal position) will be within the given figure.

6.4.4   <u>Linear error (LE)</u>. A one dimensional error (such as an error in elevation) defined by the normal distribution function.

6.4.5   <u>Long floating point</u>. A VPF data type that conforms to the format for 64-bit floating-point real numbers as defined in the Institute of Electrical and Electronics Engineers (IEEE) Standard for Binary Floating Point Arithmetic.

6.4.6   <u>Short floating point</u>. A VPF data type that conforms to the format for the 32-bit floating-point real numbers as defined in the IEEE Standard for Binary Floating Point Arithmetic.

6.5   <u>Acronyms</u>.

ANSI	American National Standards Institute
CD-ROM	Compact Disc - Read Only Memory
CE	Circular Error
DFDD	DGIWG Feature Data Dictionary
DGIWG	Digital Geographic Information Working Group
DIGEST	Digital Geographic Information Exchange Standard
DMA	Defense Mapping Agency
DoD	Department of Defense
DODISS	Department of Defense Index of Specifications and Standards
DODSSP	DoD Single Stock Point for Specifications and Standards
FACC	Feature Attribute Coding Catalog
GEOREF	Geographic Reference System
GIS	Geographic Information System
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization
LE	Linear Error
MSL	Mean Sea Level
NFC	NSG Feature Catalog
NGA	National Geospatial-Intelligence Agency
NSG	National System for Geospatial-Intelligence
STANAG	NATO Standardization Agreement

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VPF   Vector Product Format

WGS   World Geodetic System

     6.6 <u>Subject term (key word) listing</u>

     Chart
     FACC
     GEOREF
     GIS
     Map
     NFC
     Thematic layer
     Vector
     VPF
     WGS84

     6.7 <u>International standardization agreements</u>. This specification implements STANAG 2211, "Geodetic Datums, Spheroids, Grids, and Cell References" and STANAG 7074, "Digital Geographic Information Exchange Standard". When amendment, revision, or cancellation of this specification is proposed, the preparing activity will take appropriate must coordinate the action with the U.S. National Point of Contact for the international standardization agreement, as identified in the ASSIST database at www.dodssp.daps.mil.

     6.8 <u>Changes from previous issue</u>. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue, interim specification MIL-PRF-0089049(NIMA) were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Exceptions to these markings include the following tables and/or sections: char.vdt tables and int.vdt tables. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

     6.9 <u>Interoperability</u>. The VPF based products are designed to support interoperability. As such it is highly recommended that systems for production and data use be designed in such a manner as to implement the VPF standard. Systems built to implement individual product specifications do not afford the same level of flexibility and interoperability as those designed to implement MIL-STD-2407.

     6.10 <u>NGA operational help desk</u>. For questions concerning this or other NGA products, services, or specifications, please telephone the NGA Operational Help Desk at 1-800-455-0899, Commercial 314-263-4864, or DSN 693-4864.

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APPENDIX A

VPF DATA DICTIONARY ORGANIZATION

A.1 SCOPE

A.1.1 <u>Scope</u>. This appendix contains the data dictionary
organization for VPF based products. It is a mandatory part of this
specification. The information contained herein is intended for
compliance.

A.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

A.3 VPF DATA DICTIONARY ORGANIZATION

A.3.1 <u>Data dictionary organization</u>. The data provided in this
appendix are organized according to VPF structure levels. The database
tables appear first; they are described in Appendix B. The information
provided in database tables applies to the entire database. The database
contains two types of libraries: the reference library described in
Appendix C, and data libraries (containing the product data) described in
Appendix D. Appendix C contains the reference library VPF library level
tables, the reference coverage (libref) and the data coverages. Appendix D
contains the data library VPF library level tables and the reference
coverages (tileref and libref). Appendix E contains a complete description
of the Data Quality coverage. The Data Quality coverage is common among
all VPF based products.

For this data dictionary, a brief description of each feature table
is provided. All VPF tables consist of a header that is followed by the
actual record contents. This appendix contains examples of the records
that may be contained in actual tables. The data structure and contents
for both the metadata tables and feature tables that may be present within
a coverage are defined in this appendix. Tables not described in this
appendix are described in MIL-STD-2407. The format of metadata tables
(such as documentation tables) is defined in MIL-STD-2407 section 5.3.5 -
5.3.8, the format and structure of index files are defined in MIL-STD-2407
section 5.4 and the format and structure of primitive tables are defined in
MIL-STD-2407 sections 5.3.2 and 5.4.

A.3.2 <u>Notes regarding table format</u>.

a. The header portion of each table (top half of each illustration) defines the entries required for the VPF table header; the content portion (bottom half) of each table provides sample record entries for the data fields.

b. A semicolon (;) is a separator for the four components of a header.

c. The colon (:) indicates the end of a column definition.

d. Carriage returns are embedded in the text for readability only. All header information shall be a continuous string of characters with no carriage returns.

e. For more information on the format of a VPF table, see section 3.13 of this document and VPF MIL-STD-2407 section 5.2.

f. For tables with a large number of columns and only one record entry (i.e., dht, lht, grt), the backslash character (\) at the end of a line in the data records section indicates that the record entry is continued for each column for that record; no carriage returns are implied. This format permits the data records for a large number of columns to be represented so that they may fit on a page of this appendix.

g. Those records that vary from product to product or from library to library are identified in the tables.

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APPENDIX B

PRODUCT DATABASE VPF TABLES AND CONTENTS

B.1   SCOPE

B.1.1   <u>Scope</u>. This appendix describes the structure and content of each VPF table in the VPF based product database directories. It is a mandatory part of this Specification. The information contained herein is intended for compliance.

B.2   APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

B.3   DATABASE VPF TABLES AND CONTENTS

B.3.1 <u>Database metadata tables</u>. The database directory file name is the root directory for VPF based data on a CD-ROM. Metadata files at the database level are as follows:

```
"product specific"      database directory file
  lat                   library attribute table
  dht                   database header table
  dhx                   dht variable length index
  disclaim.doc          optional disclaimer documentation table
  disclaim.dox          disclaim.doc variable length index
```

B.3.1.1   <u>Library attribute table (lat)</u>. The lat contains the geographic extent (minimum bounding rectangle) of each library in the database (table B-1). Where individual libraries have not been completely defined for a database the lat table will contain a listing of only those libraries completed or defined to date.

TABLE B-1.   <u>Format and content for library attribute table</u>.

{Header length}L; Library Attribute Table;-; id=I,1,U,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	rference	-180.0	-90.0	180.0	90.0
2	eastus[1]	-90.0	30.0	-75.0	45.0
3	westus[1]	-120.0	30.0	-105.0	45.0
4	northus[1]	-90.0	60.0	-75.0	45.0
:	:	:	:	:	:
n	n	n	n	n	n

NOTE 1: The names and extent of the libraries are only examples, actual names will be provided as part of the source package.

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B.3.1.2   Database header table.   The dht describes the database (table B-2).

TABLE B-2.   Format and Content for Database Header Table (dht).


```
{Header length}L;
Database Header Table;-1;
id=I,1,P,Row Identifier,-,-,-,:
vpf_version=T,10,N,VPF version number,-,-,-,:
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,-,-,-,:
originator=T,*,N,Producer of this database,-,-,-,:
addressee=T,*,N,Address of the producer,-,-,-,:
media_volumes=T,4,N,Number of Volumes in this database,-,-,-,:
seq_numbers=T,*,N,The Sequential Number(s) in this database,-,-,-,:
num_data_sets=T,4,N,Number of Libraries,-,-,-,:
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,-,-,-,:
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\
9606\
tod017 (product specific)\
General-purpose, high-resolution database to support GIS applications.
(product specific)\
ISO 9660\
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY\
ATTN: NGA/P, Mail Stop D-134, 4600 Sangamore Road, Bethesda, MD 20816-
5003\
1\
1\
1\
U\
NO\
00000000000000.\
LIMITED DISTRIBUTION\
1\
1\
199305000000000.
```

NOTE 1: An optional disclaim.doc may be required through the Individual Library Instructions (ILS) or by a specification sheet. If implemented, refer to table B-3 for the format of the disclaim.doc. Additionally, modify the table header of the dht to read "Database Header Table;disclaim.doc;".

B.3.1.3 <u>Disclaimer documentation table</u>. Information regarding disclaimers about the usage or the quality of the data is captured in the disclaim.doc file, table B-3. Specific disclaim.doc information is found in the specification sheets or product-specific extraction guides.

TABLE B-3. <u>Format and content for disclaimer documentation table</u>
<u>(disclaim.doc)</u>.

```
{Header length}L;
Disclaimer Documentation Table;-;
id=I,1,P,Row Identifier,-,-,-,:
text=T,*,N,Text information,-,-,-,:;
```

1	NOT TO BE USED FOR NAVIGATION
2	The shoreline data for this database is a composite of data derived from various tide references. Actual tidal references may or may not be associated with particular shoreline segments.
:	:
n	...

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APPENDIX C

REFERENCE LIBRARY

C.1   SCOPE

C.1.1   Scope.   This appendix contains the structure and content of each
VPF table in a reference library directory. It is a mandatory part of this
Specification. The information contained herein is intended for compliance.

C.2   APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

C.3   REFERENCE LIBRARY

Each database will contain an untiled reference library named rference
which will be included on each distribution CD. This library will contain
smaller scale coverages (table C-1) that show a generalized extent of the
database. Each coverage contains reference information designed to orient the
user to the location and extent of the database and the libraries in it. The
reference library will be 2-dimensional.

TABLE C-1. rference library coverages.

Library Reference coverage	libref
Database Reference coverage	dbref
Political Entities coverage	polbnd
Place Names coverage	placenam

The structure and content of each VPF table in a reference library
directory are provided in this section.

