

GIS Specialist for Incident Management Training

Unit 11 – IAP Map 3 Workflow Process

Unit Objective:

By the end of this lesson, the student will create and populate a new incident geodatabase and modify the features within that geodatabase using the FIMT extension, and produce a single page Incident Action Plan (IAP) map using Incident Command System (ICS) standards.

Work Flow Instructions:

Part I

- 1) Open ArcMap and start with a new empty map document.
- 2) Set the Data Source Options to “Store relative path names.”
- 3) Turn off “Save thumbnail image with map.”
- 4) Check to see that the Fire Incident Mapping Tool (FIMT) is loaded and turned on in Extensions dialog.
- 5) Add the FIMT Toolbar if needed.
- 6) Create a new incident (using FIMT). See the exercise assignment for incident information.
- 7) Notice that the incident layers are added automatically and they are all empty. Turn off all of the History layers.
- 8) Add the base data: DRGs, buildings, and powerlines.
- 9) Group the DRG layers into a Group Layer titled DRG and zoom to the area. Turn the Green “Value 5” off for each DRG.
- 10) Group the buildings and powerlines (and any other vector base data you added) into a Group Layer titled BaseMap and symbolize the layers appropriately.
- 11) Save your map project. (Be sure to save your map periodically.)
- 12) Add the incident data for July 24th: fire origin (dated 7/22), incident points, fire perimeter, division lines, division breaks, and fire lines.
- 13) Examine these layers and their attribute tables.
- 14) Turn on the Selection tab in the Table of Contents (Tools > Options > TOC > TOC tab options: Selection). This should be on automatically in ArcMap 9. When using ArcMap 8.3, you will need to turn this option on each time you open ArcMap.
- 15) Start editing on the incident geodatabase (*Edit Incident* button). Remember that you are in an editing session and you need to save your edits as you go (saving the map document does not save your edits).
- 16) Copy the incident perimeter into the FirePolygon layer in the FIMT incident geodatabase. (Select the polygon, *Copy to Perimeter Layer* button)
- 17) Turn off the per_ir polygon layer.
- 18) Symbolize or label the division lines (ics_div_1) so you can easily determine the attributes for the different divisions.

- 19) Create division breaks in the FIMT incident geodatabase. (Use the *Split Assignment Line* tool to split the PerimeterSector line at the division breaks indicated by the divbrks layer and attribute them appropriately.) Be aware that there will be an extra division break inserted automatically at the start/end point of the original PerimeterSector line. Remove this break by assigning the adjacent lines to the same division (and it should go away automatically).
- 20) Turn off the ics_div_1 and divbrks layers.
- 21) Symbolize or label the fire lines (ics_fl_1) so you can easily determine the attributes for the different lines.
- 22) Create Fire Lines within the FIMT incident geodatabase. Attribute the lines according to the ics_fl_1 layer. (Select the original fire lines, or the PerimeterSector lines, and use the *Copy to FireLines* button. Using the PerimeterSector lines to create the FireLines will ensure that the lines are coincident. Attribute the lines using the *Change FireLine* button.) Join firelines where possible.
- 23) Turn off the ics_fl_1 layer.
- 24) Turn off the FirePolygon and PerimeterSector layers.
- 25) Symbolize or label the fire points so you can easily determine the attributes for the different points.
- 26) Create Fire Points within the FIMT incident geodatabase. Attribute the points according to the ics_x layer. (Select the original fire points, and use the *Copy to FirePoints* button, attribute the points using the *Change FirePoint* button.) Note: You may need to move the FirePoint layer up within the table of contents so the points are not covered by the FirePolygon layer.
- 27) Turn off the ics_x and origin layers.
- 28) Stop Editing (Save Edits).
- 29) Close ArcMap – You are done with Part I

Part II

- 1) Open ArcCatalog and browse to where you saved your FIMT incident geodatabase in Part I.
- 2) Copy your incident geodatabase and paste it into your backup directory. Rename the backup copy with the incident name and the date and time the geodatabase was created/completed, and an FIMT indicator. (Example: 072402_2230_timbered_rock_FIMT.gdb)
- 3) Open the ArcMap map document you saved in Part I.
- 4) Remove the ics layers from the previous operational period (072402)
- 5) Save the map document. Remember to save your map periodically.
- 6) Minimize ArcMap and ArcCatalog
- 7) Create a shapefile from the FOBS GPS data provided by the SITL. (See DNR Garmin Job Aid for instructions.) Make sure to project the file to the coordinate system being used by the incident.
- 8) Define the spatial reference of the FOBS shapefile in ArcCatalog (Define – NOT Project) using either ArcToolbox or the properties dialog.
- 9) Add the FOBS shapefile to your ArcMap document.
- 10) Update the FirePolygon within the incident geodatabase.

