11.2 Data Management Frame

A data management frame consists of the following header, fields, and records:

1) "Data management frame, Header" that describes the version of the data format, date at which the data is created, creator, and title owner.

2) "User field (Metadata)" that is used to provide information about index data only.

3) A sequence of "volume management records" for each search.

4) A sequence of "POI information management records" for managing POI information.

5) Expansion Field

name [Data Management Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	L0		Data Management Frame Header	(1)	a
2	L0	Lx		User Field (Metadata)		c
3	O1	L1*(M+α)		Volume Management Record(s) (#1 to #M+α)	(2)	a
4	O2	L2*N		POI Information Management Record(s) (#1 to #N)	(3)	a
5	O3			Expansion Field		c

Note: The maximum size allowed for items 1 to 4 above is 16 Kbytes.

1) Description in data management frames must be static.

2) The length of volume management records and POI information management records is fixed. The size L1 is described in the "Data management frame, Header."

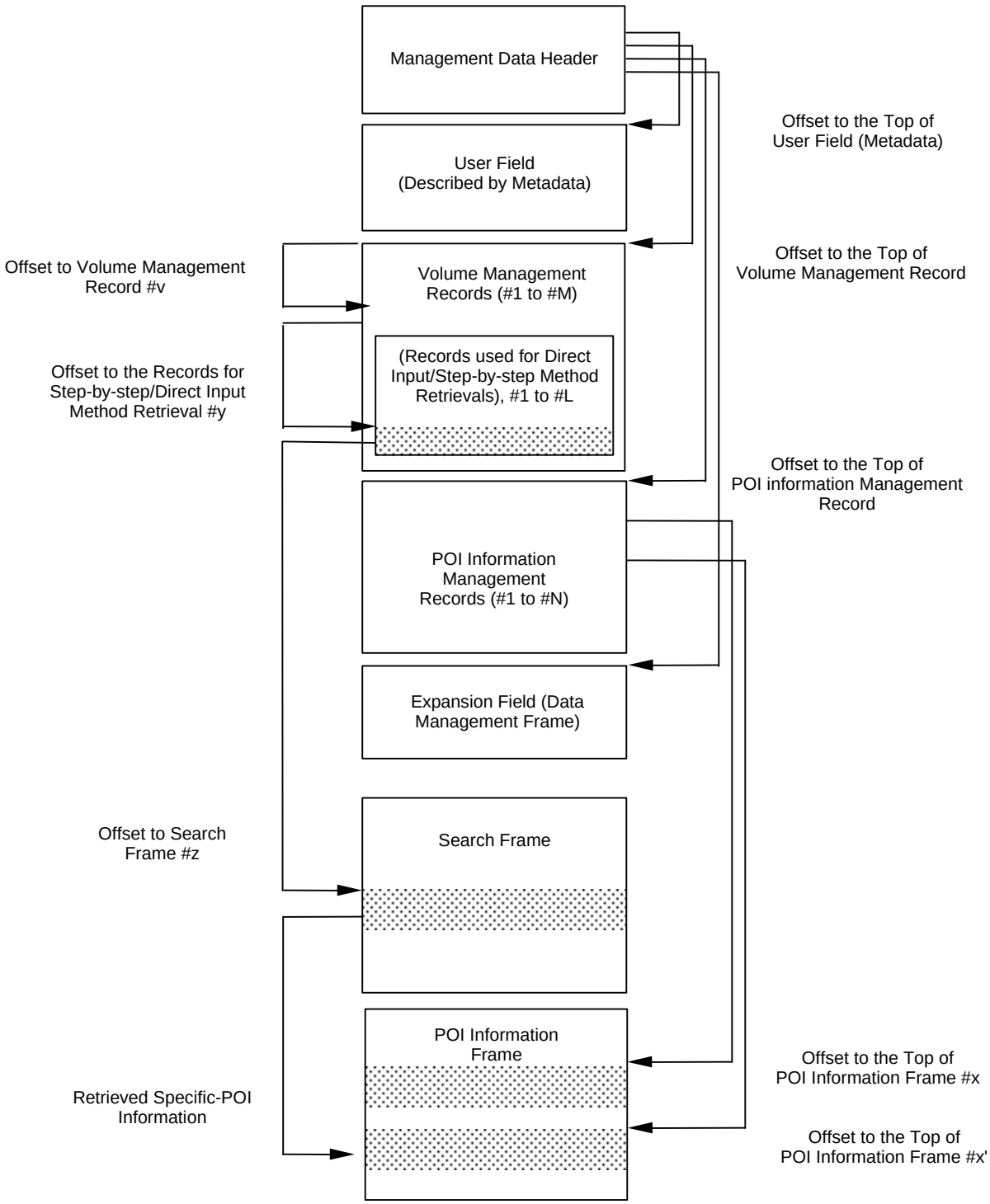
   As described in Subsection 11.2.2, volume management records can handle subsequent volume management records. Therefore, the total number of records is the number of records managed in the data management frame (M) with the number of records managed with volume management records(α) added.

