

# Microsoft Access Database Builder

## Overview

The Microsoft Access® Desktop Relational Database Management System (RDBMS) is widely used in the GIS Community to store attribution information about features and graphics. In a few instances, it also can be used to actually store the graphic/vertices information about where these features are located. Since the CADD/GIS Technology Center has developed the "Spatial Data Standards" (SDSFIE/FMSFIE) for organizing the semantic portion of a GIS and standardized the definition of features and the organization of related tables, having an automated tool to build or populate the structures (tables, attributes, and domains) of Access in accordance with the Spatial Data Standards would be particularly helpful.

The Access Builder is intended to perform exactly that function, enabling users to pick and choose features and/or tables according to a variety of methods and construct the necessary Access Structures to store compliant with the SDSFIE/FMSFIE. In essence, it replaces and expands on the functionality of the SDSFIE/FMSFIE Generator Tool first introduced in Release 1.600 of the TSSDS.

This help file provides guidance on:

[Access Builder Concept](#) - How the Builder functions, what it will, and will not perform for the user.

[Access Builder Operations](#) - The steps in including features in the Access Database.

[The Access Specification](#) - How Access is organized to be SDS Compliant and special Access characteristics/properties.

[The Builder Menu](#) - What the various Menu options do and how they contribute to the overall operation.

[Building Options](#) - What the user may configure in the construction of the Access Database.

[Special Functions](#) - Some special features in the Access Builder.

## Access Builder Concept

In order to completely understand the concept behind the Access Builder, some fundamental understanding of the organization of the Access Database is necessary. A complete description of this structure will not be duplicated here. For purposes of the Access Builder, the overall structure of the Database can be simplified into two kinds of Microsoft Access Tables. These are:

**Data Tables** - These are Access Tables that contain data from "graphic" tables (those which are directly related to the graphics maintained in other files) and "non-graphic" tables (those which link through "keys" to either graphic or other non-graphic tables, and

**Domain Tables** - These are Access Tables which contain a list of values which constrain the allowable values for a particular attribute. In the SDSFIE/FMSFIE, these table names always begin with "d\_" to clearly differentiate them from Data Tables. The field, or column, within these tables which defines the allowable value is always called "VALUE".

Specifically, the Access Builder is designed to "connect" and read the contents of an existing Access Database. However, it is also possible to create a new Access Database from scratch and

populate that Database with tables (data and domain) which are consistent with the Spatial Data Standards.

In general, the concept behind the Builder relies on a two-step process. The first step is to build a list of "candidates" to be added to the SDSFIE/FMSFIE. There are a number of techniques to create this list. When completed, it is possible to "tailor" that list to completely specify the actions that the Access Builder will take. The second step is to add information about the tables in the "candidate" list to the Access Database based on a number of user-defined options. The resulting structures are included in the specified Access Database in accordance with the Specification defined later in this document.

NOTE: The Access Builder creates a "generic" Access Database for use as an external source of attribute information. For those GIS applications which use an Access Database as a data repository but additionally include the geometry within that database, a separate tool such as the "Geomedia Builder" is provided.

## **Operation of the SDSFIE/FMSFIE Access Builder**

### **Access Database Construction Steps**

The actual construction of the Access Database data tables involves several steps. These are designed to be simple, logical, and requiring minimal knowledge of either the Spatial Data Standards or Access.

**Step 1** - Connect to an existing SDSFIE/FMSFIE Release Library (**Menu - <Open> - <SDSFIE/FMSFIE Connection>**) See "[Connecting to the SDSFIE/FMSFIE Library](#)"

**Step 2** - Connect to an existing/Create a New Access Database (**Menu - <Open> - <Access Database>**) See "[Opening an Access Database](#)"

**Step 3** - Select the Tables into the Builder Candidate List (**Menu - <Action> - <Build Candidate List>**) See "[Selecting Tables](#)"

**Step 4** - Creating/Modifying the Candidate List See "[Creating the Candidate List](#)"

**Step 5** - Refining the Candidate List See "[Refining the Candidate List](#)"

**Step 6** - Add Candidates to Access (**Menu - <Action> - <Add Candidates to Access>**) See "[Adding Candidate Tables to Access](#)"

### **Step 1 - Connecting to the SDSFIE/FMSFIE Library**

**MENU - <OPEN> <SDSFIE/FMSFIE CONNECTION>** (*Connect Button at bottom of Main Window*)

In order for the Access Builder to obtain information about the SDSFIE/FMSFIE features to be included, it must open a connection to one of the SDSFIE/FMSFIE Libraries. Each of these libraries corresponds to a Release of the SDSFIE/FMSFIE. Release Libraries are, by default, created in a subdirectory of the SDSFIE/FMSFIE directory; e.g. that directory where the SDSFIE/FMSFIE applications are stored. This is normally C:\Program Files\TSSDS. Each directory has a name of "RELEASE" and an extension corresponding to the Release number. Therefore, the Release 1.950 Library will be stored in 'RELEASE.195'. It is permissible to have multiple releases of the SDSFIE/FMSFIE on a single computer. The structure of the

SDSFIE/FMSFIE Libraries remains consistent from release to release, allowing upgraded software applications to function properly with older data.