C.3.1 Metadata tables. The rference library shall contain the following
metadata tables at the library level.

```
        rference              directory file
          cat                 coverage attribute table
          lht                 library header table
          dqt                 data quality table
          dqx                 dqt variable length index
          grt                 geographic reference table
          grx                 grt variable length index file
          lineage.doc         documentation table
          glossary.doc        an optional documentation table
          *.dox               variable length index required by *.doc
                              tables containing variable length fields
```


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APPENDIX C

C.3.1.1   Coverage attribute table. The following coverage attribute table (cat) shall be present in the rference library. Table C-2 depicts the records that are present in the cat.

TABLE C-2. Format and content for reference coverage attribute table (cat).

```
{Header length}L;
Coverage Attribute Table;-;
id=I,1,U,Row Identifier,-,-,-,:
coverage_name=T,8,P,Coverage name,-,-,-,:
description=T,50,N,Coverage description,-,-,-,:
level=I,1,N,Topology level,-,-,-,:;
```

1	libref	Library Reference	2
2	dbref	Database Reference	3
3	polbnd	Political Entities	3
4	placenam	Place Names	0

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APPENDIX C

    C.3.1.2   <u>Library header table</u>. A library header table (lht) shall be present in the rference library. The format and sample content of the library header table for each library is presented in table C-3.

    TABLE C-3.   <u>Format and content for rference library header table (lht)</u>.

```
{Header length}L;
Library Header Table;-1;
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,-,-,-,:2
source_id=T,30,N,Identifier of the source reference,-,-,-,:2
source_edition=T,20,N,Edition number of the source,-,-,-,:2
source_name=T,100,N,Name of library source,-,-,-,:2
source_date=D,1,N,Source Date,-,-,-,:2
security_class=T,1,N,Security Classification,-,-,-,:
downgrading=T,3,N,Downgrading,-,-,-,:
downgrading_date=D,1,N,Date,-,-,-,:
releasability=T,20,N,Releasability,-,-,-,:
edition_number=T,10,N,Edition number for this library,-,-,-,:
edition_date=D,1,N,Creation date for this library,-,-,-,:;
```
```
1\
XXXX(product specific)\
rference\
Small-scale data to give users a geographic reference of the database.
(product specific)\
8\
1000000\
DCW/VMAP0\
VMAP0 sasaus (data specific)\
EDITION1/EDITION2\
Digital Chart of the World and VMap0 South Asia Australia library
(data specific)\
19920701000000.\
U\
NA\
00000000000000.\
LIMITED DISTRIBUTION\
1\
19992507000000.\
```

    NOTES:
        1. An optional glossary.doc may be required through the Individual Library Instructions (ILIs). If implemented, the format of the glossary.doc shall conform to the same format as the lineage.doc (table C-6) with the exception that the table description in the header shall read "Glossary Documentation Table". When implemented, the glossary.doc name will be shown in the table header: "Library Header Table;glossary.doc;"

        2. When multiple sources are used to create a library, a new record (row in the lht) will be created for each source being defined.

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C.3.1.3 <u>Geographic reference table</u>. A geographic reference table (grt) shall be present in the rference library. The record content of this table may vary for each library. The format and sample content of the geographic reference table for each library is presented in table C-4.

TABLE C-4. <u>Format and content for a rference geographic reference table (grt)</u>.

```
{Header length}L;
Geographic Reference Table;-;
id=I,1,P,Row Identifier,-,-,-,:
data_type=T,3,N,Type of coordinate data in the library,-,-,-,:
units=T,3,N,Units of measure code for x and y coordinates in library,-,-,-,:
ellipsoid_name=T,*,N,Name of the ellipsoid,-,-,-,:
ellipsoid_code=T,3,N,Ellipsoid Code,-,-,-,:
ellipsoid_detail=T,50,N,Details about library ellipsoid,-,-,-,:
vert_datum_name=T,*,N,Name of vertical datum reference,-,-,-,:
vert_datum_code=T,4,N,Code of vertical datum reference,-,-,-,:
sound_datum_name=T,*,N,Name of sounding datum,-,-,-,:
sound_datum_code=T,4,N,Code of sounding datum reference,-,-,-,:
geo_datum_name=T,*,N,Name of geodetic datum,-,-,-,:
geo_datum_code=T,4,N,Code of geodetic datum,-,-,-,:
projection_name[1]=T,*,N,Name of the projection,-,-,-,:;
```

```
1\
GEO\
DEG[2]\
WGS 84\
A=6378137 B=6356752 METERS\
MEAN SEA LEVEL (product specific)\
MSL\
N/A\
N/A\
WGS 84\
WGE\
DECIMAL DEGREES UNPROJECTED\[3]
```

NOTES
1. Not included when data_type is GEO.
2. DEG with short or long floating point (decimal degree) coordinates.
3. Must agree with recorded data_type.

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C.3.1.4 Data quality table. A data quality table (dqt) shall be in the
library directory for the rference library. The record content of this table may
vary for each library. The format and a sample content of the dqt for each library
is presented in table C-5.

TABLE C-5. Format and Content for rference data quality table (dqt).

```
{Header length}L;
Data Quality Table;lineage.doc;
id=I,1,P,Row Identifier,-,-,-,:
vpf_level=T,8,N,VPF Level,-,-,-,:
vpf_level_name=T,8,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,*,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,-,-,-,:
collection_spec=T,*,N,Collection Specification Name,-,-,-,:
abs_horiz_acc=T,4,N,Absolute Horizontal Accuracy of VPF Level,-,-,-,:
abs_horiz_units=T,20,N,Unit of Measure for Absolute Horizontal Accuracy,-,-,-,:
abs_vert_acc=T,4,N,Absolute Vertical Accuracy of VPF Level,-,-,-,:
abs_vert_units=T,20,N,Unit of Measure for Absolute Vertical Accuracy,-,-,-,:
rel_horiz_acc=T,4,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,4,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\
rference\
All features in this library are captured from the source materials and generalized
as necessary to depict referential information.\
All features in this library have valid attribute codes assigned to them in
accordance with this specification.\
All data are topologically correct.  No duplicate features are present within a
coverage.  All areas are completely described as extracted from the source materials.
No undershoots or overshoots are present.  All data were consistently captured using
the rules described in the documentation table associated with this table and in the
various feature table narrative files present at the coverage level within the
library.\
1\
19950630000000.(data specific)\
00000000000000.(data specific)\
TOD0 Specification Sheet MIL-PRF-89049/10A (data specific)\
20050420000000. (product specific)\
00000000000000.(data specific)\
00000000000000.(data specific)\
TOD0 MIL-PRF-89049/10A (data specific)\
750\
METERS\
168\
METERS\
750\
METERS\
0\
N/A\
Additional descriptions of data lineage are available in the documentation table
associated with this data quality table (called lineage.doc).
```

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C.3.1.5 Lineage narrative table. Information regarding the data
contained in the library is captured in the lineage.doc file, table C-6.
Specific lineage.doc information is found in the general and technical
documents including product specific extraction guides.

TABLE C-6. Format and content for lineage documentation table (lineage.doc).

```
{Header length}L;
Lineage Documentation Table;-;
id=I,1,P,Row Identifier,-,-,-,:
text=T,*,N,Text information,-,-,-,:;
```

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

C.3.2 Reference coverage (libref). Each reference library shall
contain a reference coverage named library reference.

C.3.2.1 Library reference coverage directory and files. The library
reference coverage directory contains the following files:

rference	library directory file
libref	coverage directory file
char.vdt	character value description table
char.vdx	character vdt variable length index
int.vdt	integer value description table (only when symbol.rat is present)
int.vdx	integer vdt variable length index (only when symbol.rat is present)
cnd	connected node table
csi	connected node spatial index
ebr	edge bounding rectangle table
edg	edge primitive table
edx	edge variable length index
esi	edge spatial index
fcs	feature class schema table
libref.lft	library reference line feature table
libreft.tft	library reference text feature table (optional)
tsi	text spatial index (only when txt is present)
txt	text primitive table (only when tft is present)
txx	text variable length index (only when txt is present)
symbol.rat	symbology related attribute table (only when implemented per the specification sheet and when a tft is present)

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C.3.2.1.1 <u>Library reference feature class schema table</u>. A feature
class schema table shall be present in the library reference coverage. The
format and content of the fcs are presented in table C-7.

TABLE C-7.   <u>Content and format for libref feature class schema table (fcs)</u>.

```
Thematic Layer:              Library Reference
Coverage Name:               libref
Table Description:           Library Reference Feature Class Schema Table
Table Name:                  fcs
```

```
{Header length}L;
Library Reference Feature Class Schema Table;-;
id=I,1,P,Row Identifier,-,-,-,:
feature_class=T,8,N,Name of Feature Class,-,-,-,:
table1=T,12,N,First Table,-,-,-,:
table1_key=T,15,N,Column Name in First Table,-,-,-,:
table2=T,12,N,Second Table,-,-,-,:
table2_key=T,6,N,Column Name in Second Table,-,-,-,:;
```

1	libref	libref.lft	edg_id	edg	id
2	libref	edg	libref.lft_id	libref.lft	id
3	libreft	libreft.tft	txt_id	txt	id
4	libreft	txt	id	libreft.tft	txt_id
5	libreft	libreft.tft	symbol.rat_id	symbol.rat	id

C.3.2.1.2 <u>Library reference feature tables</u>. The feature tables
implemented in the library reference coverage are specified in tables C-8 and
C-9. Thematic indices will not be implemented in the library reference
coverage feature tables.

