The CEDRA Corporation's

COMMAND OF THE MONTH

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FEATURED COMMAND
Custom Formatted
Bearing Strings

Application Description

Most folks involved with mapping are familiar with the word **bearing**, which indicates direction of a line or two points. What people may not be familiar with is that a bearing can be formatted in a variety of manners.

Recently we were asked if our software supported custom bearing formats. Well, when we were asked the question, the answer was no. After hearing the question, we realized that this was functionality that should be available and as such proceeded to implement the ability to generate custom bearing strings. We also felt this functionality would make for an interesting issue in our Command of the Month series.

The CEDRA Solution

To address this issue, the [Format Bearings] command within the CEDRA-AVland-FormattingMenus Toolbar, see Figure 1, was added to the CEDRA-StationFormat Commands ComboxBox, see Figure 2. This new command appears below the Format Stations command and has been recently added to address the ability to create custom formatted bearing text strings. These text strings are stored as an attribute in a feature layer or table and can be created from an existing bearing text string or from the geometry of an existing line feature.

Format Bearings Overview

The *Format Bearings* menu command in the CEDRA-StationFormat toolbar enables the user to: (a) convert an existing

bearing text string into a custom formatted bearing text string, storing the formatted text string in a user-specified attribute field. For example, the bearing of N W 45 12 3 can be converted into a text string such as N 45°-12'-03" W, storing the text string in a specific attribute field. The bearing text string can also be created using the geometry of an existing line feature.

In performing this conversion, the user has the ability to:
• control the location or position of the quadrant identifier,
• specify the type of character that separates the quadrant identifier from the bearing components,
• specify the type of character that separates the individual bearing components,

> ### Command Of The Month bulletin
>
> *This month's issue discusses how to create a custom formatted bearing text string from an existing text string or existing line feature(s).*

• indicate whether bearing component symbols (degrees, minutes, seconds) are to be included or not,
• indicate whether leading zeros are to be included in the bearing components, and
• specify the number of digits to the right of the decimal point in the seconds component of the bearing.

In using this command, the user must first activate in the Table of Contents (TOC) of ArcMap the layer or table to be

Figure 1
CEDRA-AVland-FormattingMenus Toolbar

Figure 2
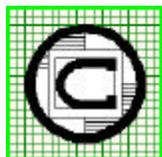**CEDRA-StationFormat Commands ComboBox**

processed. If no layer or table has been activated, the error message of Figure 3 is displayed. If more than one layer or table have been activated, the error message of Figure 4 is displayed.

In addition to activating the proper layer or table in the TOC, the user has the option of selecting features in the ArcMap display, or selecting records in the table to define which features or records are to have their existing bearing text strings formatted. If no features or records have been selected, then all features or records of the layer or table are formatted.

If the active layer is a line or polyline layer, the user has the option to create the bearing text string using the geometry of the features in the layer.

Figure 3
No Layer Selected Warning

Figure 4
Too Many Layers Selected Warning

Format Bearings Operation

Having activated the desired layer or table in the TOC and optionally selected any desired features or records, and having invoked the subject menu command, the multi-input dialog box of Figure 5 is displayed.

➤ **1**   **Scroll** down in the *Attribute with Raw Values:* data field, and **select** the field that contains the raw bearing values that are to be formatted. If the active layer is a line or polyline layer, the last option in the drop-down list will be: Compute from Geometry, which denotes that the bearing is to be determined using the geometry of the feature being processed.

➤ **2**   **Scroll** down in the *Attribute to be Populated:* data field, and **select** the field to contain the new formatted bearing values. Note that the default is the *Create the BEAR_TEXT field* option. Below this option are the text data fields which appear in the layer. Note that the field selected in this step can be the same as the one selected in Step 1.