The SDSFIE/FMSFIE Connection Dialog appears as:



When the dialog is activated, the Access Builder will look in the Windows Registry for information on existing SDSFIE/FMSFIE releases installed, and fill the text box with the most recently browsed release number path.

#### **Buttons:**

**Browse** - Displays a directory browsing window for navigation/selection of the SDSFIE/FMSFIE Library Directory.

**Cancel and Close** - Closes the Dialog and does not change or attempt Library Connection.

**Help** - Activates this Help Screen.

**Connect, Test, and Save** - Attempts connection with the SDSFIE/FMSFIE Release in the indicated directory. If the connection is successful, the application will display the Release Number in the <CONNECT to SDSFIE/FMSFIE> Button at the bottom of the main window and store the connection information in the Windows Registry.

**NOTE:** The Browser uses this Registry entry to reconnect to the same SDSFIE/FMSFIE Library each time the application is started. The Library Release may be changed using the CONNECT button or the Menu Option.

## **Step 2 - Creating a New Access Database**

### **MENU - <OPEN> <CREATE AN ACCESS DATABASE>**

The Access Builder adds/modifies features in an Access Database. This Database may be either "created" as a brand new database or "modified" as an existing database. Two Menu options are available. This Menu Option creates a new Access Database and readies it for population with SDSFIE/FMSFIE compliant structures. This Database must be designated early in the process. When the "Create New" Menu item is clicked, a standard windows Save Dialog will be displayed which permits designation of the Path and Name of the applicable Access Database. The default extension for these databases is \*.mdb.

### **Step 2 (Alternate) - Opening Access Database**

#### **MENU - <OPEN> <OPEN AN ACCESS DATABASE> (*Select Access Database Button at bottom of Main Window*)**

The Access Builder adds/modifies features in an Access Database. This Database may be either "created" as a brand new database or "modified" as an existing database. Two Menu options are available. This Menu Option (or Selection Button) adds features to an Access

Database which already exists. This Database must be designated early in the process. When either the "Open" Menu item (or the Select Button at the bottom of the window) are clicked, a standard windows Open Dialog will be displayed which permits selection of the applicable Access Database. The default extension for these databases is \*.mdb.

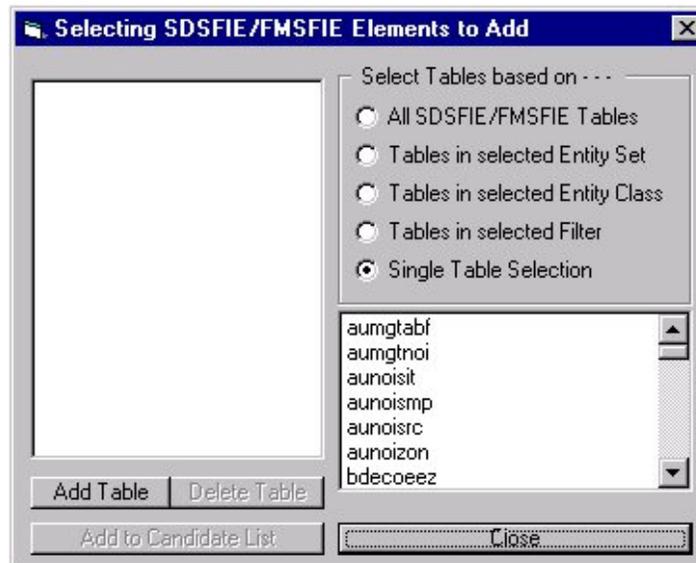
**NOTE:** The Access Builder will read the directory of the last successful "open" as the location to begin looking for new Databases. Again, the extension \*.mdb is the default although other extensions are permissible.

Once opened, the contents of the Access Database will be read (the included tables and domain), and these tables will be displayed in the "Tables" List box in the main window. Any included domain tables will be included in the "Domains" List Box in the main window.

### Step 3 - Selecting SDSFIE/FMSFIE Features/Tables

#### MENU - <OPEN> <SELECTING TABLES TO ADD>

Step 3 in the process of adding Tables to the target Access Database is to select the SDSFIE/FMSFIE Tables to Add. Selecting Tables effectively requires some knowledge of the organization and structure of the SDSFIE/FMSFIE. The Table Selection Dialog appears below:



SDSFIE/FMSFIE Table Selection has five modes. These are selected using the Option buttons at the top left of the dialog. These are structured around the possibilities of SDSFIE/FMSFIE Table Selection.

**All SDSFIE/FMSFIE Tables** - Builds every Table in the selected Release of the SDSFIE/FMSFIE.

**Tables in the selected Entity Set** - Adds the Entity Set Name to the list and will include all associated Tables

**Tables in the selected Entity Class** - Adds the Entity Class Name to the list and will include all associated Tables

**Tables in the selected Filter** - Add the Filter Name to the list and will include all associated Tables

**Single Table Selection** - Adds the Table to the list.

**NOTE:** At this stage, the list contains the names of the Sets, Classes, Filters, or Tables to be included. Actual Table names are substituted at the next step. This list may be edited using the <ADD ITEM>, <DELETE> buttons to modify the contents of the list.

