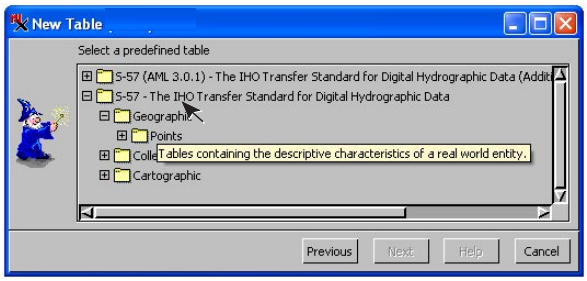
Attributes and Databases

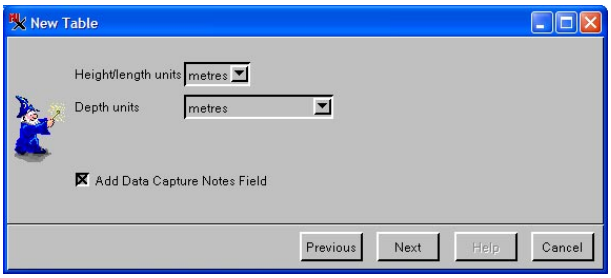
Predefined Database Tables (S-57)

The TNT products support creating new user-defined and predefined tables. Addition of existing tables from a variety of sources, including those supported by linked communication through OLE DB and the older ODBC, such as Access and MySQL, is also supported (see a series of Technical Guides concerning linking in the Import process developed for version 2006:72 of the TNT products). S-57 is the electronic data transfer standard prepared by the International Hydrographic Organization (IHO) for use with Digital Hydrographic Data. The TNT products provide the predefined tables and table structure (schema) for S-57 Edition 3.1 and separately for the Additional Military Layers (AML) 3.0.1, which extend the S-57 schema. These tables contain all the attribute information used for digital hydrologic features. Using predefined tables lets you prepare an object for assignment of any number of attributes very quickly for points, lines, and/or polygons. S-57 usage is restricted to vector, CAD, and shape objects. S-57 tables may have dozens of reference fields with constraints that are automatically defined when the table is created.

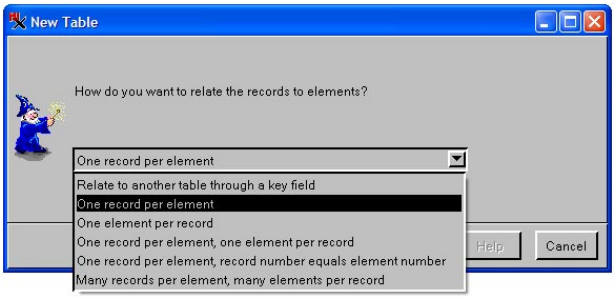
To add a table from a predefined table set, choose New Table from the right mouse button menu for the database and turn on the Predefined option on the first panel of the database creation wizard. The next panel (shown at the right) in the New Table wizard presents the organizational groupings for the predefined empty tables along with DataTips that identify the contents of the folder. You get the appropriate tables for the element type database you are adding the table to. If you are adding an S-57 table to the point database, you see a Points folder in the Geographic folder, and you see a Polygons folder if adding a table to the polygon database. If adding to a CAD object you see the Points, Lines, and Polygons folders. When you expand an element type folder, all of the empty tables for that element type are listed. When you select one of these empty tables all of its populated reference tables are automatically added. These reference tables provide a list of allowable values for the field. Each of the S-57 tables has a detailed DataTip that becomes the table's description when it is added. The description appears in the DataTip when you pause the mouse over the table's name in the Display Manager.