TABLE C-8.   <u>Format and content for libref line feature table (libref.lft)</u>.

```
Thematic Layer:              Library Reference
Coverage Name:               libref
Table Description:           Library Reference Line Feature Table
Table Name:                  libref.lft
```

```
{Header length}L;
Library Reference Line Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
edg_id=I,1,N,Edge Primitive ID,-,-,-,:;
```

1	AP030	1
2	BA010	2
3	FA000	3
:	:	:
n	n	n

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TABLE C-9. Format and content for libref text feature table (libreft.tft).

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Text Feature Table
Table Name: libreft.tft

```
{Header length}L;
Library Reference Text Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
txt_id=I,1,N,Text Primitive ID,-,-,-,:
symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;
```

1	ZD040	1	1
2	ZD040	2	10
3	ZD045	3	35
:	:	:	:
n	n	n	n

C.3.2.1.3 Library reference primitive tables. The format of the primitive tables in the library reference coverage directory is defined in section 3.16.5. Coordinate data type is defined in the specification sheets. Although the text feature table is optional, a sample text primitive table is presented to show sample values for the STRING column (table C-10).

TABLE C-10. Format and example of content for LIBREF text primitive table (txt).

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Text Primitive Table
Table Name: txt

```
{Header length}L;
Text Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
string=T,*,N,Text String,-,-,-,:
shape_line=C/B[1],*,N,Shape of Text String,-,-,-,:;
```

1	DUBLIN[2]	-6.211609,53.662006
:	:	:
n	n	n

NOTES
1. The C coordinate type shall be used with single-precision floating point coordinates and the B coordinate type shall be used with double-precision coordinates. Coordinate data type is defined in the specification sheets.
2. The names and extent of the libraries, or other geographic identifiers.

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C.3.2.1.4 <u>Library reference value description tables</u>. A character
value description table shall be present in the library reference coverage.
The format and content of the char.vdt are presented in table C-11. An
integer value description table shall be optionally present in the library
reference coverage when the symbol.rat is present, meaning that the text
feature table is present as well. The format and content of the int.vdt are
presented in table C-12.

TABLE C-11.   <u>Library reference character value description table</u>.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Character Value
                           Description Table
Table Name: char.vdt

```
{Header length}L;
Library Reference Character Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,6,N,Column Name,-,-,-,:
value=T,5,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	libref.lft	f_code	AP030	Road
2	libref.lft	f_code	BA010	Coastline/Shoreline
3	libref.lft	f_code	BH140	River/Stream
4	libref.lft	f_code	FA000	Administrative Boundary
5	libreft.tft	f_code	ZD040	Named Location
6	libreft.tft	f_code	ZD045	Text Description

NOTE: Features suggested for typical orientation purposes, and may be tailored
by data needs.

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TABLE C-12. Library reference integer value description table.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Integer Value Description Table
Table Name: int.vdt

```
{Header length}L;
Library Reference Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,3,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	symbol.rat	fon	1	Machine Default
2	symbol.rat	sty	1	Kern
3	symbol.rat	sty	2	Proportional
4	symbol.rat	sty	3	Constant
5	symbol.rat	clt	1	Black
6	symbol.rat	clt	2	Blue
7	symbol.rat	clt	3	Red-Brown
8	symbol.rat	clt	4	Magenta

C.3.3 Data coverages. Data coverages for the rference library are the: database reference coverage (dbref), the political entities coverage (polbnd) and the placenames coverage (placenam). For each coverage, the feature class schema table is described first, followed by the feature tables. The type and content of documentation tables will vary with each coverage. For each feature table, the attribute names, description, and attribute values are also represented. A summary of the rference coverages (both reference and data) and feature classes is presented in table C-13.

The structure and content of each VPF table in the rference library data coverages are provided in this section. The format of the primitive tables in the reference library data coverage is defined in section 3.16.5. Coordinate data type is defined in the specification sheets.

Thematic indices are not implemented in the feature tables in the data coverages of the rference library.

TABLE C-13. rference library feature table(s) in coverages.

| Coverage name | Feature Classes | | | |
	Point	Line	Area	Text
libref[1]		libref.lft		libreft.tft
dbref			dbref.aft	dbtxt.tft
polbnd			polbnd.aft	polbndtx.tft
placenam	placenam.pft			placetxt.tft

NOTE 1: Described in Appendix C.3.2

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C.3.3.1 Database reference coverage (dbref) directory and files. This
coverage contains the generalized small-scale outlines of each data library in
the database. The files in this coverage are presented in tables C-14 to C-
18. The database reference coverage directory contains the following files:

```
        dbref                   directory file
          char.vdt              character value description table
          char.vdx              character vdt variable length index
          int.vdt               integer value description table (only when
                                  symbol.rat is present)
          int.vdx               integer vdt variable length index (only
                                  when int.vdt is present)
          cnd                   connected node primitive table
          csi                   connected node spatial index
          ebr                   edge bounding rectangle table
          edg                   edge primitive table
          edx                   edge variable length index
          esi                   edge spatial index
          fac                   face primitive table
          fbr                   face bounding rectangle table
          fcs                   feature class schema table
          fsi                   face spatial index
          rng                   ring table
          dbref.aft             database reference area feature table
          dbtxt.tft             database reference text feature table
                                  (optional)
          tsi                   text spatial index (only when a txt is
                                  present)
          txt                   text primitive table (only when a tft is
                                  present)
          txx                   text variable length index (only when a
                                  txt is present)
          symbol.rat            symbology related attribute table (only
                                  when implemented per the specification
                                  sheet and when a tft is present)
```

TABLE C-14. Content and format for dbref coverage feature class schema table.

```
Thematic Layer:               Database Reference
Coverage Name:                dbref
Table Description:            Database Reference Feature Class Schema Table
Table Name:                   fcs
```

{Header length}L; Database Reference Feature Class Schema Table;-; id=I,1,P,Row Identifier,-,-,-,: feature_class=T,8,N,Name of Feature Class,-,-,-,: table1=T,12,N,First Table,-,-,-,: table1_key=T,15,N,Column Name in First Table,-,-,-,: table2=T,12,N,Second Table,-,-,-,: table2_key=T,6,N,Column Name in Second Table,-,-,-,:;					
1	dbref	dbref.aft	fac_id	fac	id
2	dbref	fac	dbref.aft_id	dbref.aft	id
3	dbtxt	dbtxt.tft	txt_id	txt	id
4	dbtxt	txt	id	dbtxt.tft	txt_id
5	dbtxt	dbtxt.tft	symbol.rat_id	symbol.rat	id

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TABLE C-15.   dbref area feature table.

Thematic Layer: Database Reference
Coverage Name: dbref
Table Description: Database Reference Area Feature Table
Table Name: dbref.aft

```
{Header length}L;
Database Reference Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
library_name=T,8,N,Library Name,-,-,-,:
fac_id=I,1,N,Face Primitive ID,-,-,-,:;
```

1	BOLIVIAH[1]	2
2	TEXASH[1]	3
3	:	4
:	:	:
n	n	n

NOTE 1: Library names will vary by product.

TABLE C-16.   dbref text feature table.

Thematic Layer: Database Reference
Coverage Name: dbref
Table Description: Database Reference Text Feature Table
Table Name: dbtxt.tft

```
{Header length}L;
Database Reference Text Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
txt_id=I,1,N,Text Primitive ID,-,-,-,:
symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;
```

1	ZD040	1	1
:	:	:	:
n	n	n	n

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TABLE C-17.   dbref character value description table.

Thematic Layer: Database Reference
Coverage Name: dbref
Table Description: Database Reference Character Value
                             Description Table
Table Name: char.vdt

```
{Header length}L;
Database Reference Character Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,6,N,Column Name,-,-,-,:
value=T,5,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

| 1 | dbtxt.tft | f_code | ZD040 | Named Location |
| 2 | dbtxt.tft | f_code | ZD045 | Text Description |

TABLE C-18.   dbref integer value description table.

Thematic Layer: Database Reference
Coverage Name: dbref
Table Description: Database Reference Integer Value Description Table
Table Name: int.vdt

```
{Header length}L;
Database Reference Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,3,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	symbol.rat	fon	1	Machine Default
2	symbol.rat	sty	1	Kern
3	symbol.rat	sty	2	Proportional
4	symbol.rat	sty	3	Constant
5	symbol.rat	clt	1	Black
6	symbol.rat	clt	2	Blue
7	symbol.rat	clt	3	Red-Brown
8	symbol.rat	clt	4	Magenta

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C.3.3.2 <u>Political entities coverage (polbnd) directory and files</u>. This
coverage contains the generalized small-scale outlines of the political
entities in the database. The files for this coverage are described in tables
C-19 to C-23. The political entities coverage directory contains the
following files:

```
polbnd                directory file
  char.vdt            character value description table
  char.vtx            character vdt variable length index
  int.vdt             integer value description table (only
                      when symbol.rat is present)
  int.vdx             integer vdt variable length index (only
                      when int.vdt is present)
  cnd                 connected node primitive table
  csi                 connected node spatial index
  ebr                 edge bounding rectangle table
  edg                 edge primitive table
  edx                 edge variable length index
  esi                 edge spatial index
  fac                 face primitive table
  fbr                 face bounding rectangle table
  fcs                 feature class schema table
  fsi                 face spatial index
  rng                 ring table
  polbnd.aft          political entities area feature table
  polbnd.afx          polbnd.aft variable length index
  polbndtx.tft        political entities text feature table
                      (optional)
  tsi                 text spatial index (only when a txt is
                      present)
  txt                 text primitive table (only when a tft is
                      present)
  txx                 text variable length index (only when a
                      txt is present)
  symbol.rat          symbology related attribute table (only
                      when implemented per the specification
                      sheet and a tft is present)
```

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TABLE C-19. <u>Content and format for polbnd coverage feature class schema table</u>.