**Buttons:**

**Add Table** - Adds the item selected in the element list box on the right to the selection list box on the left.

**Delete Table** - Removes the item selected in the selection list box on the left; e.g. "unselects" the item.

**Help** - Activates this Help Screen.

**Add to Candidate List** - Takes the contents of the selection list box on the left and converts it to Table Names. These Table Names are added to the Candidates List Box on the main window.

**Close** - Closes the Dialog without selection.

#### **Step 4 - Creating the Candidate List**

Once the Selection List in the Add Elements Dialog approximates the Tables to be added, clicking on the **<ADD TO CANDIDATE LIST>** will convert the selections to Table Names and add these to the Candidate List on the main window. This is a preliminary step to final Table addition and allows users to actually view the Tables which are candidates for addition to the target Access Database.

When this process is complete, the Dialog will close and the main window will display the "Candidates" Tab. It is still possible to view the contents of the Access Database, simply by selecting the "Tables" Tab.

#### **Step 5 - Refining the Candidate List**

Since the Selection Element Dialog uses Entity Set Name, Entity Class Name, Filter Name, and Table Name to select Table Names, an additional capability is required prior to actual creation of the tables within the target Access Database. This process is known as Refining the Candidate List.

In the main window of the Access Builder, the "Candidates" tab displays those Tables which are to be added. It is possible to add additional Candidates to this list simply by repeating step 3; e.g. click on **MENU - <OPEN> <SELECTING ELEMENTS TO ADD>**. It is possible to repeat this process and add newly selected Candidates to the list.

Removing Candidates from the list can be accomplished either one at a time or in total. To remove all Candidates from the list, click on **MENU - <SPECIAL> <CLEAR CANDIDATES LIST>**. To remove a single Candidate from the list, select that candidate (single click with the left mouse button), then click the right mouse button. A popup menu will be displayed that contains **<DELETE>**. Click **<DELETE>** will remove the entry from the Candidate List.

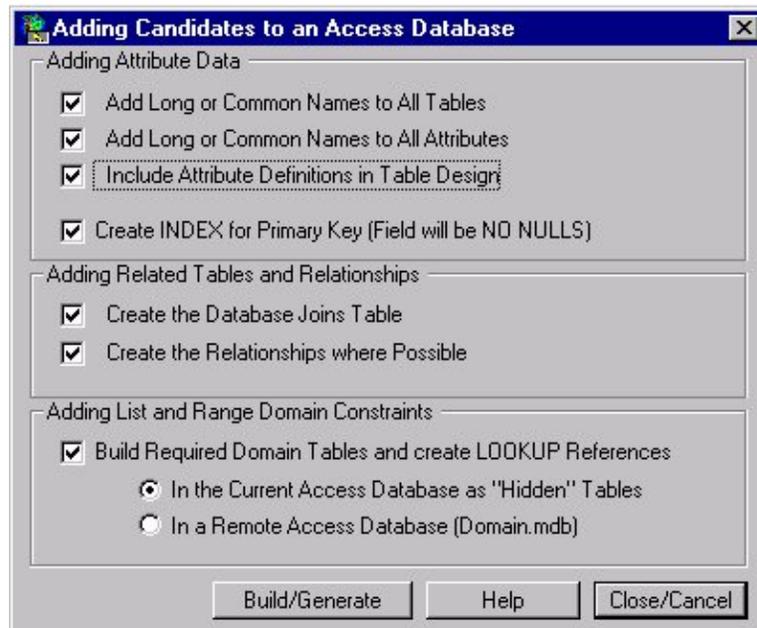
This process should be repeated until the Candidate List represents the actual list of Tables to be added to the open Access Database.

**NOTE:** At this point, it is not necessary to worry about whether the Table is already contained in the open Access Database. No duplicate Tables will be added.

## Step 6 - Adding Candidates to Access

Actually adding the Candidates to the target Access Database is the most complicated portion of the Access Builder Application. It relies on the content of the Candidate List, the contents of the Access Database, the Options selected, and the [Access Specification](#).

When clicked, the menu option displays the Addition Configuration Options Dialog. It appears below:



The Access Builder defaults to the most commonly used options, conforming to the [SDSFIE/FMSFIE Access Specification](#). Options may be selected by clicking on the check box or option. See "[Access Construction Options](#)" for additional details.

**NOTE:** The actual construction of the Access Tables may take some time. A progress bar and status bar are included on the bottom of the main window during the building process to indicate the status of the construction.

### Buttons:

**Browse** - Allows the user to select a path and file name to an attached Access Database to store the List Domains.

**Build/Generate** - Begins the Building process based on the Candidate List and the selected configuration Options.

**Help** - Activates this Help Screen.

**Close/Cancel** - Closes the and cancels the construction process.

## SDSFIE/FMSFIE Access Specification

Since a variety of desktop GIS applications (and some more robust GIS applications) use Microsoft Access™, an Access Specification has been written for the implementation of the SDSFIE/FMSFIE. In addition to providing fundamental Access capability, this specification defines suggested ways to configure Microsoft Access (Version 97 and above) to:

- 1: Fully implement the capabilities of the SDSFIE/FMSFIE within Access for a variety of GIS.
- 2: Integrate Access into current and future tools for the SDSFIE/FMSFIE Tool Box.
- 3: Provide greater capability for users to interface with the SDSFIE/FMSFIE within the normal Access environment, including expanded Data Dictionary capability.