When the *Create the BEAR_TEXT field* option is selected, the command will create a field called *BEAR_TEXT* that is of the string/text type with a field width of 20. That is, the maximum number of characters in this field will be 20. If the user requires a field width greater than 20, then native ArcMap functionality should be used to create a field of the desired width.
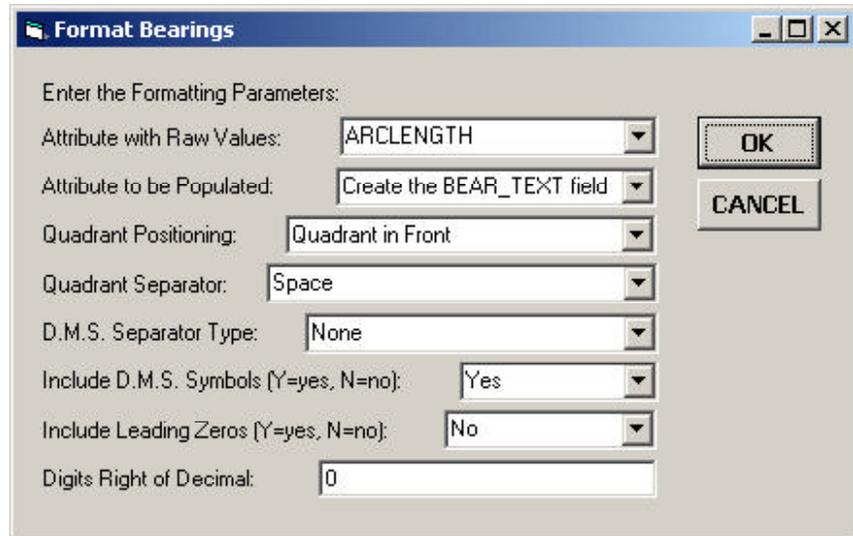
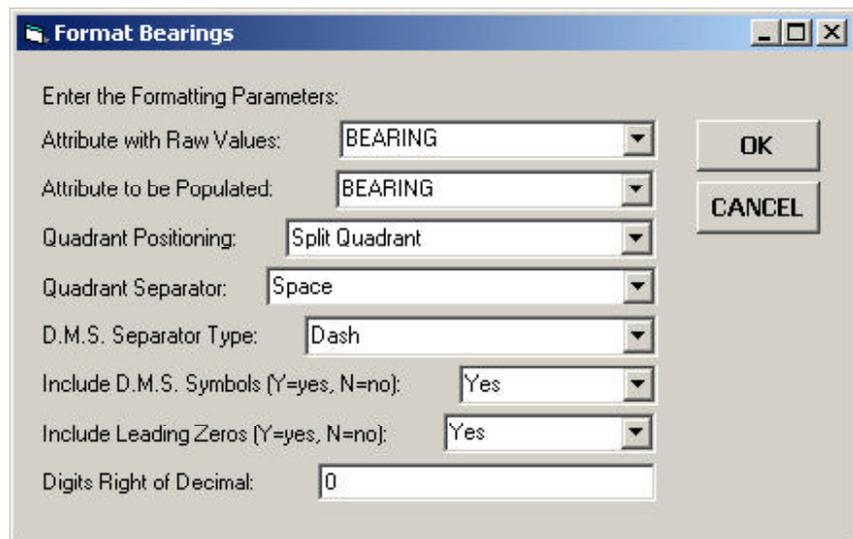**Figure 5 - The Default Station Formatting Parameters**

Figure 6 - Station Formatting Parameters

➤ **3**   **Scroll** down in the *Quadrant Positioning:* data field, and **select** the option describing the desired positioning or location of the quadrant identifier. The available options are:
       Quadrant in Front
       Quadrant in Back
       Split Quadrant

➤ **4**   **Scroll** down in the *Quadrant Separator:* data field, and **select** the option describing the character that is to be used to separate the quadrant identifier from the bearing components.

The available options are:
       Space
       Dash
       None

➤ **5**   **Scroll** down in the *D.M.S. Separator Type:* data field, and **select** the option describing the character that is to be used to separate the individual bearing components. The available options are:
       Space
       Dash
       None

➤ **6** **Scroll** down in the *Include D.M.S. Symbols:* data field, and **select** the option indicating whether the degree, minute and seconds symbols are to be included in the formatted bearing text string.

➤ **7** **Scroll** down in the *Include Leading Zeros:* data field, and **select** the option indicating whether leading zeros are to be included in the formatted bearing text string.