Thematic Layer: Political Entities
Coverage Name: polbnd
Table Description: Political Entities Feature Class Schema Table
Table Name: fcs

```
{Header length}L;
Political Entities Feature Class Schema Table;-;
id=I,1,P,Row Identifier,-,-,-,:
feature_class=T,8,N,Name of Feature Class,-,-,-,:
table1=T,12,N,First Table,-,-,-,:
table1_key=T,15,N,Column Name in First Table,-,-,-,:
table2=T,12,N,Second Table,-,-,-,:
table2_key=T,6,N,Column Name in Second Table,-,-,-,:;
```

1	polbnd	polbnd.aft	fac_id	fac	id
2	polbnd	fac	polbnd.aft_id	polbnd.aft	id
3	polbndtx	polbndtx.tft	txt_id	txt	id
4	polbndtx	txt	id	polbndtx.tft	txt_id
5	polbndtx	polbndtx.tft	symbol.rat_id	symbol.rat	id

TABLE C-20. <u>polbnd area feature table</u>.

Thematic Layer: Political Entities
Coverage Name: polbnd
Table Description: Political Entities Area Feature Table
Table Name: polbnd.aft

```
{Header length}L;
Political Entities Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
country_name=T,*,N,Political Entity Name,-,-,-,:
fac_id=I,1,N,Face Primitive ID,-,-,-,:;
```

1	United States of America	2
2	Canada	3
3	Mexico	4
4	:	5
:	:	:
n	n	n

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TABLE C-21.   polbnd text feature table.

Thematic Layer: Political Entities
Coverage Name: polbnd
Table Description: Political Entities Text Feature Table
Table Name: polbndtx.tft

```
{Header length}L;
Political Entities Text Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
txt_id=I,1,N,Text Primitive ID,-,-,-,:
symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;
```

1	ZD040	1	10
:	:	:	:
n	n	n	n

TABLE C-22.   polbnd character value description table.

Thematic Layer: Political Entities
Coverage Name: polbnd
Table Description: Political Entities Character Value
                             Description Table
Table Name: char.vdt

```
{Header length}L;
Political Entities Character Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,6,N,Column Name,-,-,-,:
value=T,5,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	polbndtx.tft	f_code	ZD040	Named Location
2	polbndtx.tft	f_code	ZD045	Text Description

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TABLE C-23. <u>polbnd integer value description table</u>.

Thematic Layer: Political Entities
Coverage Name: polbnd
Table Description: Political Entities Integer Value Description Table
Table Name: int.vdt

```
{Header length}L;
Political Entities Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,3,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	symbol.rat	fon	1	Machine Default
2	symbol.rat	sty	1	Kern
3	symbol.rat	sty	2	Proportional
4	symbol.rat	sty	3	Constant
5	symbol.rat	clt	1	Black
6	symbol.rat	clt	2	Blue
7	symbol.rat	clt	3	Red-Brown
8	symbol.rat	clt	4	Magenta

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C.3.3.3 Place name coverage (placenam) directory and files. This
coverage contains named places in the database. The files for this coverage
are described in tables C-24 to C-27. The place names coverage directory
contains the following files:

          placenam   directory file
            int.vdt   integer value description table (only
                                when symbol.rat is present)
            int.vdx   integer vdt variable length index (only
                                when int.vdt is present)
            end   entity node primitive table
            nsi   entity node spatial index
            fcs   feature class schema table
            placenam.pft   places point feature table
            placetxt.tft   places text feature table (optional)
            tsi   text spatial index (only when a txt is
                                present)
            txt   text primitive table (only when a tft is
                                present)
            txx   text variable length index (only when a
                                txt is present)
            symbol.rat   symbology related attribute table (only
                                when implemented per the specification
                                sheet and when a tft is present)

  TABLE C-24. Content and format for placenam coverage feature class schema
               table.

Thematic Layer: Place Names
Coverage Name: placenam
Table Description: Place Names Feature Class Schema Table
Table Name: fcs

```
{Header length}L;
Place Names Feature Class Schema Table;-;
id=I,1,P,Row Identifier,-,-,-,:
feature_class=T,8,N,Name of Feature Class,-,-,-,:
table1=T,12,N,First Table,-,-,-,:
table1_key=T,15,N,Column Name in First Table,-,-,-,:
table2=T,12,N,Second Table,-,-,-,:
table2_key=T,6,N,Column Name in Second Table,-,-,-,:;
```

1	placenam	placenam.pft	end_id	end	id
2	placenam	end	placenam.pft_id	placenam.pft	id
3	placetxt	placetxt.tft	txt_id	txt	id
4	placetxt	txt	id	placetxt.tft	txt_id
5	placetxt	placetxt.tft	symbol.rat_id	symbol.rat	id

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TABLE C-25. <u>placenam point feature table</u>.

```
Thematic Layer:             Place Names
Coverage Name:              placenam
Table Description:          Place Names Point Feature Table
Table Name:                 placenam.pft
```

{Header length}L; Place Names Point Feature Table;-; id=I,1,P,Row Identifier,-,-,-,: place_name=T,40,N,Place Name,-,-,-,: end_id=I,1,N,Entity Node Primitive ID,-,-,-,:;		
1	Gulf of Mexico[1]	1
2	Fairfax[1]	2
3	Redlands[1]	3
4	Lake Superior[1]	4
:	:	:
n	n	n

NOTE 1: Representative place names.

TABLE C-26. <u>placenam text feature table</u>.

```
Thematic Layer:             Place Names
Coverage Name:              placenam
Table Description:          Place Names Text Feature Table
Table Name:                 placetxt.tft
```

{Header length}L; Place Names Text Feature Table;-; id=I,1,P,Row Identifier,-,-,-,: name=T,20,N,Place Name,-,-,-,: txt_id=I,1,N,Text Primitive ID,-,-,-,: symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;			
1	Richmond	1	1
2	Fairfax	2	6
3	Baltimore	3	8
:	:	:	:
n	n	n	n

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TABLE C-27.   placenam integer value description table.

Thematic Layer: Place Names
Coverage Name: placenam
Table Description: Place Names Integer Value Description Table
Table Name: int.vdt

```
{Header length}L;
Place Names Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,3,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	symbol.rat	fon	1	Machine Default
2	symbol.rat	sty	1	Kern
3	symbol.rat	sty	2	Proportional
4	symbol.rat	sty	3	Constant
5	symbol.rat	clt	1	Black
6	symbol.rat	clt	2	Blue
7	symbol.rat	clt	3	Red-Brown
8	symbol.rat	clt	4	Magenta

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APPENDIX D

DATA LIBRARY

D.1   SCOPE

D.1.1   Scope. This appendix contains the structure and content of each metadata and reference coverage table in a data library of the database. It is a mandatory part of this specification. Data coverage tables are defined in the specification sheets. The information contained herein is intended for compliance.

D.2   APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

D.3   DATA LIBRARY

The structure and content of each table in a data library of the database are provided in this section. The actual record contents of the metadata tables will vary with each library.

Each library is represented as a directory file.

D.3.1 Library metadata tables. Each data library shall contain the following metadata tables at the library level.

lib_147[1]	directory file
cat	coverage attribute table
dqt	data quality table
dqx	data quality index file
grt	geographic reference table
lht	library header table
lineage.doc	an optional documentation table
glossary.doc	an optional documentation table
*.dox	variable length index required by *.doc tables containing variable length fields

NOTE 1: Representative directory name for a library.

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D.3.1.1   Coverage attribute table.   A coverage attribute table
(cat) shall be present in every data library. Table D-1 depicts the format
and a sample record content of a data library cat. Each specification sheet
will define all possible cat records for a library. Actual records in a
library's cat will be dependent on the existence of the coverages in that
specific library.

   TABLE D-1.   Format and sample content for coverage attribute table (cat).

{Header length}L;
Coverage Attribute Table;-;
id=I,1,U,Row Identifier,-,-,-,:
coverage_name[1]=T,8,P,Coverage name,-,-,-,:
description=T,24,N,Coverage description,-,-,-,:
level[2]=I,1,N,Topology level,-,-,-,:;

1	libref	Library Reference	2
2	tileref	Tile Reference	3
3	aer	Aeronautical	3
4	dq	Data Quality	3
5	ecr	Earth Cover	0
6	mar	Maritime	3

   NOTES:
        1. This table depicts example coverages which may be present in a
library (example above is for TOD0, reference specification sheets for product
specific coverage attribute tables). Presence of these coverages will vary
with data availability. If library does not contain any data for a particular
coverage, then the record describing the coverage will not be present.
        2. The number in the level column represents the topology of each
coverage.

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D.3.1.2 Library header table. A library header table (lht) shall be present in every library. The format and sample content of the library header table for each library is presented in table D-2. The record content of this table will vary for each library.

TABLE D-2. Format and content for example library header table (lht).