3) The size of a POI information management record is described in the data management frame header.

   Offset O1 = L0 + Lx
   O2 = L0 + Lx + L1 * (M+α)
   O3 = L0 + Lx + L1 * (M+α) + L2 * N

   The size of the all data management frame and the size of the header shall be described in a frame managing the entire medium (all data management frame).

name [Offset]


Management Data Header
Offset to the Top of
User Field (Metadata)
User Field
(Described by Metadata)
Offset to Volume Management
Record #v
Volume Management
Records (#1 to #M)
Offset to the Top of
Volume Management Record
(Records used for Direct
Input/Step-by-step Method
Retrievals), #1 to #L
Offset to the Records for
Step-by-step/Direct Input
Method Retrieval #y
Offset to the Top of
POI information Management
Record
POI Information
Management
Records (#1 to #N)
Expansion Field (Data
Management Frame)
Offset to Search
Frame #z
Search Frame
POI Information
Frame
Offset to the Top of
POI Information Frame #x
Retrieved Specific-POI
Information
Offset to the Top of
POI Information Frame #x'

11.2.1 Data Management Frame Header

name [Data Management Frame Header]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	C	Data Declaration	'DCTR'	a
2	4	8	C	Data Format Version	(1)	a
3	12	8	BCD	Date Creation Date	(2)	a
4	20	32	C	Copyright	(3)	a
5	52	4	SWS	User Field Size (Metadata)	(4)	a
6	56	4	D	Offset to User Field (Metadata)	(4)	a
7	60	4	SWS	Expansion Field Size	(5)	a
8	64	4	D	Offset to Expansion Field	(5)	a
9	68	4	N	Number of Volume Management Records	= M	a
10	72	4	SWS	Volume Management Record Size	= L1	a
11	76	4	D	Offset to Volume Management Record	(= O1)	a
12	80	4	N	Number of POI Information Management Records	= N	a
13	84	4	SWS	POI Information Management Record Size	= L2	a
14	88	4	D	Offset to the Top of POI Information Management Record		a
15	92	B1		Character Data List for Displayed Title	(6)	a

1) Data format, Version shall be represented with characters (ASCII) for which '1.00????' is used for the initial value. The integer part indicates the version and the two digits below the decimal point indicate the revision. For the subsequent four digits, the data creator can use free. For example, the data creator can be described as 1.00a, 1.00b, 1.000001, or 1.00IPC.

2) Date at which data was created shall be represented with BCD like YYYYMMDDhhmmssss.

Example: November 7, 1998, 15 o'clock, 14 minutes, 30.02 seconds → 0x1998110715143002
September 15, 2001, 0 o'clock, 0 minute, 0.00 second → 0x2001091500000000
Time is represented with the 24-hour-system.

3) COPYRIGHT

Represented with the ASCII code.

4) User Field

Converts information needed for searches or management of registration of points to Metadata, then stores it.

The user field is used to supply external index data or POI information (without any relationship to map data).

When the resolution of latitude/longitude is different from that defined in map data or the support language is different, it must be describe in the field.

The offset to user field stores the displacement from the top of the data management frame to the top of the user field.

When no user field is set, set 0 (disabled) to its size and offset.

5) Expansion Field Size and Offset

Store the expansion fields in the data management frame according to the expansion method in Section 1.4.

