



Natural Resources
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CanMatrix (Raster Topographic Maps)

Metadata Format

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Purpose

The present document describes the transfer format of the data set metadata for CanMatrix product. The information on a CanMatrix data set is transferred in two distinct files: One describing the geometry and the other describing the metadata.

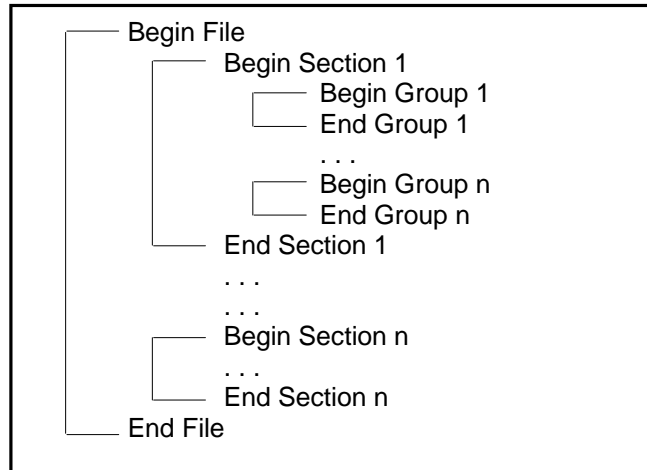
1- INFORMATION STRUCTURE

Metadata are classified into information sections. Each section has key words making it possible to determine the format and the nature of the specified value. The data are organized so as to enable the format's evolution and to ease its reading.

2- FORMAT GENERAL DESCRIPTION

2.1- File Structure

The file is structured in information sections. The beginning and end of files, sections and information groups are delimited by key words (BEGIN, END). The following is the general structure of a metadata file:



2.2- Line Structure

Data are in lines and conform to the following format:

comment	column 1;
key word	columns 2 to 15;
separator	column 16;
value	columns 17 to 80 inclusively.

Information is supplied in lines by combining the key word, separator and value. Lines have a maximum length of 80 characters. The *Value* field is ended with a carriage return to position 81 or before. The «blank» characters inserted left of the *Value* are not interpreted. However, the first «non-blank» character met indicates the beginning of the value. The next characters have to conform to the format determined for this particular value. A chain of characters of «0» in length (carriage return to position 17) or a chain of «blank» characters is considered empty. Information requiring more than one line shall conform to the same format (key word, separator and value).

2.2.1- Comments – Column 1

Lines with an exclamation mark (!) in column number 1 are considered comment lines and are not interpreted.

2.2.2- Key Words – Columns 2 to 15

The key word field contains a defined chain of characters for the purpose of identifying the nature of the specified value. The key words meet two (2) objectives: either they delimit the structure of the file or they identify in a unique fashion the specified values.

2.2.2.1- Key Words and Structure related values

The key words BEGIN and END are used to delimit the file and its sections. If more than one information group are associated to a section, they are also delimited by the key words BEGIN and END. The beginning and end of the file are combined with the FILE value. The beginning and end of a section are combined with the section name followed by the *_SECTION* suffix (e.g. DATASET_SECTION). Finally, the beginning and end of a group of information are combined with the group name.

2.2.2.2- Key Words and Specific values

Each key word defines the nature of the value field. The key words are unique and must conform to the designated spelling.

2.2.2.3- Structure Example

```
BEGIN      FILE
!Beginning of the data set section
BEGIN      DATA_SET_SECTION
...
END        DATA_SET_SECTION
END        FILE
```

2.3- Separator – Column 16

Column 16 is used as separator between key words and values. The «blank» character (« ») is used as separator.

2.4- Values – Columns 17 to 80 inclusively

The *Value* field contains the information to be transmitted. This field must conform to the format designated by each key word. Field lengths must be adhered to. The carriage return will be used to indicate the end of the chain of characters.

3- FORMAT DETAILED DESCRIPTION

The detailed description specifies the values and the format to be used for transferring metadata. The metadata file format is subjected to the following rules.

- **Key word:** The key word is used to clearly identify the given value and it is invariable (example: MAP_EDITION).
- **Value type and length:** The second information provides the numerical (N) or alphanumerical (A) type and its maximum length (examples: A(2) for two alphanumerical characters, N(2) for integers under 100, N(6.3) for a number with a maximum accuracy of three digits or decimals).
- **Description length:** The third information provides the description field maximum length (example: A(15) for 15 alphanumerical characters). This field contains a brief description that will facilitate consulting the metadata file. This description is separated from the value by a «blank» character and included between parentheses. The given length includes the parentheses. The description may be given in either English or French. Several key words have no description and are identified as having a «0» description length. The description is always optional.

- **Number of lines:** The fourth information provides the maximum number of lines that can be used for this key word (example: 4L for 4 lines maximum).

Example:

MAP_EDITION	N(2)	A(0)	1L
--------------------	-------------	-------------	-----------

3.1- TERRITORY Section

The TERRITORY Section initiates the metadata file. It contains the metadata linked to the territory represented. The data must comply with the following format and order.