For Generic Access Functionality, the implementation specification is:

For Feature Data Table Objects *TABLEDEF*

<b>Property</b>	<b>SDSFIE/FMSFIE Element</b>	<b>Description</b>
<b><i>NAME</i></b>	<b>TABLE-TABLE NAME</b>	This is the normal configuration, where the Access Table Name directly corresponds to the SDSFIE/FMSFIE Table Name.
<b><i>SDSNAME</i></b>	<b>TABLE-TABLE NAME</b>	The normal SDSFIE/FMSFIE Table Name applied for consistency. It is the existence of this property that defines the database as being SDSFIE/FMSFIE Generated/Capable. It is always included during any of the SDSFIE/FMSFIE generations since various GIS applications require a separate and/or different name for the actual Table Name. This property is not normally visible in Access, but can be viewed/printed using the "Database Documenter".
<b><i>DESCRIPTION</i></b>	<b>TABLE-COMMON NAME</b>	The normal SDSFIE/FMSFIE Table Common Name used to provide additional expanded information regarding the data table in the Database. This property is visible in Access by selecting the Table and viewing "Properties".
<b><i>RELEASE</i></b>	<b>VERSION-RELEASE</b>	Indicates the SDSFIE/FMSFIE Release Number the last time the structure of the table was verified/validated against the

SDSFIE/FMSFIE Standard or the Release. This property is easily read to determine the extent of compliance with a particular version of the SDSFIE/FMSFIE. This property is not normally visible in Access, but can be viewed/printed using the "Database Documenter."

*ITALICS* indicates a standard Microsoft Access Property for TABLEDEFs.

For Domain Table Objects *TABLEDEF*

<b>Property</b>	<b>SDSFIE/FMSFIE Element</b>	<b>Description</b>
<i>NAME</i>	DOMAIN - TABLE NAME	Corresponds to the SDSFIE/FMSFIE Domain Table Name (begins with "d_")
<i>RELEASE</i>	VERSION-RELEASE	Indicates the SDSFIE/FMSFIE Release Number the last time the contents of the table was verified/validated against the SDSFIE/FMSFIE Standard or the Release. This property is easily read to determine the extent of compliance with a particular version of the SDSFIE/FMSFIE. This property is not normally visible in Access, but can be viewed/printed using the "Database Documenter".

For Feature Attribute Objects *FIELD*

<b>Property</b>	<b>SDSFIE/FMSFIE Element</b>	<b>Description</b>
<i>NAME</i>	ATTRIBUTE - ATTRIBUTE NAME	Corresponds to the normal or "short" name of the SDSFIE/FMSFIE attribute.
<i>LONGNAME</i>	ATTRIBUTE - COMMON NAME	The long or common SDSFIE/FMSFIE Attribute Name applied for additional information. It is included or not included based on the configuration options in the Add Candidates to Geomedia specification. This property is not normally visible in Access, but can

be viewed/printed using the "Database Documenter".

<b>DESCRIPTION</b>	ATTRIBUTE - DEFINITION	The normal SDSFIE/FMSFIE Attribute Definition. Within Geomedia, this definition may be included both in the field properties as well as within the Geomedia metadata table for ATTRIBUTEPROPERTIES. This property is visible in Access by selecting the Table and viewing "Design".
<b>INTTYPE</b>	ATTRIBUTE - CHAR LENGTH	Indicates the SDSFIE/FMSFIE Integer Type for the Attribute or Field. Since the SDSFIE/FMSFIE uses integers for not only integer fields but for Dates and Times as well, this field indicates whether the field is for a date (Inttype = "Date"), a time (IntType = "Time"), or a nonspecific integer (IntType = ""). This property is not normally visible in Access, but can be viewed/printed using the "Database Documenter".
<b>DOMAIN</b>	ATTRIBUTE - DOMAIN TABLE	Indicates the SDSFIE/FMSFIE Domain Table Name for the Attribute or Field, if one is specified in the SDSFIE/FMSFIE. This equates to the Name Property for Domain Tables. This property is not normally visible in Access, but can be viewed/printed using the "Database Documenter"

## Configuration Options for Adding Tables

### [Add Long or Common Name to all Tables](#)

This Option populates the TableDef Property DESCRIPTION as defined in the [Access Specification](#) with the Table Common Name for all Tables.

### [Add Long or Common Name to all Attributes](#)

This Option creates the Field Property LONGNAME as defined in the [Access Specification](#) and populates that field with the Attribute Common Name for all Fields.

### [Include Attribute Definitions in Access Table Design](#)

This Option populates the Field Property DESCRIPTION as defined in the [Access Specification](#) with the SDSFIE/FMSFIE Attribute Definition. This is the description/definition that appears in Access Table Design.