The offset to expansion field stores the displacement from the top of the data management frame to the top of the expansion field.

When no expansion field is set, set 0 (disabled) to its size and offset.

6) Character Data List for Displayed Title

name [Character Data List for Displayed Title]

No.	Offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	SWS	Displayed Title Character Data List Size	(7)	c
2	2	B1		Language-specific Offset Pointer Table for Displayed Title	(8)	c
3		B2		Language-specific Character Information List for Displayed Title	(9)	a

Used to display a screen for selecting a medium to be used for searches or obtaining information in a drive with medium-changer.

To select a disc, a disk title in the all data management frame is used.

Describe the number of supported languages defined with Metadata. Specify the supported languages in the order in which they are defined with Metadata.

7) Character Data List Size of Displayed Title

This field describes the size of the entire character data list for the displayed title.

8) Language-specific Offset Pointer Table for Displayed Title

name [Language-specific Offset Pointer Table for Displayed Title]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	D	Language-specific Offset Pointer (Language 1) for Displayed Title		c
2	2	2	D	Language-specific Offset Pointer (Language 2) for Displayed Title		c
3				••••••••		c
4		2	D	Language-specific Offset Pointer (Language n) for Displayed Title		c

The displacement from the top of the displayed title, character data list to the top of each language-specific character information is indicated.

Describe the number of stored languages, their types, and the order in which they are located with Metadata.

Note: When only one language is stored (for example, Japanese only), delete the language-specific offset pointer table.

Note: It is allowed to use different language-specific offset pointers to specify the same language character information.

9) Language-specific Character Information List for Displayed Title

name [Language-specific Character Information List for Displayed Title]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0			Language-specific Character Information (Language 1) for Displayed Title	(10)	c
2				Language-specific Character Information (Language 2) for Displayed Title		c
3				••••••••		c
4				Language-specific Character Information (Language n) for Displayed Title		c

10) Language-specific Character Information required for Displayed Title

name [Language-specific Character Information for Displayed Title]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	SWS	Displayed Title Language-specific Character String Size (word)	(11)	a
2	2		C;CC	Displayed Title Language-specific Character String	(12)	c

11) Displayed Title Language-specific Character String Size

This field describes the character string size by word.

12) Displayed Title Language-specific Character String

00(16) is assigned to the end of a character string as dummy data when the character string ends at an odd byte.

Only one data management frame is allowed par directory.

Its header size must be defined in the section managing the entire medium (all data management frame). However, the 86 bytes from the top of the header must be a fixed field (the number of bytes depends on the format version). The number of title name records shall be specified with Metadata. (In future versions, the size of the fixed field may be changed.)

The data format will be changed when the version is updated. When types or signatures are added or removed, the revision is changed.

A frame must be made up of a header, volume management records, and POI information management records. Therefore, the offsets used in this header are the displacement from the top of the frame. The size of each management record must be the fixed length specified in the file management frame.

POI information frames are sequentially numbered 1, 2, 3•••, N in the order in which the records are described in the POI information management frame.

However, when the number of POI information management records is 1, it is unnecessary to specify POI information frame numbers in each search volume.

11.2.2 Volume Management Record

How the volume management record is used is clearly defined by the 4-byte signature in the "data declaration."

The types of data declarations are as follows:

1) Hierarchical Search, Composite Search (signature) 'DSRC' = 'Define for SeaRCh'

   Used to narrow down a range of data to be retrieved step by step. The composite search allows you to move between screens such as screens for search by area or character to retrieve data.

2) B-Tree type Search 'DSBT' = 'Define for Search of Balanced Tree

   Used when a key (input) determines specific data or used to average each search cost when there is a large amount of data matching a key (input). Normally, matching data has been sorted with the key.

3) Nearby Search 'DSAR' = 'Define for Search of ARound'

   Used to display facilities near the target point in the order of distance or in which they are located along the route.

4) Voice Search 'DSVC' = 'Define for Search by VoiCe'

   Used to a search with voice recognition data used. It depends on the hardware system.