```
{Header length}L;
Library Header Table;-1;
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,-,-,-,:2
source_id=T,30,N,Identifier of the source reference,-,-,-,:2
source_edition=T,20,N,Edition number of the source,-,-,-,:2
source_name=T,100,N,Name of library source,-,-,-,:2
source_date=D,1,N,Source Date,-,-,-,:2
security_class=T,1,N,Security Classification,-,-,-,:
downgrading=T,3,N,Downgrading,-,-,-,:
downgrading_date=D,1,N,Date,-,-,-,:
releasability=T,20,N,Releasability,-,-,-,:
edition_number=T,10,N,Edition number for this library,-,-,-,:
edition_date=D,1,N,Creation date for this library,-,-,-,:;
```

```
1\
TOD0(product specific)\
tod017\
Digital data collected equivalent to a hardcopy OPAREA.(product
specific)\
8\
250000 (product specific)\
SEE lineage.doc (product specific)\
SEE lineage.doc AND dqarea.aft (product specific)\
SAME AS ABOVE (product specific)\
SEE lineage.doc (product specific)\
19920801000000. (data specific)\
U (data specific)\
NA\
00000000000000.\
LIMITED DISTRIBUTION (data specific)\
2\
20050418000000.\
```

NOTES:
1. An optional glossary.doc file may be required through the Individual Library Instructions (ILIs). If implemented, the format of the glossary.doc table shall be the same as the format for the lineage.doc table (table D-5) with the exception that the table header description shall be "Glossary Documentation Table". When implemented, the glossary.doc name will be shown in the table header: "Library Header Table;glossary.doc;"
2. When multiple sources are used to create a library, a new record (new row in the lht) will be created for each source being defined.

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D.3.1.3 Geographic reference table. A geographic reference table (grt) shall be present in every library. The record content of this table may vary for each library. The format and sample content of the geographic reference table for each library is presented in table D-3.

TABLE D-3. Format and sample content for a geographic reference table (grt).

```
{Header length}L;
Geographic Reference Table;-;
id=I,1,P,Row Identifier,-,-,-,:
data_type=T,3,N,Type of coordinate data in the library,-,-,-,:
units=T,3,N,Units of measure code for x and y coordinates in library,-,-,-,:
ellipsoid_name=T,*,N,Name of the ellipsoid,-,-,-,:
ellipsoid_code=T,3,N,Ellipsoid Code,-,-,-,:
ellipsoid_detail=T,50,N,Details about library ellipsoid,-,-,-,:
vert_datum_name=T,*,N,Name of vertical datum reference,-,-,-,:
vert_datum_code=T,4,N,Code of vertical datum reference,-,-,-,:
vert_units=T,3,N,Units of measure code for Z values,-,-,-,:
sound_datum_name=T,*,N,Name of sounding datum,-,-,-,:
sound_datum_code=T,4,N,Code of sounding datum reference,-,-,-,:
sound_units=T,3,N,Units of measure code for soundings,-,-,-,:
geo_datum_name=T,*,N,Name of geodetic datum,-,-,-,:
geo_datum_code=T,4,N,Code of geodetic datum,-,-,-,:
projection_name[1]=T,*,N,Name of the projection,-,-,-,:;
```
```
1\
GEO\
DEG[2]\
WGS 84\
WGE\
A=6378137 B=6356752 METERS\
MEAN SEA LEVEL (product specific)\
MSL\
M\
N/A\
N/A\
M[3]\
WGS 84\
WGE\
DECIMAL DEGREES UNPROJECTED\[4]
```

NOTES
    1. Not included when data type is GEO.
    2. DEG with short or long floating point (decimal degree) coordinates.
    3. Must be M (meters) when soundings are defined in the specification sheet. Otherwise, will be null.
    4. Must agree with recorded data_type.

D.3.1.4 Data quality table. A data quality table (dqt) shall be present at the library-level for every library. The record content of this table may vary for each library. The format and sample content of the dqt for each library is presented in table D-4.

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TABLE D-4. <u>Format and sample content for data quality table (dqt).</u>

```
{Header length}L;
Data Quality Table;lineage.doc;
id=I,1,P,Row Identifier,-,-,-,:
vpf_level=T,8,N,VPF Level,-,-,-,:
vpf_level_name=T,8,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,*,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,-,-,-,:
collection_spec=T,*,N,Collection Specification Name,-,-,-,:
abs_horiz_acc=T,4,N,Absolute Horizontal Accuracy of VPF Level,-,-,-,:
abs_horiz_units=T,20,N,Unit of Measure for Absolute Horizontal Accuracy,-,-,-,:
abs_vert_acc=T,4,N,Absolute Vertical Accuracy of VPF Level,-,-,-,:
abs_vert_units=T,20,N,Unit of Measure for Absolute Vertical Accuracy,-,-,-,:
rel_horiz_acc=T,4,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,4,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\
tod017a[1]\ (data specific)
All features in this library are captured from the source materials using the rules
for feature extraction and inclusion conditions in accordance with this
specification.\
All features in this library have valid attribute codes assigned to them in accordance
with this specification.\
All data are topologically correct.  No duplicate features are present within a
coverage.
All areas are completely described as extracted from the source materials.
No undershoots or overshoots are present.  All data were consistently captured using
the rules described in the documentation table associated with this table and in the
various feature table narrative files present at the coverage level within the
library.\
1\
19920915000000. (Product specific)\
00000000000000. (Product specific)\
MIL-PRF-89049/10A (Product specific)\
19961222000000. (Product specific)\
19720801000000. (Product specific)\
19801001000000. (Product specific)\
MIL-PRF-89049/10A (Product specific)\
5[2]\
METERS\
20[2]\
METERS\
0\
METERS\
0\
METERS\
Additional descriptions of data lineage are available in the documentation table
associated with this data quality table (called lineage.doc).\
```

NOTES:
1. Replace with appropriate name for each library.
2. These values are for example only refer to section 3.3 for
clarification.

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D.3.1.5 <u>Lineage narrative table</u>. Information regarding the data
contained in the library is captured in the lineage.doc file (table D-5).
Specific lineage.doc information is found in the general and technical
documents including product specific extraction guides.

TABLE D-5. <u>Format and sample content for lineage documentation table</u>
<u>(lineage.doc)</u>.

```
{Header length}L;
Lineage Documentation Table;-;
id=I,1,P,Row Identifier,-,-,-,:
text=T,*,N,Text information,-,-,-,:;
```

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

D.3.2 <u>Data library reference coverages and tables</u>. The following
reference coverages named tileref and libref, including directory files and
tables, apply to all tiled data libraries. Untiled data libraries will only
contain the directory files and tables for the libref reference coverage.
These coverages are untiled and 2-dimensional.

D.3.2.1 <u>Tile Reference coverage (tileref) directory and files</u>. The
tile reference coverage directory contains the following files:


```
        tileref              directory file
          int.vdt            integer value description table (only
                             when symbol.rat is present)
          int.vdx            integer vdt variable length index (only
                             when int.vdt is present)
          cnd                connected node primitive table
          csi                connected node spatial index
          ebr                edge bounding rectangle table
          edg                edge primitive table
          edx                edge variable length index
          esi                edge spatial index
          fac                face primitive table
          fbr                face bounding rectangle table
          fcs                feature class schema table
          fsi                face spatial index
          rng                ring table
          tileref.aft        tile reference area feature table
          tilereft.tft       tile reference text feature table
                             (optional)
          tsi                text spatial index (only when a txt is
                             present)
          txt                text primitive table (only when a tft is
                             present)
          txx                text variable length index (only when a
                             txt is present)
          symbol.rat         symbology related attribute table (only
                             when implemented per the specification
                             sheet and when a tft is present)
```


D.3.2.1.1 <u>Tile Reference feature class schema table</u>. A feature class
schema table shall be present in every tile reference coverage (tileref). The
format and content of the fcs is presented in table D-6. The record content
of this table may vary for each tile reference coverage depending upon the
presence or absence of a text feature class.

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TABLE D-6. Content and format for tileref feature class schema table.

```
Thematic Layer:              Tile Reference
Coverage Name:               tileref
Table Description:           Feature Class Schema Table
Table Name:                  fcs
```

```
{Header length}L;
Tile Reference Feature Class Schema Table;-;
id=I,1,P,Row Identifier,-,-,-,:
feature_class=T,8,N,Name of Feature Class,-,-,-,:
table1=T,12,N,First Table,-,-,-,:
table1_key=T,15,N,Column Name in First Table,-,-,-,:
table2=T,12,N,Second Table,-,-,-,:
table2_key=T,6,N,Column Name in Second Table,-,-,-,:;
```

1	tileref	tileref.aft	fac_id	fac	id
2	tileref	fac	tileref.aft_id	tileref.aft	id
3	tileref	tilereft.tft	txt_id	txt	id
4	tileref	txt	id	tilereft.tft	txt_id
5	tileref	tilereft.tft	symbol.rat_id	symbol.rat	id

D.3.2.1.2 Tile reference feature tables. The feature tables implemented in the tile reference coverage are specified in tables D-7 and D-8. The text feature table is optional. If it is present, there is a one-to-one correspondence between the records of the tile reference area feature table and text feature table. Thematic indices will not be implemented in the tile reference coverage feature tables.

TABLE D-7. Format and content for tileref area feature table.