➤ **8** **Enter** in the *Digits Right of Decimal:* data field the desired number of digits to the right of the decimal point to be included in

the formatted seconds value. This value must be zero (0) or greater. It cannot be negative.

➤ **9** **Click** at the **OK** button to continue,
or
click at the **Cancel** button to abort the command.

Having clicked at the *OK* button, the command processes the selected features/records in the active layer/table. If there are no selected features/records, then all features/records in the layer/table are processed. A progress bar is displayed in the status bar area indicat-

ing the percent completion of the conversion.

Once the command has completed the station formatting process, a message is displayed in the status bar area informing the user of how many features or records have been formatted.

Shown in Figure 6 are user-specified formatting parameter settings. Shown in Figure 7 and Figure 8 are a "before" and "after" image of a layer that was processed with this command. The parameters shown in Figure 6 are the ones which were used to create the bearing text strings shown in Figure 8.

LEN	AZIMUTH	BEARING	CARTESIAN
100.2781	99°36'57"	SE 80° 23' 3"	350.384265
59.2662	77°37'9"	NE 77° 37' 9"	12.380873
120	77°37'9"	NE 77° 37' 9"	12.380873
120	77°37'9"	NE 77° 37' 9"	12.380873
256.2379	192°29'5"	SW 12° 29' 5"	257.515308
40	278°11'20"	NW 81° 48' 40"	171.811109
424.1311	347°37'9"	NW 12° 22' 51"	102.380873
32.2169	77°37'9"	NE 77° 37' 9"	12.380873
64.1111	278°11'20"	NW 81° 48' 40"	171.811109
65.1387	280°35'0"	NW 79° 25' 0"	169.416667

Record: 1   Show: All | Selected   Records (0 out of 63 Selected.)   Options

Figure 7 - Existing Bearing Text String stored under the Bearing Field (Attribute)

LEN	AZIMUTH	BEARING	CARTESIAN
100.2781	99°36'57"	S 80°-23'-03" E	350.384265
59.2662	77°37'9"	N 77°-37'-09" E	12.380873
120	77°37'9"	N 77°-37'-09" E	12.380873
120	77°37'9"	N 77°-37'-09" E	12.380873
256.2379	192°29'5"	S 12°-29'-05" W	257.515308
40	278°11'20"	N 81°-48'-40" W	171.811109
424.1311	347°37'9"	N 12°-22'-51" W	102.380873
32.2169	77°37'9"	N 77°-37'-09" E	12.380873
64.1111	278°11'20"	N 81°-48'-40" W	171.811109
65.1387	280°35'0"	N 79°-25'-00" W	169.416667

Record: 1   Show: All | Selected   Records (0 out of 63 Selected.)   Options

Figure 8 - Custom Bearing Text Strings Created using the Format Parameters shown in Figure 6

In Figures 7 and 8, the field BEARING is used for extraction and storing of the bearing text string. That is, the values in the BEARING field are replaced with new bearing text strings.

In Figure 7 it can be seen that the quadrant identifier precedes the bearing components, while in Figure 8 the quadrant identifier is split between the bearing components. Additionally, the DASH character is used to separate the bearing components.

Notes

a. One the bearing components have been defined, the next time the command is invoked, the default values displayed will be those when the command when last executed. That is to say, the command remembers the previous user settings.

b. If the user wishes to not keep the new formatted bearing text strings, the {Edit} [Undo Format Bearings] command can be invoked. This is extremely useful in the case where the same field is being used for extraction and storing.

Summary

Those users who require the ability to create a custom formatted bearing string will find the [Format Bearings] command extremely useful.

The implementation of the [Format Bearings] command is a recent enhancement and a direct result of an inquiry from a CEDRA software user.

Users with a software support agreement should check with The CEDRA Corporation on how to obtain a software update so as to be able to utilize this new functionality.

As always, users who have a need for functionality that is not presently available in CEDRA software should feel free to forward these requests to CEDRA, as well as, any other comments or suggestions you may have.

If you have a request for Command Of The Month, feel free to phone, fax or e-mail your request to The CEDRA Corporation.