5) (Subsequent) Volume Management 'DVCR' = 'Define for Volume ContRol'

   Used when the purpose/type of a search is determined at a lower hierarchy. For example, a search for a railway station is classified into the "railroad station name search" at the first step. In the next step, it is assigned to a volume for search by character, area, or railroad. The (subsequent) volume management applies to the first step in this case.

6) Map Overlay Service Information 'DSIM' = 'Define for Service Information on Map'

   Is information about points with detailed data externally supplied. Such information cannot be changed normally.

7) Registered Point 'DPOU' = 'Define for Points Of User's'

   POI information user can register or delete.

8) Recommended Route Data 'DIRD' = 'Define for Interesting Route's Data'

   Used to handle the destination and the data about a route from the starting point (points calling at) to the destination. There are two types of route data: route data represented with strings of points preliminarily calculated, and route data recalculated with calculation conditions preliminarily stored when it is selected.

9) Game 'DGAM' = 'Define for GAMes'

   Used to handle games created with HTML or other programs.

   The games are for taking a drive (by setting a destination and selecting information about points) such as a game for selecting recommended spots according to results of fortune-telling or diagnosis of how the two people are well-suited.

Note that data represented in volume management records changes depending on the signature.

name [Type Volume Management Record used for Step-by-step Retrieval]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	C	Data Declaration	‘DSRC’ etc.	a
2	4	4	C	Search Function Declaration	‘FGGF’ etc.	a
3	8	4	C	Address Description Declaration	(2)	a
4	12	4	SWS	Expansion Field Size	(3)	a
5	16	4	D	Offset to Expansion Field	(3)	a
6	20	4	C	Default Keyboard Designation	(4)	a
7	24	8	PID	Covered Area; Minimum Latitude/Longitude	(5)	a
8	32	8	PID	Covered Area; Maximum Latitude/Longitude	(5)	a
9	40	4	SWS	Management Frame Size of Search Frame		a
10	44	4	D	Address to Management Frame of Search Frame	(9)	a
11	48	B1		Character Data List for Representation Item	(13)	a
12	O1	B2		Management Frame Address of Additional Search Frame	(9)	c
13	O2	B3		Expansion Field	(19)	c
14	O3	B4		Padding Field		c

Note: For items 12 and 13, their storage areas can be specified with items 5 and 10. Thus, their locations in volume management records are arbitrary.

However, their sizes must be within the volume management record size specified for the data management frame for a higher hierarchy using items 12 to 14.

name [Volume Management Record used for Advanced Search]

No.	Offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	C	Data Declaration	‘DVCR’	a
2	4	4	C	Management Purpose Declaration	(6)	a
3	8	4	C	Address Description Declaration	(2)	a
4	12	4	SWS	Expansion Field Size	(3)	a
5	16	4	D	Offset to Expansion Field	(3)	a
6	20	16		(RESERVED)		b
7	36	4	N	Number of Volume Management Records	(7)	a
8	40	4	SWS	Volume Management Record Size (Size of One Record)	(8)	a
9	44	4	D	Address to the Top of Volume Management Record	(9)	a
10	48	B1		Character Data List for Representation Item	(13)	a
11	O1	B2		Address to the Top of Additional Volume Management Record (of Target Frame)	(9)	c
12	O2	B3		Expansion Field	(19)	c
13	O3	B4		Padding Field		c

Note: For items 11 and 12, their storage areas can be specified with items 5 and 9. Thus, their locations in volume management records are arbitrary.

However, their sizes must be within the volume management record size specified for the data management frame for a higher hierarchy using items 11 to 13.

2) Address Representation Declaration

For the principle of how to describe address, the following signatures are applied:

Note that "address" that is defined by a search frame controlled under this level conforms to this declaration, except for volume management records (used for advanced search).

a) Description of file name and offset (‘FNME’ = ‘File Name & offset’)

b) Description of offset (‘OFST’ = ‘OFfSeT’)

c) Description of map unit-dependent type (‘DPUA’ or ‘DPUB’ = ‘DePend of Unit A (B)’)

3) Expansion Field Size and Offset

The offset to expansion field stores the displacement from the top of the data management frame to the top of the expansion field.

When no expansion field is set, set 0 to its size and offset.

4) Default Keyboard Designation

Designates the keyboard usually used using a signature.