```
Thematic Layer:              Tile Reference
Coverage Name:               tileref
Table Description:           Tile Reference Area Feature Table
Table Name:                  tileref.aft
```

```
{Header length}L;
Tile Reference Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
tile_name=T,15,N,Library Tile Path Name,-,-,-,:
fac_id=I,1,N,Face Primitive ID,-,-,-,:;
```

1	FJHB1500[1]	2
2	FJHB1515[1]	3
3	FJHB3030[1]	4
4	FJHB3015[1]	5
:	:	:
n	n	n

NOTE 1: The sample tile path names for libraries.

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TABLE D-8. Format and content for tileref text feature table.

Thematic Layer: Tile Reference
Coverage Name: tileref
Table Description: Tile Reference Text Feature Table
Table Name: tilereft.tft

{Header length}L; Tile Reference Text Feature Table;-; id=I,1,P,Row Identifier,-,-,-,: tile_name=T,8,N,Tile Name,-,-,-,: txt_id=I,1,N,Text Primitive ID,-,-,-,: symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;			
1	FJHB1500	1	1
2	FJHB3030	2	1
3	:	3	1
:	:	:	:
n	n	n	n

D.3.2.1.3 Tile reference primitive tables. The format of the primitive tables in the tile reference coverage directory is described in section 3.16.5. Coordinate data type is defined in the specification sheets. Although the text feature table is optional, a sample text primitive table (table D-9) is presented to show sample values for the STRING column. The structure and format of the variable-length index files and spatial index files are provided in section 3.14.3. The structure and format of the bounding rectangle tables are described in section 3.16.5.

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TABLE D-9.   Format and example of content for tileref text primitive table.

Thematic Layer: Tile Reference
Coverage Name: tileref
Table Description: Text Primitive Table
Table Name: txt

```
{Header length}L;
Text Primitive Table;-;
id=I,1,P,Row Identifier,-,-,-,:
string=T,*,N,Text String,-,-,-,:
shape_line=C/B¹,*,N,Shape of Text String,-,-,-,:;
```

1	\FJHB1500[2]	-5.811609,43.662006
2	\FJHB1515[2]	-8.574136,43.435287
3	\FJHB3030[2]	-7.437326,42.881957
4	\FJHB3015[2]	-6.835582,40.736553
		-6.825007,40.846355
:	:	:
n	n	n

NOTES
    1. Coordinate type C is used for short floating point coordinates and coordinate type B is used for long floating point coordinates. Coordinate data type is defined in the specificiation sheets.
    2 Sample tile path names for libraries.

TABLE D-10.   Tile reference integer value description table.

Thematic Layer: Tile Reference
Coverage Name: tileref
Table Description: Tile Reference Integer Value Description Table
Table Name: int.vdt

```
{Header length}L;
Tile Reference Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,3,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	symbol.rat	fon	1	Machine Default
2	symbol.rat	sty	1	Kern
3	symbol.rat	sty	2	Proportional
4	symbol.rat	sty	3	Constant
5	symbol.rat	clt	1	Black
6	symbol.rat	clt	2	Blue
7	symbol.rat	clt	3	Red-Brown
8	symbol.rat	clt	4	Magenta

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D.3.2.2 <u>Library Reference coverage directory and files</u>. The library
reference coverage directory contains the following files:


```
        libref              directory file
         int.vdt            integer value description table (only
                            when symbol.rat is present)
         int.vdx            integer vdt variable length index (only
                            when int.vdt is present)
         char.vdt           character value description table
         char.vdx           character vdt variable length index
         cnd                connected node primitive table
         csi                connected node spatial index
         ebr                edge bounding rectangle table
         edg                edge primitive table
         edx                edge variable length index
         esi                edge spatial index
         fcs                feature class schema table
         libref.lft         library reference line feature table
         libreft.tft        library reference text feature table
                            (optional)
         tsi                text spatial index (only when a txt is
                            present)
         txt                text primitive table (only when a tft is
                            present)
         txx                text variable length index (only when a
                            txt is present)
         symbol.rat         symbology related attribute table (only
                            when implemented per the specification
                            sheet and when a tft is present)
```


D.3.2.2.1 <u>Library Reference feature class schema table</u>. A feature
class schema table shall be present in every library reference coverage
(libref). The format and content of the fcs is presented in table D-11.
The record content of this table may vary for each library reference
coverage, depending upon the presence or absence of a text feature class.

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TABLE D-11.   Content and format for libref feature class schema table.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Feature Class Schema Table
Table Name: fcs

```
{Header length}L;
Library Reference Feature Class Schema Table;-;
id=I,1,P,Row Identifier,-,-,-,:
feature_class=T,8,N,Name of Feature Class,-,-,-,:
table1=T,12,N,First Table,-,-,-,:
table1_key=T,15,N,Column Name in First Table,-,-,-,:
table2=T,12,N,Second Table,-,-,-,:
table2_key=T,6,N,Column Name in Second Table,-,-,-,:;
```

1	libref	libref.lft	edg_id	edg	id
2	libref	edg	libref.lft_id	libref.lft	id
3	libreft	libreft.tft	txt_id	txt	id
4	libreft	txt	id	libreft.tft	txt_id
5	libreft	libreft.tft	symbol.rat_id	symbol.rat	id

D.3.2.2.2   Library reference feature tables. The feature tables implemented in the library reference coverage are specified in tables D-12 and D-13. Thematic indices will not be implemented in the library reference coverage feature tables.

TABLE D-12.   Format and content for libref line feature table.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Line Feature Table
Table Name: libref.lft

```
{Header length}L;
Library Reference Line Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
edg_id=I,1,N,Edge Primitive ID,-,-,-,:;
```

1	FA000	1
2	BA010	2
3	AP030	3
:	:	:
n	n	n

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TABLE D-13. <u>Format and content for libref text feature table</u>.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Text Feature Table
Table Name: libreft.tft

{Header length}L; Library Reference Text Feature Table;-; id=I,1,P,Row Identifier,-,-,-,: f_code=T,5,N,FACC Feature Code,char.vdt,-,-,: txt_id=I,1,N,Text Primitive ID,-,-,-,: symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;			
1	ZD040	1	1
2	ZD040	2	2
3	ZD045	3	6
:	:	:	:
n	n	n	n

D.3.2.2.3 <u>Library reference primitive tables</u>. The format of the primitive tables in the library reference coverage directory is defined in section 3.16.5. Coordinate data type is defined in the specification sheets. Although the text feature table is optional, a sample text primitive table is presented to show sample values for the STRING column (table D-14).

TABLE D-14. <u>Format and example of the content for libref text primitive table</u>.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Text Primitive Table
Table Name: txt

{Header length}L; Text Primitive Table;-; id=I,1,P,Row Identifier,-,-,-,: string=T,*,N,Text String,-,-,-,: shape_line=C/B[1],*,N,Shape of Text String,-,-,-,:;		
1	DUBLIN[2]	-6.811609,53.662006
:	:	:
n	n	n

NOTES
   1. Coordinate type C is used for short floating point coordinates and coordinate type B is used for long floating point coordinates. Coordinate data type is defined in the speciciation sheets.
   2. The names and extent of the product libraries, or other geographic identifiers.

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D.3.2.2.4 <u>Library reference value description tables</u>. A character value
description table shall be present in the library reference coverage. The
format and content of the char.vdt are presented in table D-15. An integer
value description table shall be optionally present in the library reference
coverage when the symbol.rat is present, meaning that the text feature table
is present as well. The format and content of the int.vdt are presented in
table D-16.

TABLE D-15.   <u>Library reference character value description table</u>.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Character Value Description
                           Table
Table Name: char.vdt

```
{Header length}L;
Library Reference Character Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,6,N,Column Name,-,-,-,:
value=T,5,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	libref.lft	f_code	AP030	Road
2	libref.lft	f_code	BA010	Coastline/Shoreline
3	libref.lft	f_code	BH140	River/Stream
4	libref.lft	f_code	FA000	Administrative Boundary
5	libreft.tft	f_code	ZD040	Named Location
6	libreft.tft	f_code	ZD045	Text Description

TABLE D-16.   <u>Library reference integer value description table</u>.

Thematic Layer: Library Reference
Coverage Name: libref
Table Description: Library Reference Integer Value Description
                           Table
Table Name: int.vdt

```
{Header length}L;
Library Reference Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,3,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	symbol.rat	fon	1	Machine Default
2	symbol.rat	sty	1	Kern
3	symbol.rat	sty	2	Proportional
4	symbol.rat	sty	3	Constant
5	symbol.rat	clt	1	Black
6	symbol.rat	clt	2	Blue
7	symbol.rat	clt	3	Red-Brown
8	symbol.rat	clt	4	Magenta

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APPENDIX E

DATA QUALITY COVERAGE

E.1   SCOPE

E.1.1   <u>Scope</u>.   This appendix contains the structure and content of the
data quality coverage.   This coverage is common among all VPF based products.
It is a mandatory part of this specification.   Data quality coverage tables
are defined in this appendix.   The information contained herein is intended
for compliance.

E.2   APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

E.3   DATA LIBRARY

The structure and content of each table in a data quality coverage of
the library are provided in this section.   Each library in a database will
have a separate data quality table reflecting the sources used to build the
library and data quality information specific to the library.

E.3.1   <u>Data quality coverage</u>.   A data quality coverage shall be
implemented as shown in tables E-1 through E-11.   This coverage contains
information that affects the entire library.   It may also contain information
that pertains to particular coverages, feature classes, or even to particular
features.   For example, the line feature table dqline.lft (table E-3) and line
related attribute table dqline.rat (table E-4) are used to describe data
quality conditions that result from the edge matching of two sources.   The dq
coverage is tiled and 2-dimensional.   Refer to specification sheets for the
following product-specific dq implementation guidance:

1.   The data type for the geographic coordinates contained in the dq
     primitive tables.
2.   The inclusion/exclusion of the optional text feature table
     (dqtxt.tft).   Note, that if included, the dq coverage will implement
     the feature-to-primitive link for its text feature class using a
     text join table.
3.   The inclusion/exclusion of the symbol.rat table.

Note that for items 2 and 3, the inclusion or exclusion of each item affects
the contents of the fcs, char.vdt, and int.vdt tables in the dq coverage.