BEGIN	A(30)	A(0)	1L
--------------	--------------	-------------	-----------

The key word BEGIN is associated with the FILE value to indicate the file's beginning.

BEGIN	A(30)	A(0)	1L
--------------	--------------	-------------	-----------

The BEGIN key word is associated with the TERRITORY_SECTION value to indicate the beginning of the section.

NTS	A(8)	A(0)	1L
------------	-------------	-------------	-----------

Territory number according to National Topographic System (NTS) sectioning for Canada at 1:50 000 or 1:250 000 scale. For special NTS coverages, the number corresponds to the main sheet coverage. The NTS number format follows these rules:

- 1: 50 000 031G01 6 characters
- 1: 50 000 031G01_E and/or 031G01_W 8 characters (for East and West sheets)
- 1: 250 000 031G 4 characters

DATA_SET_NAME	A(30)	A(0)	1L
----------------------	--------------	-------------	-----------

Name associated to the data set. The name of a territory deriving from a map sheet (topographic map) border break corresponds to the NTS number.

PROVINCE	A(2)	A(27)	4L
-----------------	-------------	--------------	-----------

Provinces (or Territories) ordered by decreasing order of the percentage of territory they occupy. More than one province (or Territory) may be supplied by repeating the key word and by giving different values.

ZONE_NUMBER_1	N(2)	A(0)	1L
----------------------	-------------	-------------	-----------

Value included between 7 and 23 corresponding to the UTM zone.

Note: Main UTM zone inside of which the data set territory is totally or partially located. This zone is used to define the cartographic coordinate system for the entire data set.

ZONE_NUMBER_2	N(2)	A(0)	1L
----------------------	-------------	-------------	-----------

Value included between 7 and 23 corresponding to the UTM zone.

Note: Secondary UTM zone inside of which a portion of the data set territory may be located. This information is only an indication of the UTM zones touching the territory referred to. The data set cartographic coordinate system never refers to this zone. When a territory is totally located inside a unique UTM zone, this specific UTM zone's value is assigned to ZONE_NUMBER_1 and the value «-1» is assigned to ZONE_NUMBER_2.

PCT_OF_LAND	N(3)	A(0)	1L
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Value included between 1 and 100 which indicates, in percentage, the surface of the territory covered by mainland (i.e. in Canada excluding only the waterbodies of coastal areas, of the Great Lakes region and other major waterbodies). The reliability degree of this value is within $\pm 5\%$.

END	A(30)	A(0)	1L
------------	--------------	-------------	-----------

The key word END is associated to the TERRITORY_SECTION value to indicate the end of the section.

3.2- DATA_SET Section

The DATA_SET section contains metadata linked to a specific data set. Each data set, identified by its NTS number and its edition/version number, has data set metadata. The data must conform to the following format and order.

BEGIN	A(30)	A(0)	1L
--------------	--------------	-------------	-----------

The key word BEGIN is associated to the DATA_SET_SECTION value to indicate the section's beginning.

EDITION_VERSIO	A(5)	A(0)	1L
-----------------------	-------------	-------------	-----------

Edition and version number of the data set in the «edition.version» form and format «99.09» (e.g. 1.01).

SPEC	A(6)	A(15)	1L
-------------	-------------	--------------	-----------

Version numbers of *CanMatrix: Standards and Specifications* which the data conform to (e.g. 1.0).

DATE_AVAILABLE	A(10)	A(0)	1L
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Date of the availability of the data set. The date is expressed in the following format: YYYY/MM/DD.

MAP_EDITION	N(2)	A(0)	1L
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This field indicates the map edition number (e.g. 2).

EAST_WEST	A(1)	A(9)	1L
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This field indicates which portion of the map sheet is covered by the CANMATRIX dataset. Three values are possible : 'C' for complete; 'E' for «East» portion and 'W' for «West».portion.

STYLE_CODE	A(1)	A(15)	1L
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This field indicates the map type. 5 values are possible : 'P' for polychrome map; 'M' for monochrome map; 'V' for provisional; 'A' for photomap; 'L' for planimetric.

VALID_DATE	A(10)	A(0)	1L
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Date of source used to identify map features on the map sheet. For example: field completion date, air photography or satellite image date. The date is expressed in the following format: YYYY/MM/DD.

PUBLISH_DATE	A(10)	A(0)	1L
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Date at which the paper map was published. The date is expressed in the following format: YYYY/MM/DD.

PLAN_ACCURACY	A(1)	A(28)	1L
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Provides the planimetric precision of the source of data. The precision is the degree of correspondence of the geometric data versus geodetic foundation (horizontal reference system). Value is expressed as a classification (e.g. A (25m. (50K)/75m. (250K))).

ALTI_ACCURACY	A(1)	*A(27)	1L
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Provides the altimetric precision of the source of data. The precision is the degree of correspondence of the geometric data versus geodetic foundation (vertical reference system). Value is expressed as a classification (e.g. 1 (10m. (50K)/50m. (250K))).