When it is not needed to specify it (in a case of a list-type hierarchical search), specify ‘NORM.’

This field describes the default keyboard enables screens to be displayed efficiently.

In addition, specifying the default keyboard enables restrictions on data to be specified implicitly. (For example, this applies to screens in which characters shall be input in the upper-case or screens in which numeric characters shall be input for telephone numbers.)

5) Coverage Area

For latitude and longitude, a southwestward edge point is minimum and a northeastward edge point is maximum. Latitude and longitude are describe in the PID format.

6) Management Purpose Declaration

This field describes the purpose of each volume managed using a signature.

This field describes ‘DSRC’ to indicate the purpose is search. Specify ‘DPOU’ to indicate the purpose is management of registered points.

7) Number of Volume Management Records

This field is used only for the volume management record used for advanced search. It indicates the number of volume management records to be managed in the next hierarchy.

It enables a new volume to be handled in the next hierarchy.

8) Volume Management Record Size

This field describes the size of a volume management record to be handled by this frame.

9) Address Representation

Address is described in the following format:

name [Address]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1				:		c
2		4	D	*** Address		a
3				:		c
4		B2		Additional *** Address		c
5				:		c

Set data for the data declaration and relating data for items 2 and 4 as follows:

a) Description of File Name and Offset

(Item 2) Describe the displacement from the top of the data frame to the top of "Separate setting: *** address" at Item 4.

(Item 4) See name [Separate setting: *** address] below.

b) Description of Offset

(Item 2) Chapter 11, displacement from the top.

(Item 4) Nothing specified.

c) Description of Map Unit-dependent Type

Each map unit stores data frames.

In general, map units can additionally store type-A and type-B frames. Specify either type is used.

(Item 2) Assign the invalid value, 0.

(Item 4) Assign the invalid value, 0.

d) Mesh-dependent Type Designation

(Item No. 2) Assign 'null'.

(Item No. 4) Nothing specified or assign 'null'.

Note: To set an invalid value when the target frame is not set, set 'null' in item No. 2 or 4.

name [Additional *** Address]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	D	Offset to ***	(10)	a
2	4	2	SWS	Data Name Size	(11)	a
3	6	B1	C	Data Name	(12)	c

10) Offset to ***

Describes the displacement from the top of the target file containing the target data frame.

11) Data Name Size

Describes the size of a file name to be stored in the target data frame.

12) Data Name

Describes the name of a file to be stored in the target data frame.

When the file name is odd size, pad it with a NULL character.

Note: To set an invalid value when the target frame is not set, set the invalid value 'null' in item No. 2 or 4.

13) Character Data List for Representation Item

name [Character Data List for Representation Item]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	SWS	Size of Character Data List for Representation Items	(14)	c
2	2	B1		Language-specific Offset Pointer Table for Representation Items	(15)	c
3		B2		Language-specific Character Information List Representation Items	(16)	a

For the representation item, describe a character string required in the screen displayed.

Describe the number of supported languages defined by Metadata. Describe the languages in the order in which they are defined with Metadata.

14) Character Data List Size for Representation Item

This field describes the data size of the entire representation item, character data list.

However, when there is only one language stored (for example, Japanese only), delete the character data list size.

15) Representation Item, Language-specific Offset Pointer Table

name [Representation Item, Language-specific Offset Pointer Table]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	D	Language-specific Offset Pointer (Language 1) for Representation Items		c
2	2	2	D	Language-specific Offset Pointer (Language 2) for Representation Items		c
3		2	D	••••••••		c
4		2	D	Language-specific Offset Pointer (Language n) for Representation Items		c

This table indicates the displacement from the top of the representation item information data list to the top of each language-specific character information.

Use Metadata to describe the number of languages stored and the order of location.

Note: When there is only one language stored (for example, Japanese only), delete the language-specific offset table.

Note: It is allowed to use different language-specific offsets to specify the same language character information.