### **Create Index for Primary Key**

This Option causes a unique, NO NULLS, index to be created for the SDSFIE/FMSFIE Primary Key Attribute. This is how the records within that table are identified. However, creating the index may cause data entry problems.

### **Create the Database Joins Table**

This Option builds a table within the Access Database to store information about all of the required joins or relationships based on the contents of the database. For each table in the database, the SDSFIE/FMSFIE joins are examined. If both tables required for the join/relationship are present in the database, an entry will be made in a table called "Database Joins", which will document the need for the relationship. This replaces the text creation of joins documentation in earlier versions of the Generator.

### **Create Database Table Relationships where possible**

Access supports the creation of table relationships which enforce referential integrity. However, the numbers of these relationships are currently somewhat limited. This Option creates relationships to the extent possible based on the contents of the database.

### **Build required Domain Tables and create LOOKUP References**

This Option examines all indicated Tables and develops a list of the required Domain Tables necessary for the included attributes. These Domain Tables are constructed, populated with the SDSFIE/FMSFIE values in the Domain, and an Access "Lookup" is created which develops a "Combo Box" dropdown for data entry within Access, either directly or on Access Forms. Two creation options are possible:

**Create the Domain in the Local Database** - This adds the domains to the current target Access Database. This ensures that these domains are always available but increases the size of the Database.

**Create the Domain in a Remote Database** - This adds the domains to a separate Access Database. This Database will have the same name as the target Access Database with the addition of the word "Domains". This option keeps the size of the Database to a minimum but may result in the links of the domain tables being inaccessible if the databases are moved.

## Access Builder Menu

A complete breakdown of the Access Builder Menu is as follows:

### <OPEN>

**<CREATE ACCESS DATABASE>** - Selecting this menu option constructs an empty Access Database which is then used as the target for SDSFIE/FMSFIE Table addition. See "[Creating an Access Database](#)"

**<OPEN ACCESS DATABASE>** - Selecting this menu option allows the user to select an existing Access Database for SDSFIE/FMSFIE Table addition. See "[Opening an Access Database](#)"

**<SDSFIE/FMSFIE CONNECTION>** - Selecting this menu option allows for connecting to the SDSFIE/FMSFIE Library. See "[Connecting to the SDSFIE/FMSFIE Library](#)"

**<COMPACT DATABASE>** - Selecting this menu option removes unused data space from the target Access Database. This "compacting" process is described in Microsoft Access documentation and reduces the file size of the MDB file.

### <ACTION>

**<LIST TABLES IN ACCESS DATABASE>** - Selecting this menu option refills the "Tables" List and the "Domains" List. The List of both Data and Domain Tables is automatically refilled after deletion or addition of a new table. This Menu option is primarily to ensure that a current list of tables is displayed.

**NOTE:** This Menu option is disabled until a valid Access Database has been opened or created.

**<CLEAR CANDIDATE TABLES LIST>** - Selecting this menu option empties the Candidates List of any indicated Tables.

**<BUILD CANDIDATE TABLES LIST>** - Selecting this menu option activates the "Select Elements to Add" Dialog for the determination of which tables should be added to the "Candidates" List. See "[Selecting Elements to Add](#)". **NOTE:** This Menu option is disabled until a valid Access Database has been opened.

**<ADD CANDIDATES TO ACCESS>** - Selecting this menu option displays the "Options Dialog" which defines how the individual tables will be added to Access and which properties will be activated. See "[Adding Candidates to an Access Database](#)". **NOTE:** This Menu option is disabled until the Candidates List Box actually contains table names.

**<UPDATE ACCESS DATABASE>** - Selecting this menu option reconstructs the special SDS Microsoft Access Properties which are used by other SDSFIE/FMSFIE Tools under development. See "[SDSFIE/FMSFIE Access Specification](#)".

**NOTE:** This Menu option is disabled until a valid Access Database has been opened.

**<UPDATE DATABASE COMPLIANCE>** - Selecting this menu option activates the Upgrade/Compliance Diagnostic Dialog to compare the structure and contents of the Access Database against the selected Release of the SDSFIE/FMSFIE. See "Analyzing Database Compliance". **NOTE:** This Menu option is disabled until a valid Access Database has been opened.

- <REBUILD ALL DOMAINS>** - Selecting this menu option reads each Data Table, deletes all Domain and Domain references, and rebuilds them from scratch. Rebuilding domains in this way will always build the domains in the local database. See "[Special Functions—Domains](#)" **NOTE:** This Menu option is disabled until a valid Access Database has been opened.
- <DELETE ALL DOMAINS>** - Selecting this menu option deletes all Domain Tables (including Linked Table references) from the Local Database. See "[Special Functions—Domains](#)" **NOTE:** This Menu option is disabled until a valid Access Database has been opened.
- <REBUILD ALL JOINS>** - Selecting this menu reconstructs a table within the Access Database that contains a reference to the Table to Table Join Relationships specified within the database. Since Microsoft Access has difficulty with the number of joins referencing a particular table, the existence and contents of this table can be used to determine table relationships. **NOTE:** This Menu option is disabled until a valid Access Database has been opened.
- <DELETE ALL JOINS>** - Selecting this menu option deletes all existing Microsoft Access Relationships and rebuilds them based on the contents of the "Database Joins" Table. Therefore, complete reconstruction of the database table relationships can only be accomplished after the prior Special Function (Build the Database Joins Table) has been completed. **NOTE:** This Menu option is disabled until a valid Access Database has been opened.