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E.3.2. <u>Data quality coverage directory and files</u>. The data quality
coverage directory contains the following files, along with their thematic
indices as defined in this specification:

```
dq            directory file
int.vdt       integer value description table
int.vdx       integer vdt variable length index
char.vdt      character value description table
char.vdx      character vdt variable length index
cnd           connected node primitive table
csi           connected node spatial index
cnx           connected node variable length index
ebr           edge bounding rectangle table
edg           edge primitive table
edx           edge variable length index
esi           edge spatial index
fac           face primitive table
fbr           face bounding rectangle table
fsi           face spatial index
rng           ring table
fcs           feature class schema table
dqline.lft    data quality line feature table
dqline.ljt    data quality line feature join table
dqline.rat    data quality line related attribute table
dqline.rax    data quality line rat variable length index
dqline.rjt    data quality line rat join table
dqarea.aft    data quality area feature table
dqarea.ajt    data quality area feature join table
dqarea.rat    data quality area related attribute table
dqarea.rax    data quality area rat variable length index
dqarea.rjt    data quality area rat join table
dqvoida.aft   data quality void area feature table
dqvoida.ajt   data quality void area feature join table
notes.rat     notes relational attribute table
notes.rax     notes rat variable length index
dqvoida.njt   data quality void area notes join table
dqtxt.tft     data quality text feature table (optional)
dqtxt.tjt     data quality text feature join table
                    (only when a tft is present)
tsi           text spatial index (only when a txt is present)
txt           text primitive table (only when a tft is present)
txx           text variable length index (only when a txt is present)
symbol.rat    symbology related attribute table
                    (only when implemented per the specification
                     sheet and when a tft is present)
```

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TABLE E-1. <u>Data quality character value description table.</u>

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Character Value Description Table
Table Name: char.vdt

```
{Header length}L;
Data Quality Character Value Description Table;-;
id=I,1,P,Row Identifier -,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,6,N,Column Name,-,-,-,:
value=T,5,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

| 1 | dqvoida.aft | f_code | ZD020 | Void Collection Area |
| 2 | dqtxt.tft | f_code | ZD045 | Text Description |

TABLE E-2. <u>Data quality integer value description table.</u>

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Integer Value Description Table
Table Name: int.vdt

```
{Header length}L;
Data Quality Integer Value Description Table;-;
id=I,1,P,Row Identifier,-,-,-,:
table=T,12,N,Name of the Feature Table,-,-,-,:
attribute=T,12,N,Column Name,-,-,-,:
value=S,1,N,Unique Value of Attribute,-,-,-,:
description=T,*,N,Description of Value,-,-,-,:;
```

1	dqvoida.aft	vca	0	Unknown
2	dqvoida.aft	vca	1	Data Not Requested by User
3	dqvoida.aft	vca	2	Area Too Rough to Collect
4	dqvoida.aft	vca	3	No Available Imagery
5	dqvoida.aft	vca	6	No Available Map Source
6	dqvoida.aft	vca	7	No Suitable Imagery
7	dqvoida.aft	vct	0	Unknown
8	dqvoida.aft	vct	1	Relief
9	dqvoida.aft	vct	999	Other
10	symbol.rat	fon	1	Machine Default
11	symbol.rat	sty	1	Kern
12	symbol.rat	sty	2	Proportional
13	symbol.rat	sty	3	Constant
14	symbol.rat	clt	1	Black
15	symbol.rat	clt	2	Blue
16	symbol.rat	clt	3	Red-Brown
17	symbol.rat	clt	4	Magenta

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TABLE E-3. <u>Data quality line feature table</u>.

```
Thematic Layer:              Data Quality
Coverage Name:               dq
Feature Table Description:   Data Quality Line Feature Table
Table Name:                  dqline.lft
Thematic Index ID Number:    1
```

```
{Header length}L;
Data Quality Line Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
ss1=T,20,N,First Source Sheet or Data Identifier,-,ss11.lti,-,:
ss2=T,20,N,Second Source Sheet or Data Identifier,-,ss21.lti,-,:;
```

Column	Description	Value	Value Meaning
id	Row Identifier	Sequential beginning with 1	
ss1	First Source Sheet or Data Identifier		This item contains the name of the first map sheet number or other source where a line feature crosses or runs along the source boundary, and requires a data quality description (see dqline.rat). (e.g., 6446 II V782)
ss2	Second Source Sheet or Data Identifier		This item contains the name of the second map sheet number or other source where a line feature crosses or runs along the source boundary, and requires a data quality description (see dqline.rat). (e.g., 6446 I V782)

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TABLE E-4. Data quality line related attribute table.

```
Thematic Layer:              Data Quality
Coverage Name:               dq
Table Description:           Data Quality Line Related Attribute Table
Table Name:                  dqline.rat
```

```
{Header length}L;
Data Quality Line Related Attribute Table;-;
id=I,1,P,Row Identifier,-,-,-,:
dqd=T,*,N,Data Quality Description,-,-,-,:
thl=T,*,N,Data Quality Thematic Layer,-,-,-,:;
```

Column	Description	Value	Value Meaning
id	Row Identifier	Sequential beginning with 1	
dqd	Data Quality Description		This item contains a text string describing specific conditions occurring within the coverage at the location identified by the dq feature. Typically this refers to edgematch problems observed between two source maps and identifies any steps taken to ameliorate the problem.
thl	Data Quality Thematic Layer		This is the abbreviated thematic coverage name.

TABLE E-5. Format for data quality line related join table.

```
Thematic Layer:              Data Quality
Coverage Name:               dq
Table Description:           Data Quality Line Related Join Table
Table Name:                  dqline.rjt
```

```
{Header length}L;
Data Quality Line Related Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
dqline.lft_id=I,1,N,Feature Key,-,fid1.rti,-,:
dqline.rat_id=I,1,N,Related Attribute Table Row Identifier,-,rat1.rti,-,:;
```

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TABLE E-6.   Data quality area feature table.

```
Thematic Layer:              Data Quality
Coverage Name:               dq
Table Description:           Data Quality Area Feature Table
Table Name:                  dqarea.aft
Thematic Index ID Number:    2
```

```
{Header length}L;
Data Quality Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
sin=T,20,N,Source Identification,-,sin2.ati,-,:
mse=T,10,N,Map Sheet Edition,-,mse2.ati,-,:
mcd=D,1,N,Map Compilation Date,-,-,-,:
mrd=D,1,N,Map Revision Date,-,-,-,:
mpd=D,1,N,Map Print Date,-,-,-,:
sdp=T,*,N,Source Description,-,-,-,:
aha=F,1,N,Absolute Horizontal Accuracy in Meters,-,aha2.ati,-,:
ava=F,1,N,Absolute Vertical Accuracy in Meters,-,ava2.ati,-,:;
```

Column	Description	Value	Value Meaning
id	Row Identifier	Sequential beginning with 1	
sin	Source Identification		Alphanumeric String of the Map Sheet, or Source Name or Identification Number
mse	Map Sheet Edition		Alphanumeric String of the Map Sheet Edition
mcd	Map Compilation Date		Appropriate date value or space character filled if null
mrd	Map Revision Date		Appropriate date value or space character filled if null
mpd	Map Print Date		Appropriate date value or space character filled if null
sdp	Source Description		Contains a description of conditions occurring in the database, such as sheet-wide phenomena, regional phenomena, or marginalia. "Character String of the Map Sheet Information" (e.g., "All roads are approximate alignment")

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TABLE E-6. <u>Data quality area feature table (continued)</u>.

aha   Absolute Horizontal Accuracy in Meters
                                        -32767.0   Unknown
                                        >= 0.0   Actual Value

ava   Absolute Vertical Accuracy in Meters
                                        -32767.0   Unknown
                                        >= 0.0   Actual Value

TABLE E-7. <u>Data quality area related attribute table</u>.

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Area Related Attribute Table
Table Name: dqarea.rat

```
{Header length}L;
Data Quality Area Related Attribute Table;-;
id=I,1,P,Row Identifier,-,-,-,:
dqd=T,*,N,Data Quality Description,-,-,-,:
thl=T,*,N,Data Quality Thematic Layer,-,-,-,:;
```

Column	Description	Value	Value Meaning
id	Row Identifier	Sequential beginning with 1	
dqd	Data Quality Description		This item contains a text string describing specific conditions occurring within the coverage at the location identified by the dq feature. Typically this refers to edgematch problems observed between two source maps and identifies any steps taken to ameliorate the problem.
thl	Data Quality Thematic Layer		This is the abbreviated coverage name.

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TABLE E-8. <u>Format for data quality area related join table</u>.

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Area Related Attribute Join Table
Table Name: dqarea.rjt

```
{Header length}L;
Data Quality Area Related Join Table;-;
id=I,1,P,Row Identifier,-,-,-,:
dqarea.aft_id=I,1,N,Feature Key,-,fid2.rti,-,:
dqarea.rat_id=I,1,N,Related Attribute Table Row Identifier,-,rat2.rti,-,:;
```

TABLE E-9. <u>Data quality void collection area feature table</u>.

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Void Collection Area Feature Table
Table Name: dqvoida.aft
Thematic Index ID Number: 3
Portrayal Criteria: specific requirements for portrayal criteria are
                              located in the specification sheets.

