The CEDRA Corporation's

COMMAND OF THE MONTH

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FEATURED COMMAND
Creating Points
at Polygon Centers

Application Description

Recently we were asked if it was possible to generate point features at the centers of one or more polygon features. The caveat to this request was that the point that was created had to be inside the polygon that it was associated with.

Those of you involved in parcel mapping work have come across this application many times. The difficulty most commands have with this task is that the center of a polygon sometimes falls outside the polygon. For example, a U shaped polygon will have its center outside of the polygon. That is, the center is in the middle of the U, not in the U itself. As such, some methodology would have to be created to ensure that the resultant point falls within the polygon and not outside of the polygon.

Additionally, it was desired to transfer from the polygon to the resultant point, one or more attribute values of the polygon. If the attributes did not exist in the point layer, the command would need to create these attributes for the user.

After reviewing the requirements we determined that within a short time we could create a new command that would address this application.

The CEDRA Solution

To address the application described above, the [Collapse Polygon to Point] command within the {CEDRA-Polygon-Tools} toolbar, shown in Figure 1, was created.

Collapse Polygon to Point Overview

The *Collapse Polygon to Point* menu command will create a point that is at the center of a polygon or inside the polygon if the center of the polygon does not fall within the polygon. Additionally, the command offers the option to transfer one or many attributes from the polygon to the point feature that is created.

The command processes all of the features, or just the selected features, within the active polygon layer in the Table of Contents. If a selected set of features is to be processed, the features must be selected prior to activating the command.

> *Command Of The Month bulletin*
>
> *This month's issue discusses how to generate point features at the center of polygons ensuring that the point falls within the polygon.*

Collapse Polygon to Point Operation

To use this menu command, the user should:

➤ 1 **Scroll** down in the **table of contents area**, and **select** the **layer** that contains the polygon features to be processed.

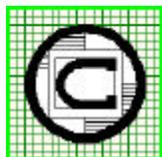➤ 2 If all features within the active layer are to be processed, pro-

Figure 1
CEDRA-Polygon-Tools Toolbar

ceed to the next step, otherwise, **select** with the *Select Features from Active Layers* tool the **features** to be processed.

➤ 3 **Scroll** down in the {CEDRA-Polygon-Tools} menu combo box, and **select** the [Collapse Polygon to Point] menu command (see Figure 1). If the prerequisite conditions are not met, one of the warning messages shown in Figures 2 through 4 will be displayed. At this point click the OK button and make the appropriate adjustments.

Figure 2
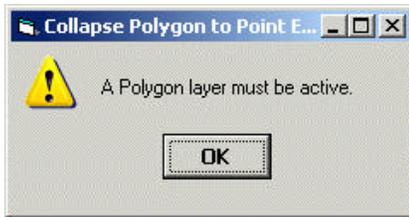**No Theme Selected**
Warning Message

Figure 3
No Polygon Layer Selected
Warning Message

Figure 4
More than 1 Layer Selected
Warning Message

A progress bar is displayed in the status bar area indicating the percent complete of the processing. Once all of the processing has been completed, the command displays in the status bar area a message indicating the number of point features created, see Figure 8.

The point features that are created are stored in the current active layer. The [Set Active Layer] command can be used
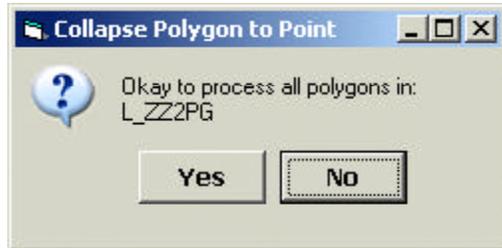

Figure 5
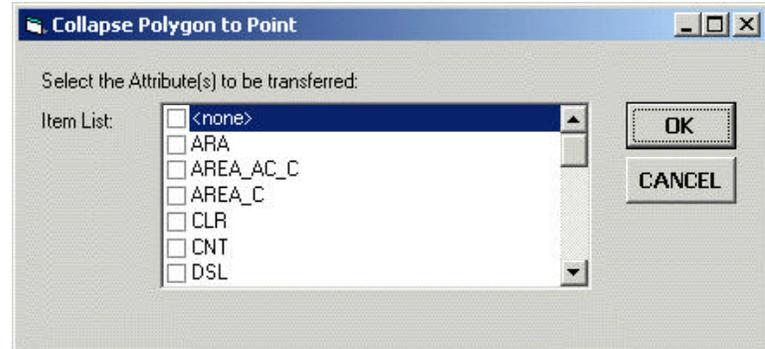**Okay to Process All Features**
Query Message Box