**<HELP>**

- <ABOUT THE BUILDER>** - Selecting this menu option activates the Help Function for the Access Builder, beginning with the "Overview" Screen.
- <CONTENTS/INDEX>** - Selecting this menu option activates the Help
- <ABOUT THE ACCESS BUILDER>** - Selecting this menu option displays a Dialog with credits and version number for the Access Builder..

## Special Functions in the Access Builder

### Menu Special Functions -

**List Access Tables** - **<LIST TABLES IN ACCESS DATABASE>** - This function refills the "Tables" Tab List Box with the databases Data Tables and the "Domains" Tab List Box with the valid Domain Tables in the Access Database. This options is always executed when the Access Database is first opened or its contents has been modified.

**Clear Candidate List** - **<CANDIDATES -> CLEAR>** - This function empties the Candidates Tab List Box. At the same time, the Menu Item **<ADD CANDIDATES TO ACCESS>** is deactivated.

**Build Candidates List** - **<CANDIDATES -> BUILD>** - This function activates the "Select Elements Dialog" where users may select from a variety of options for adding tables to the Candidates List. See "[Selecting Elements to Add](#)". **NOTE:** This Menu option is disabled until a valid Access Database has been opened or created.

**Add Candidate Tables to Access - <ADD CANDIDATES TO ACCESS>** - This function attempts to add all tables identified in the Candidate Table List to the Access Database, according to the specified preferences. Selecting this function activates the "Adding Tables to Access Dialog". See "[Adding Candidates to Access](#)". **NOTE:** This Menu option is disabled until the Candidates List Box actually contains Candidates.

**Update Access Database - <UPDATE SDS PROPERTIES>** - This function reads the contents of the Access Database and reconstructs the Access Properties required to be consistent with the Access Specification. See both "Upgrading the Database" and "[Access Specification](#)". **NOTE:** This Menu option is disabled until a valid Access Database has been opened.

**Update Database Compliance - <UPDATE DATABASE COMPLIANCE>** - This function activates the SDSFIE/FMSFIE Compliance/Upgrade Analyzer Dialog to compare the structure and contents of the Access Database against the selected Release of the SDSFIE/FMSFIE. See "Analyzing Database Compliance". **NOTE:** This Menu option is disabled until a Geomedia GeoDatabase has been opened.

**Rebuild All Domains - <REBUILD ALL DOMAINS>** - This function reads the attributes for those tables which are designated as SDSFIE/FMSFIE tables. These tables are the one with the SDSName Property assigned to the SDSFIE/FMSFIE Table Name. See "[Access Specification](#)" for additional details. For these SDSFIE/FMSFIE Tables, any attribute ending in "\_d" according to the SDSFIE/FMSFIE convention will have the Domain Table updated to the current SDSFIE/FMSFIE Release. **NOTE** that rebuilding domain tables using this technique always builds the domain tables in the local database.

**Delete All Domains - <DELETE ALL DOMAINS>** - This function deletes any table from the Access Database whose name begins with the "d\_" according to the SDSFIE/FMSFIE convention. It will NOT delete domains in any database other than the local Access Database. If Domains are linked to another database, this function will delete the link.

**Rebuild All Joins - <REBUILD ALL JOINS>** - This function reconstructs a table within the Access Database that contains a reference to the Feature Table/Non-Graphic Join Relationships specified within the database. Since Microsoft Access has difficulty with the number of joins referencing a particular table, the existence and contents of this table can be used to determine table relationships. **NOTE:** This Menu option is disabled until a valid AccessDatabase has been opened.

**Delete All Joins - <DELETE ALL JOINS>** - This function deletes all existing Microsoft Access Relationships and rebuilds them based on the contents of the "Database Joins" Table. Therefore, complete reconstruction of the database table relationships can only be accomplished after the prior Special Function (Build the Database Joins Table) has been completed. **NOTE:** This Menu option is disabled until a valid Access Database has been opened.

### **Popup Menu Special Function -**

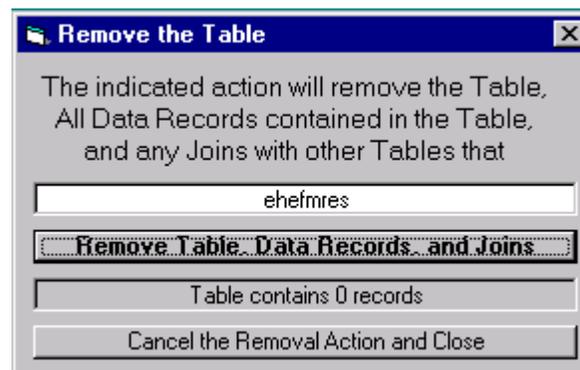
**DELETE TABLE** - This function is available to delete any Table from the Access Database. It can be activated by using the right mouse button to activate the popup menu. Use the **<DELETE>** menu item to delete the table. See "[Deleting/Removing Access Tables](#)".