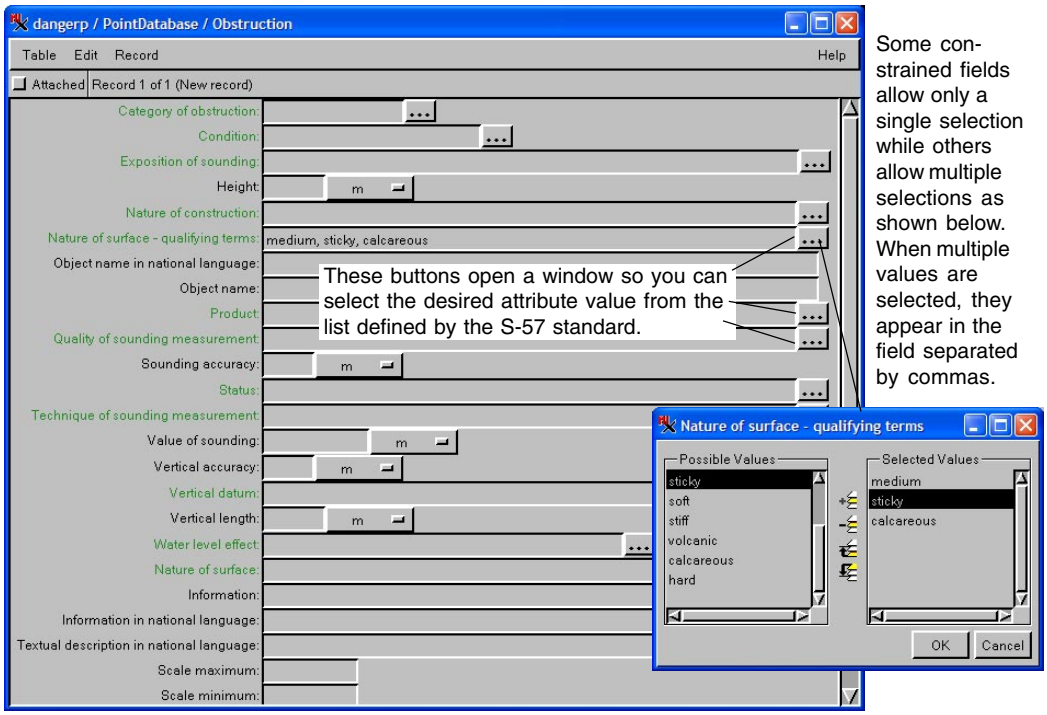
The next wizard panel (shown at the right) lets you specify the units in which you will be entering data in the new table and indicate whether you want a string field (Unicode) added to the S-57 defined fields for the table so you can include data capture notes. The default width of this field is 256 characters, which can be subsequently changed in the Table Properties window if desired. The next panel (not shown) provides the standard name and description for the table selected, so that it can be edited if necessary. You can also choose to show the legacy object name and description valid for versions 2005:71 and earlier, which expands the wizard window to show this information.



The next panel (shown at the right) lets you choose how to relate the records in the new empty table to the elements in the geometric object. The default choice when creating an S-57 table is One record per element. See the Quick Guide entitled *Database Attachment Types* for more information on attachment types available for use in the TNT products. The final wizard panel (not shown) is merely informative and tells you that the table properties window will open next. The Table Properties window lets you



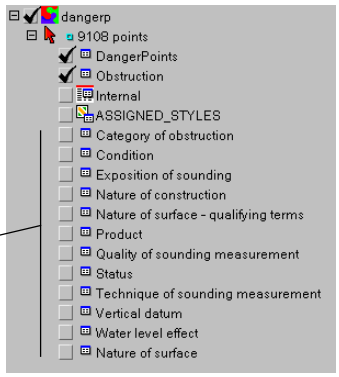
add, delete, or edit fields and set or change constraints. When creating a new table using predefined information, you generally do not want to change this information because it will no longer be S-57 compliant. The new table is set by default to prompt for attribute information when an element is added to the object.



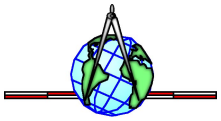
Some constrained fields allow only a single selection while others allow multiple selections as shown below. When multiple values are selected, they appear in the field separated by commas.

A few of the fields have simple constraints set, such as the minimum and/or maximum allowed value. Fields constrained in this manner will alter values entered outside the designated range to the closest limit. Other fields are constrained to present choices for the field value from the records in an additional reference table. Such additional tables are automatically added when you choose one of the tables that uses this kind of constraints. Simple constraints are a feature supported in single record view only. Once the information is filled out in single record view, you can switch to tabular view for attribute viewing if desired. Tabular view does not enforce simple constraints but it does provide a means for selecting values from other tables to fill in a field.

System tables not shown (above) and shown (right).



These tables provide values for some of the constrained fields.

A special feature of the implemetation of S-57 hides these additional tables from the user unless the Show System Tables option is on. The tables providing constrained values may greatly outnumber the tables of interest. For example, the Obstruction point table, which lists obstructions to navigation, has twelve different tables that provide the values for 12 of its fields. There is no need to view these tables directly unless you want to edit the information they contain for corrections and changes in the S-57 attribute system. When you edit the contents of these tables, existing records with values from that table are not altered. If you find something you want to change (for example, a typographical error), you should change the text in the s57.scm file, which implements the S-57 publication, so it will be changed for subsequent selections of that table. The s57.scm file resides in the directory where your TNT product was installed. It is an XML file that has had the extension changed so that TNT recognizes it for predefined table use.

You can also create your own set of predefined tables for situations in which you repeatedly create objects with a shared set of attributes. Use the s57.scm (XML) file as a model for a new file that is appropriate for your data set.