```
{Header length}L;
Data Quality Void Collection Area Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
vca=S,1,N,Void Collection Attribute,int.vdt,vca3.ati,-,:
vct=S,1,N,Void Collection Type,int.vdt,vct3.ati,-,:;
```

Column	Description	Value	Value Meaning	Applicable F_CODE for Attribute Value
id	Row Identifier	Sequential beginning with 1		
f_code	FACC Feature Code			
		ZD020	Void Collection Area	
vca	Void Collection Attribute			
		0	Unknown	ZD020
		1	Data Not Requested by User	ZD020
		2	Area Too Rough to Collect	ZD020
		3	No Available Imagery	ZD020
		6	No Available Map Source	ZD020
		7	No Suitable Imagery	ZD020

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TABLE E-9. Data quality void collection area feature table (continued).

vct   Void Collection Type
                              0   Unknown   ZD020
                              1   Relief   ZD020
                              999   Other   ZD020

TABLE E-10. Data quality text feature table.

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Text Feature Table
Table Name: dqtxt.tft
Thematic Index ID Number: 4

```
{Header length}L;
Data Quality Text Feature Table;-;
id=I,1,P,Row Identifier,-,-,-,:
f_code=T,5,N,FACC Feature Code,char.vdt,-,-,:
symbol.rat_id=I,1,N,Symbol Identification,-,-,-,:;
```

				Applicable F_CODE for
Column	**Description**	**Value**	**Value Meaning**	**Attribute Value**
id	Row Identifier	Sequential beginning with 1		
f_code	FACC Feature Code			
		ZD045	Text Description	

symbol.rat_id
          Symbol Identification
          (Refer to Symbol Related Attribute Table for selection of values)

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TABLE E-11. <u>Content and format for data quality coverage feature class schema</u>
<u>table</u>.

Thematic Layer: Data Quality
Coverage Name: dq
Table Description: Data Quality Feature Class Schema Table
Table Name: fcs

```
{Header length}L;
Data Quality Feature Class Schema Table;-;
id=I,1,P,Row Identifier,-,-,-,:
feature_class=T,8,N,Name of Feature Class,-,-,-,:
table1=T,12,N,First Table,-,-,-,:
table1_key=T,15,N,Column Name in First Table,-,-,-,:
table2=T,12,N,Second Table,-,-,-,:
table2_key=T,15,N,Column Name in Second Table,-,-,-,:;
```

1	dqline	dqline.lft	id	dqline.ljt	dqline.lft_id
2	dqline	dqline.ljt	edg_id	edg	id
3	dqline	edg	id	dqline.ljt	edg_id
4	dqline	dqline.ljt	dqline.lft_id	dqline.lft	id
5	dqline	dqline.lft	id	dqline.rjt	dqline.lft_id
6	dqline	dqline.rjt	dqline.rat_id	dqline.rat	id
7	dqline	dqline.rat	id	dqline.rjt	dqline.rat_id
8	dqline	dqline.rjt	dqline.lft_id	dqline.lft	id
9	dqarea	dqarea.aft	id	dqarea.ajt	dqarea.aft_id
10	dqarea	dqarea.ajt	fac_id	fac	id
11	dqarea	fac	id	dqarea.ajt	fac_id
12	dqarea	dqarea.ajt	dqarea.aft_id	dqarea.aft	id
13	dqarea	dqarea.aft	id	dqarea.rjt	dqarea.aft_id
14	dqarea	dqarea.rjt	dqarea.rat_id	dqarea.rat	id
15	dqarea	dqarea.rat	id	dqarea.rjt	dqarea.rat_id
16	dqarea	dqarea.rjt	dqarea.aft_id	dqarea.aft	id
17	dqvoida	dqvoida.aft	id	dqvoida.ajt	dqvoida.aft_id
18	dqvoida	dqvoida.ajt	fac_id	fac	id
19	dqvoida	fac	id	dqvoida.ajt	fac_id
20	dqvoida	dqvoida.ajt	dqvoida.aft_id	dqvoida.aft	id
21	dqvoida	dqvoida.aft	id	dqvoida.njt	dqvoida.aft_id
22	dqvoida	dqvoida.njt	notes.rat_id	notes.rat	id
23	dqvoida	notes.rat	id	dqvoida.njt	notes.rat_id
24	dqvoida	dqvoida.njt	dqvoida.aft_id	dqvoida.aft	id
25	dqtxt	dqtxt.tft	id	dqtxt.tjt	dqtxt.tft_id
26	dqtxt	dqtxt.tjt	txt_id	txt	id
27	dqtxt	txt	id	dqtxt.tjt	txt_id
28	dqtxt	dqtxt.tjt	dqtxt.tft_id	dqtxt.tft	id
29	dqtxt	dqtxt.tft	symbol.rat_id	symbol.rat	id

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APPENDIX F

VECTOR PRODUCT FEATURE AND ATTRIBUTE GLOSSARY

F.1 SCOPE

F.1.1 Scope. This Appendix describes the relationship between feature and attribute denotation (coding) used in the Vector Product Format (VPF) datasets covered by this specification, and the Digital Geographic Information Working Group (DGIWG) Digital Geographic Information Exchange Standard (DIGEST) Part 4, Feature and Attribute Coding Catalogue (FACC), and the National Imagery and Mapping Agency (NIMA) Profile of FACC. This Appendix is a mandatory part of the specification. The information contained herein is intended for compliance. Feature and attribute requirements are identified in applicable product specification sheets.

F.2 APPLICABLE DOCUMENTS

Digital Geospatial Information Exchange Standard (DIGEST), Part 4, Feature and Attribute Coding Catalogue (FACC)

(Copies of the aforementioned publication are available at http://www.digest.org)

Digital Geographic Information Working Group (DGIWG) Feature Data Dictionary (DFDD)

(Copies of the aforementioned publication are available at https://www.dgiwg.org/FAD/)

National Imagery and Mapping Agency (NIMA) Profile of the DIGEST Feature and Attribute Coding Catalogue (FACC)

NSG Feature Data Dictionary (NFDD)

NSG Feature Catalog (NFC)

(Copies of the above publications are available from the National Geospatial-Intelligence Agency, National Center for Geospatial Intelligence Standards (NCGIS), Mail Stop P-106, 12310 Sunrise Valley Drive, Reston, VA 20191-3449.)

F.3 REQUIREMENTS

F.3.1 Digital Geographic Information Exchange Standard (DIGEST) Part 4, Feature and Attribute Coding Catalogue (FACC). In 1993, the Defense Mapping Agency (DMA) adopted the DIGEST FACC feature and attribute coding for its Vector Product Format (VPF) products. The first eight VPF products were coded using the DIGEST FACC directly, and included the Digital Nautical Chart (DNC), Vector Map Level 0 (VMAP 0), Vector Map Level 1 (VMAP 1), Vector Map Level 2 (VMAP 2), Urban Vector Map (UVMAP), Vector Product Interim Terrain Data (VITD), Digital Topographic Data (DTOP), and World Vector Shoreline Plus (WVSPlus). Feature and attribute codes were not standardized across product lines in these products, and due to redundancies in FACC, coding inconsistencies may occur between different products.

F.3.2 NIMA Profile of the DIGEST FACC. In 1996, the National Imagery and Mapping Agency (NIMA) began working on a second generation of VPF products, which are covered under this general specification. These include Tactical Ocean Data Level 0 (TOD0), Tactical Ocean Data Level 1 (TOD1),

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Tactical Ocean Data Level 2 (TOD2), Tactical Ocean Data Level 3 (TOD3), Tactical Ocean Data Level 4 (TOD4), and Vector Vertical Obstruction Data (VVOD). To facilitate the generation of products from a centralized data store, the feature and attribute coding for these products has been standardized across product lines based on a data catalog called the NIMA Profile of FACC. In addition to identifying those FACC features and attributes that are relevant to this suite of VPF products, the NIMA Profile of FACC also identifies specific attributes for each feature, and identifies relevant enumerate values for coded attributes. The principles of feature and attribute standardization used in the development of the NIMA Profile of FACC were:

     a. Any item of geospatial intelligence information was coded in only one way. For example, FACC allows a causeway to be coded either as a feature AQ064 Causeway or as the feature DB090 Embankment, with an attribute of "Functional Use 18 = as a causeway". The NIMA Profile of FACC only allows feature AQ064 to be used.

     b. Attributes have been incorporated into the catalog in such a manner that restricts each attribute to a single logical concept. For example, although the FACC attribute Existence (EXS) can be used to denote operational status (operational, abandoned, etc.), and certainty of existence (definite, doubtful, reported), the NIMA Profile of FACC uses a separate attribute Certainty of Existence (COE) to indicate the second concept.

When new items were added to the NIMA Profile of FACC, they were harmonized in such a manner that they did not conflict with or duplicate existing NIMA Profile of FACC entries. The NIMA Profile of FACC was intended to be the basis for new VPF products. No attempt was made to update the first eight VPF products (see section F.3.1) to conform to the NIMA Profile of FACC.

     F.3.3 <u>DGIWG Feature Data Dictionary (DFDD)</u>. In 2005, the DGIWG promulgated a registry-based DGIWG Feature Data Dictionary, to replace FACC. The existing FACC development was frozen, and in the future new geospatial features and attributes will be incorporated into the DFDD rather than FACC. Numerous changes were made to DFDD to normalize the feature and attribute coding and eliminate some of the duplications and redundancies contained in FACC. From the DFDD, NGA has developed the National System for Geospatial Intelligence (NSG) Feature Data Dictionary (NFDD), and NSG Feature Catalog (NFC), both of which are being used to develop new production, storage, and dissemination systems at NGA, including those that will generate legacy VPF products.

     F.3.4 <u>Feature and attribute coding in VPF products</u>. As of the end of 2005, none of NGA's Vector Product Format (VPF) products, including those covered by this general specification (TOD0, TOD1, TOD2, TOD3, TOD4 and VVOD), have been changed to incorporate DFDD feature and attribute coding. Feature and attribute coding in products covered by this general specification shall be in accordance with applicable product specification sheets, regardless of the feature and attribute-coding scheme used for internal data storage, or in production systems of the data producing organization(s).

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CONCLUDING MATERIAL

Custodians: Preparing Activity:
Air Force: 09   NGA - MP
Army: TI
Navy: NO
                                                     Project GINT-0372
Review Activities:
Air Force: 33, 99
Army: AV, CE2
Coast Guard: CG
DISA: DC2
DCMA: CM
DIA: DI
DMSO: DMS
Marine Corps: MC
NSA: NS
USNORTHCOM: US
USSOCOM

NOTE: The activities listed above were interested in this document as of the
date of this document. Since organizations and responsibilities can change,
you should verify the currency of the information above by using the ASSIST
Online database at http://assist.daps.dla.mil/.