**ANALYZE TABLE** - This function is available for any table or domain table included in the Access Database. It can be activated either by double clicking on the Table or Domain Table Name appropriate List Box or by selecting a Table or Domain Table and using the right mouse button to activate the popup menu. Use the **<ANALYZE>** menu item to analyze. See "[Viewing Table Characteristics](#)" or "Viewing Domain Table Characteristics" for additional information.

## Deleting/Removing existing Access Tables

One of the special functions within the Access Builder is the capability to delete or remove a Table from the target Access Database. This capability is included in case a Table has been added in error, and it is necessary to "undo" or remove the Data Table and its Joins from the Database.

In order to delete the Table, select the Table from the "Tables" Tab List Box and click the right mouse button. Select menu item **<DELETE>** from the Popup Menu. The following Dialog will appear:



This small dialog is used to delete/remove the Table. The Name of the Table is displayed in the dialog. In addition, the number of records in the Table is indicated. If the Table contains no records, clicking the **<REMOVE TABLE, DATA RECORDS, AND JOINS>** button will remove the table; e.g. "undo" the Table Addition action. Once the Table has been removed, the Table List Box will be refilled with the revised list.

If the Data Table contains records, removing the Table will cause data loss. In this situation, an extra "confirmation" dialog will appear. Again, removing/deleting tables containing data is **NOT RECOMMENDED**.

## Viewing Table Characteristics

Another of the special functions within the Access Builder is the capability to view some detail about the Table and its Attributes in the Access Database. This capability for information only and is a precursor to determining the compliance of the database with the SDSFIE/FMSFIE.

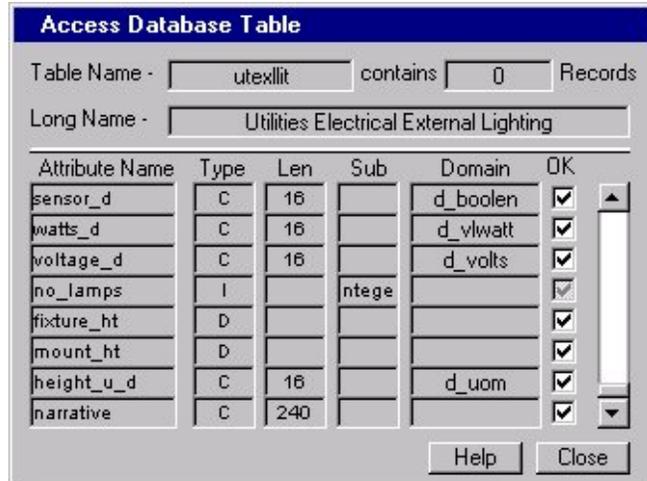
In order to view information about the Table, select the Table from the Tables List Box and click the right mouse button. Select menu item **<ANALYZE>** from the Popup Menu. The dialog at the top of the next page will appear:

**Screen Contents -**

**Table Name** - The name of the Access Database Table. This is the same as the entry in the Tables List Box and the normal SDSFIE/FMSFIE Table Name.

**No of Records** - The number of records currently in the Table. This does not necessarily mean that these records are populated, but that there are records indicated.

**Long Name** - The SDSFIE/FMSFIE Long Name of the Table. For Tables built by the Builder, this indicates the SDSFIE/FMSFIE Table "Common" Name.



**Attribute Information for the Table** - A scrollable list of attributes in the Table. The list contains:

**Attribute Name** - The Field Name for the Attribute. For SDSFIE/FMSFIE Tables, this is the normal, or short, attribute name.

**Data Type** - The Data Type for the field as derived from the Field. Normal Data Types include "C", "I", "S", "M", "D", and "R".

**Length** - The Field Length for Character Type fields. This number indicates how many characters the field can hold.

**Sub Type** - The supplemental Type for Integer types indicating whether they express "Date" or "Time". Only applicable for Table built by the Access Builder.

**Domain** - The Name of the Domain Table to which the Attribute refers, if applicable.

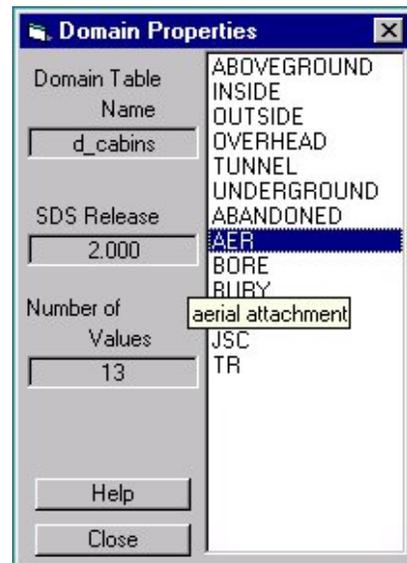
**Ok** - Indicates whether a quick analysis of the Attribute is consistent with the specified Release of the SDSFIE/FMSFIE.