Figure 6
Selection of Attributes, if any, to be Transferred

Figure 7 - Status Bar Message

➤ **4** If the layer contains selected features, proceed to the next step, otherwise, **click** at the **Yes** or **No** button, see Figure 5, to indicate whether or not all features in the active layer are to be processed. If the No button is selected, the command is aborted.

➤ **5** **Scroll** down in the *Item List* data field of Figure 6, and **select** the:

• **<none>** option to indicate that no attributes are to be transferred to the point features that are created, or

• **the attribute(s)** to be transferred to the point features that are created. If the attribute that is selected does not exist in the point layer, the command will create the attribute for the user automatically.

➤ **6** **Click** at either the **OK** button to begin the processing.
or
click at the **Cancel** button to abort the command. If the Cancel button is selected, the command will display the message shown in Figure 7 in the status bar area. Note, in order for processing to begin and if no attributes are to be transferred, the user must select the <none> option. That is, a check mark must appear in the square to the left of the <none> option.

Having clicked at the OK button, the command processes the appropriate polygon features creating point features that are either:
a. at the center of the polygon, or
b.   in the polygon if the center location happens to fall outside of the polygon.

Figure 8
Results of Processing
Message

to control the current active layer. If the point features are to be saved in a special layer that does not exist in the Table of Contents, that name of the layer must be specified prior to invoking this command. In this case, the user should: (a) invoke the [Set Active Layer] menu command, (b) select the Entering New Layer option, click the OK button, and (c) specify the desired layer name and click the OK button.

If the current active layer is not defined in the Table of Contents, the [Set Working Directory] command can be used to define the folder where the layer is to be stored.
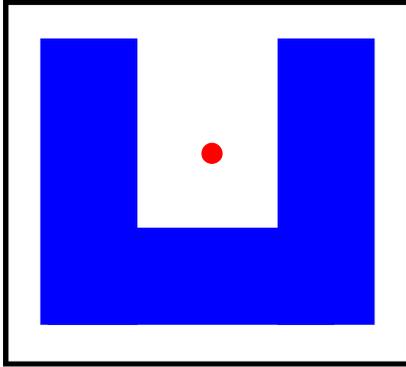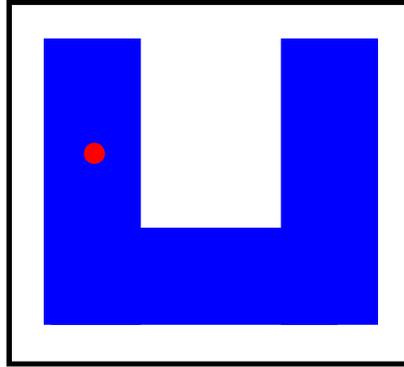
Figure 9a
Center outside Polygon

Figure 9b
Center inside Polygon

In transferring attributes from the polygon to the point, the command will create in the point layer the attribute that is being transferred if the attribute does not exist in the point layer.

Note

Shown in Figure 9a is an example where the center of a polygon falls outside the polygon. Shown in Figure 9b is where the [Collapse Polygon to Point] command would position the center point.

In positioning the center point when the center falls outside the polygon. The command will maintain the Y coordinate and perform an iteration process to determine a suitable X coordinate such that the X and Y coordinates fall within the polygon.

Summary

As far as we are aware there is no out-of-the-box ArcMap command that accomplishes the same task as the [Collapse Polygon to Point] command. Now there is native ArcMap functionality that will create a point at the center of a polygon but that center point can fall outside of the polygon. So that for those cases where it is required that the center point fall within the polygon, the [Collapse Polygon to Point] command can be used.

The implementation of the [Collapse Polygon to Point] menu command is a recent enhancement and a direct result of a re-

quest from a CEDRA software user. As a matter of fact, it was the same day that the request was made that the command was ready for use. It then took two more days to finalize the command.

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 suggestion 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.