- a. First, you will need to clean up the FOBS polygon. Start an edit session on the FOBS polygon shapefile.
 - b. Remove the three GPS errors that break up the lines. (Select the line, set the edit task to Modify Feature, use the Edit Tool to right-click on the vertices that make up the GPS error and choose Delete Vertex, then Finish Sketch when you are done.)
 - c. Merge the three line segments into one. (Select all desired segments, under the Edit menu, click Merge and follow the instructions.)
 - d. Stop Editing and Save Edits.
 - e. Start an edit session on the FIMT incident geodatabase (*Edit Incident*). Remember to save your edits periodically.
 - f. There are several ways to update the FirePolygon layer. See the FIMT Job Aid for details. In this case, it will be necessary to simply replace the existing FirePolygon (instructions follow).
 - g. Turn off the FireLine layer and turn ON the PerimeterSector layer.
 - h. Make sure only the FOBS layer and the FirePolygon are selectable
 - i. Use the Trace Tool to heads-up digitize the new FirePolygon.
 - i. Click the Create Fire Polygon button.
 - ii. Use the Edit Tool on the Editor Toolbar to select the existing FirePolygon.
 - iii. Select the Trace Tool on the Editor Toolbar
 - iv. Click on the FirePolygon at the northern intersection with the FOBS line and trace the western edge of the polygon until you reach the southern intersection with the FOBS line, click the polygon again. (Do not end the sketch yet.)
 - v. Use the Edit Tool to select the FOBS line then re-select the Trace Tool.
 - vi. Click on the FOBS line where you left off tracing the polygon. Trace the FOBS line until you reach your starting point and double-click to finish the sketch
 - vii. Enter any attributes you can (date/time/source of polygon).
 - j. Before deleting the old FirePolygon, mark the locations of the division breaks using the *Create FirePoint* button (leave the points as “Unknown”). *Note: You may need to move the FirePoint layer above the FirePolygon and AssignmentBreak layers in the table of contents to see the new fire points.*
 - k. Make note of the division assignments of the old fire polygon.
 - l. Open the attribute table for the FirePolygon layer. Select and delete the old FirePolygon (the associated PerimeterSector lines and AssignmentBreaks should delete themselves automatically).
- 11) Turn off the FOBS line.
 - 12) Create Division breaks as indicated in the exercise assignment. Hint: Use the *Create FirePoint by Lat/Lon* tool to create unknown FirePoints to identify the coordinate locations given for some of the division breaks. (When done, make sure to delete all of the extra FirePoints that were used as markers for the division breaks.)
 - 13) Create new FireLines. First, determine whether any of the FireLines from the previous operational period did not change. Delete all other existing FireLines.
 - 14) Create new FireLines as indicated in the exercise assignment. (Hint: You will need to use the *Copy to FireLine*, *Change FireLine*, *Split FireLine*, and *Join FireLine* tools.)

- 15) Create new FirePoints as indicated in the exercise assignment.
- 16) Stop Editing and Save Edits
- 17) Set your map scale to 1:24,000.
- 18) Label the Branches and Divisions present within the map (Hint: Remember that you use the PerimeterSector layer to label divisions.) Format the labels for proper, clear cartographic display. This includes size and font type. *Remember your IAP map will be printed at 1:24,000.*
- 19) Convert the Branch/Division labels to annotation.
- 20) Move the resulting annotation such that it has an angle of zero, and it lies outside the fireline and does not conflict with other features on the map. *Remember, if you created your annotation as a feature class within the incident geodatabase, you will need to start an editing session on the geodatabase before you can modify the annotation features. Also remember to set your selectable layers so you are not moving any other features by accident.*
- 21) Label the FirePoints and format the labels for proper, clear cartographic display.
- 22) Convert the labels to annotation and move the resulting annotation so it does not conflict with other features on the map.
- 23) Open the FirePoint Layer Symbology tab in the Layers Properties dialog and remove the symbols that are not being used in the map. *This is necessary for proper production of the maps legend. However, be aware that once a symbol has been deleted, it can not be replaced into the map without removing the incident geodatabase from the map document and using the Open Incident button to re-open the incident geodatabase at which time all of the symbols will return for each layer.*
- 24) Repeat step 23 for the FireLine and AssignmentBreak layers.
- 25) Adjust the layer symbols size (FirePoint, FireLine, AssignmentBreak, and any base map layers) to ensure they can clearly be seen at a 1:24,000 scale.
- 26) Switch to Layout mode. Set the page size to 11x17 (Tabloid).
- 27) Resize the map and stretch the borders of the Data Frame to fill the entire page. Set your scale to 1:24,000
- 28) Add the Legend using the standard ArcMap Legend Wizard. *When creating your legend be sure to remove layers that are not being displayed in the map. Example would be the Fire Polygon layer.*
- 29) Add a Lat/Long Grid or Graticules to the layout using the ArcMap Wizard. After you have finished the Wizard, go to the Graticule properties and change your label offsets so that they appear inside the map. Change your label orientation to vertical for your right and left labels.
- 30) Add S.T.A.N.D.
- 31) Position the Title, Scale Bar, North Arrow, and Legend in the Layout where they won't block any important map or incident features.
- 32) Export your map to a PDF following the instructions provided in the Exercise Assignment.