16) Language-specific Character Information List for Representation Items

name [Language-specific Character Information List for Representation Items]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0			Language-specific Character Information (Language 1) for Representation Items		c
2				Language-specific Character Information (Language 2) for Representation Items		c
3				•••••••••		c
4				Language-specific Character Information (Language n) for Representation Items		c

name [Language-specific Character Information for Representation Items]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	SWS	Size of Language-specific Character String (word) for Representation Items	(17)	a
2	2		C;CC	Language-specific Character String for Representation Items	(18)	c

17) Size of Language-specific Character String for Representation Items

This field describes the character string size by word.

18) Language-specific Character String for Representation Items

00(16) is assigned to the end of a character string as dummy data when the character string ends at an odd byte.

11.2.3 POI Information Management Record

(Conforms to the volume management record used for step-by-step retrieval.)

POI information management records store locations where POI information definitions or POI information entities exist. POI information management records shall be described with a fixed format.

name [POI Information Management Records]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	C	Data Declaration	'PINR' etc. (1)	a
2	4	4		POI Information Type Declaration	(7)	a
3	8	4	C	Address Description Declaration	(2)	a
4	12	4	SWS	Expansion Field Size	(3)	a
5	16	4	D	Offset to Expansion Field	(3)	a
6	20	4		(Reserved)		b
7	24	8	PID	Covered Area; Minimum Latitude/Longitude	(4)	a
8	32	8	PID	Covered Area; Maximum Latitude/Longitude	(4)	a
9	40	4	SWS	Size of Management Frame of POI Information Frame		a
10	44	4	D	Management Frame Address of POI Information Frame	(5)	a
11	48	B1		Character Data List for POI Information Name	(6)	a
12	O1	B2		Address to the Management Frame of Additional POI Information Frame	(5)	c
13	O2	B3		Expansion Field		c
14	O3	B4		Padding Field		c

Note: For items 12 and 13, their storage areas can be specified with items 5 and 10. Thus, their locations in the POI information management record are arbitrary.

However, their sizes must be within the POI information management record size specified for the data management frame for a higher hierarchy using items 12 to 14.

1) Data Declaration

The types of data declaration are as follows:

a) POI Information (general) (signature) 'PINR' = 'Point of Interest(NoRmal)'

b) Map Unit-dependent Type 'PIFA' = 'Point of Interest depend of map Frame A'

'PIFB' = 'Point of Interest depend of map Frame B'

c) Mesh-dependent Type ‘PIME’ = ‘Point of Interest depend of Mesh’

What is basically to be handled as the map unit-dependent type is only data to be used for a nearby search or description about a facility selected on a map using the cursor regardless of any search.

To prevent an excess of a data size for a unit and avoid extra data by each scale, address indicating the location of real data may be described without recording real data for the matching data frame or POI information frame into additional data A/B frames.

In addition, it is allowed to describe some of data with their real data, and indicate the other data with their address.

Additional frame indications are handled by volume in the same manner as index data.

What is to be handled is only data to be used for a nearby search or description about a facility selected on a map using the cursor regardless of any search. In distinction from additional data A/B frames, it is allowed to store data in another medium (for example, when making a search without any map data used as a key).

2) Address Description Declaration

For the principle of how to describe address, the following signatures are applied:

The signature definitions conform to those for the volume management record used for step-by-step method retrieval described in 2) of Subsection 11.2.2.

3) Expansion Field Size and Offset

Stores expanded data in the data management frame according to the expansion method described in Section 1.4.

The offset to expansion field stores the displacement from the top of the data management frame to the top of the expanded field.

If no expansion field exists, assign 0 to the size, and ‘null’ to the offset.

4) Covered Area

For latitude and longitude, a southwestward edge point is minimum and a northeastward edge point is maximum. Latitude and longitude shall be stored in the PID format.

5) Address Representation

The representation of address conforms to that for the volume management record used for step-by-step method retrieval, in Subsection 11.2.2, 9), "Representation of address."

6) Character Data List for POI Information Name

POI information names are used to display names (and validate data contents) by POI information.

(Normally, representation items for volume management are used to indicate POI information names.)

This field describes the number of supported languages defined with Metadata. Specify the supported languages in the order in which they are defined with Metadata.

7) POI Information Type Declaration

Use the following:

a) POI Information (normal) 'PKNR' = 'Point of interest Kind NoRmal'

b) POI Information (address) 'PKAD' = 'Point of interest Kind ADdress'