**Viewing Domain Table Characteristics**

Another of the special functions within the Access Builder is the capability to view some detail about a Domain Table in the Access Database. This capability for information only and is a precursor to determining the compliance of the database with the SDSFIE/FMSFIE.

In order to view information about the Domain Table, select the Domain Table from the Domain Tables List Box and click the right mouse button. Select menu item <ANALYZE> from the Popup Menu. The dialog (right) will appear:

**Screen Contents -**



**Domain Table Name** - The name of the SDSFIE/FMSFIE Domain Table. This is the same as the entry in the Domain Tables List Box and the normal SDSFIE/FMSFIE Domain Table Name.

**SDS Release** - For Domain Tables built by the Access Builder, this indicates the Release Number used to construct the Value List. It is useful in determining whether the Domain Table is current. For User Built Domain Tables, this indicates "Not Specified".

**No of Values** - The number of records currently in the Domain Table, corresponding to the number of Distinct Values in the Domain List.

**Value List** - A scrollable list of Domain Values in the Access Domain Table. By selecting a value (clicking), and then holding the mouse over the value, the Tool tip will display the definition.

## Analyzing Database Compliance

One of the most extensive of the special functions is to perform a detailed comparison of the structure and contents of the Access Database against the connected Release of the SDSFIE/FMSFIE. In this way, it is possible to not only determine the level of compliance of the Database to the SDSFIE/FMSFIE, but to automate, to the extent possible, a series of actions to upgrade or modify the database. When selected, this special function displays the Analyze Database Compliance Dialog.

**SDSFIE/FMSFIE Access Database Analyzer**

**Perform**

- Diagnostics and Document Deficiencies/Errors
- Diagnostics and Correct Errors where Possible
- Diagnostics and Prompt for Correction

**Output/Documentation**

- Output the Results to an ASCII File
- Output the Results into the ACCESS Database
- Output the Results to the Viewer Only

**Diagnostics/Corrections**

- Tables/Attributes vs SDS/FMS
- Domain Tables vs SDS/FMS
- Attribute Values vs Domains
- Missing/Invalid Indexes
- Missing/Undocumented Joins
- Missing Domains
- Missing Tables

**Summary Statistics**

<b>Total Tables</b>	237	<b>Attribute Errors</b>	0
<b>Data Tables</b>	21	<b>Value Errors</b>	0
<b>Domain Tables</b>	208	<b>Tables Added</b>	0
<b>Total Attributes</b>	667	<b>Attributes Added</b>	0
<b>Total Constraints</b>	0	<b>Total Warnings</b>	0
<b>Total Indexes</b>	2	<b>Total Corrections</b>	0

**Table**

**Attribute**

**Start**

**Close** **Help**

Screen Contents -

## **PERFORM Section**

**Diagnostics and Document Errors/Deficiencies** - This option simply displays the results of the comparison.

**Diagnostics and Correct Errors where Possible** - This option not only displays results but will attempt to correct a number of database deficiencies, provided those corrective actions do not result in data loss.

**Diagnostics and Prompt for Correction** - This option not only displays results but will individual prompt user to either correct or ignore errors/deficiencies found in the database.

## **OUTPUT/DOCUMENTATION Section**

**Output the Results to an ASCII File** - This option not only displays the results, but writes them to an ASCII File designated by the user. If selected, a text box will appear where the path and file name of the output file can be designated.

**Output the Results into the ACCESS Database** - This option not only displays the results, but writes them into an Access table called "Diagnostic Results", actually created and populated within the Access Database.

**Output the Results to the Viewing Window Only** - This option simply displays the results of the analysis and comparison.

## **SUMMARY STATISTICS Section**

This section displays quantitative information about the contents of the Database as well as counts about the deficiencies noted and corrective actions taken.

## **DIAGNOSTICS/CORRECTIONS Section**

**Table / Attributes against the SDSFIE/FMSFIE** - This Diagnostic analyzes the structure (Name, Data Type, Character Length) of each table in the User Database indicating whether the table is valid, needs to be deleted, or needs to be renamed. Data Tables not included in any release of the SDSFIE/FMSFIE are noted but ignored.

**Domain Tables against the SDSFIE/FMSFIE** - This Diagnostic analyzes the value contents of any included Domain Tables, indicating whether values are valid as well as missing.

**Attribute Values against the included Domains** - This Diagnostic analyzes the contents of tables/attributes which reference Domain Tables and indicates whether included values are valid *against the loca Domain*.

**Missing or Invalid Indexes** - This Diagnostic analyzes the definition of any table indexes and determines whether the index is structured in accordance with the SDSFIE/FMSFIE. This includes information such as multiple fields, Primary Keys, etc.

**Missing / Undocumented Joins** - This Diagnostic analyzes all relationships defined in the database against those that are possible; e.g. that both tables for the Joins are included in the Database.

**Missing Domains** - This Diagnostic analyzes the need for Domain Tables based on the Data Tables and Attributes included in the Database.

**Missing Tables** - This Diagnostic analyzes the need for additional tables based on the currently included tables and Foreign Key joins defined in the SDSFIE/FMSFIE. For all included tables, each Foreign Key is identified and the table to which it joins is also identified. If the table is not included in the database, it is displayed.