UNIT_CONTOURS	A(1)	*A(7)	1L
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This field indicates the measuring unit used to express contour and elevation point elevations (e.g. M (Meter)).

CONTOUR_INTERV	A(3)	A(0)	1L
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A contour interval corresponds to the elevation difference between two consecutive contour lines. It is expressed as an integer (e.g. 10).

CONT_AUXILIARY	A(3)	A(0)	1L
-----------------------	-------------	-------------	-----------

An auxiliary contour interval corresponds to the elevation difference between a contour line and an auxiliary contour line or between two consecutive auxiliary contour lines. It is expressed as an integer (e.g. 10).

DATUM	A(5)	A(43)	1L
--------------	-------------	--------------	-----------

Datum used for planimetric rectification (e.g. NAD83).

SCAN_RESOLUTIO	N(6)	A(14)	1L
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Spatial resolution of the optical scanner without interpolation. Expressed in meters. (e.g. 3.000).

RADIOMETRY	N(3)	A(6)	1L
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Number of bits used to save pixel information (e.g. 24 bits).

FORMAT	A(16)	A(0)	4L
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This field gives the data format name. The information is expressed as a unique chain of characters (no blanks) (e.g. GEO_TIFF).

COMMENT	A(64)	A(0)	8L
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Bilingual notes and remarks recorded by the team responsible for producing the data set. This field may be empty.

END	A(30)	A(0)	1L
------------	--------------	-------------	-----------

The key word END is associated to the DATA_SET_SECTION value to indicate the end of the section.

END	A(30)	A(0)	1L
------------	--------------	-------------	-----------

The key word END is associated to the FILE value to indicate the end of the file. This is the last line.

EXAMPLE OF A METADATA DATASET

```
BEGIN          FILE
!
BEGIN          TERRITORY_SECTION
NTS           069H13
DATA_SET_NAME MEIGHEN ISLANDS
PROVINCE      NU (Nunavut)
ZONE_NUMBER_1 14
ZONE_NUMBER_2 -1
PCT_OF_LAND   80
END           TERRITORY_SECTION
!
BEGIN          DATA_SET_SECTION
EDITION_VERSIO 1.00
SPEC           1.0 (Standards 1.0)
DATE_AVAILABLE 2002/06/20
MAP_EDITION    1
EAST_WEST      C (Full)
STYLE_CODE     V (Provisional)
VALID_DATE     1959
PUBLISH_DATE   1965
PLAN_ACCURACY  B (50m. (50K)/250m. (250K))
ALTI_ACCURACY  1 (10m. (50K)/50m. (250K))
UNIT_CONTOURS  M (Meter)
CONTOUR_INTERV 10
CONT_AUXILIARY 0
DATUM          NAD83 (North American Datum of 1983)
SCAN_RESOLUTIO 3.0000 (m. (423 dpi))
RADIOMETRY     8 (bits)
FORMAT         GEO_TIFF
COMMENT        Has as extrusions / A pour crevé(s) : 069G16 069H11
COMMENT        069H12 069H14
COMMENT        Is an extrusion of / Est crevé de : 560B02
END           DATA_SET_SECTION
!
END           FILE
```

APPENDIX A - Domain values and authorized combinations

Some fields must respect predefined domain values. When an entry contains more than one distinct part, the domain of each part is listed along with its authorized combinations for the entry. The domain values will evolve to better respond to the change of the production environment and then describe the phenomena we want to keep and classify.

TERRITORY Section

NTS

- Any valid NTS number for Canadian territory at 1:50 000 and 1:250 000 scales.

PROVINCE

- AB Alberta
- BC British Columbia
- FR France
- GL Greenland
- MB Manitoba
- NB New Brunswick
- NF Newfoundland
- NS Nova Scotia
- NT Northwest Territories
- NU Nunavut
- ON Ontario
- PE Prince Edward Island
- PQ Quebec
- SK Saskatchewan
- US United States
- YT Yukon Territory

ZONE_NUMBER_1 and ZONE_NUMBER_2

- Value included in -1¹, (7,23).

PCT_OF_LAND

- Value included in the domain [0,100].

DATA_SET Section

EAST_WEST

- C Full
- E East
- W West

¹ Generally in this document, the value «-1» means that the value is unknown or the field is not applicable.

STYLE_CODE

- P Polychrome map
- M Monochrome map
- V Provisional map
- A Photomap
- L Planimetric map

PLAN_ACCURACY

- A 25 meters (50K)/75 meters (250K)
- B 50 meters (50K)/250 meters (250K)
- C 75 meters (50K)/375 meters (250K)
- D >100 meters (50K)/>500 meters (250K)
- E Unknown

ALTI_ACCURACY

- 0 5 meters (50K)/25 meters (250K)
- 1 10 meters (50K)/50 meters (250K)
- 2 20 meters (50K)/100 meters (250K)
- 3 >20 meters (50K)/>100 meters (250K)
- 4 Unknown

UNIT_CONTOUR

- M Meter
- P Foot