

# AddMagMap manual

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## 1. MapSend structure

MapSend maps consist of the following 5 types of objects:

1. Polylines (lines)
2. Polygons (areas)
3. Points
4. Points-of-Interest (POIs)
5. Topo data

In this document there is no difference in the meaning of polyline or line; polygon or area. These two definitions are identical.

POIs and Topo (if exist) are composed in a single databases covering all area of the given MapSend application (i.e. US, Europe, Australia etc); Polylines, Polygons and

Points are used in several “maps” (i.e. States, Counties or Countries) which are parts of the whole MapSend.

Typically detail map (which is exported to the receiver) consists of polylines and polygons (point data are rarely used in detail maps, all detail map data of point type are presented as POIs).

Detail maps consist of LAYERS; the layers belong to one of the GROUPS. Number and type of the layers and groups depend on the MapSend type (i.e. Topo, DirectRoute, Streets&Destination).




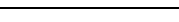
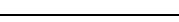
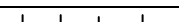

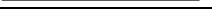
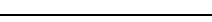
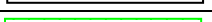
Each *layer* has its own zoom properties and drawing type.

*Groups* are databases where labels of objects can be found for search purposes. Several layers (of different type) can belong to one group.

All small maps that compose the map has the same number (and type) of layers and groups. Drawing types and zoom properties of layers are different for the PC (computer) and the receiver, but number of layers and their type stay the same.

MapSend software has a database of predefined drawing types, each layer on PC map may contain several different drawing types, when map is exported to the receiver all objects that belong to the same layer on PC will be replaced by a single drawing of the receiver's layer.

Example (US Topo 3d).

Group	Layer	Type	Receiver Drawing <sup>1</sup>	PC drawing
Roads	Freeways	Line		many
	Highways	Line		many
	Major_Roads	Line		many
	Streets	Line		many
	Trails	Line		many
	Alternate_Rds	Line	not shown	
Railroads	Railrads	Line		many
Waterways	Hydro_polygones	Area		many
	Hydro_Lines	Line		many
	Other_Hydro	Area		many
Parks	Parks	Area		many

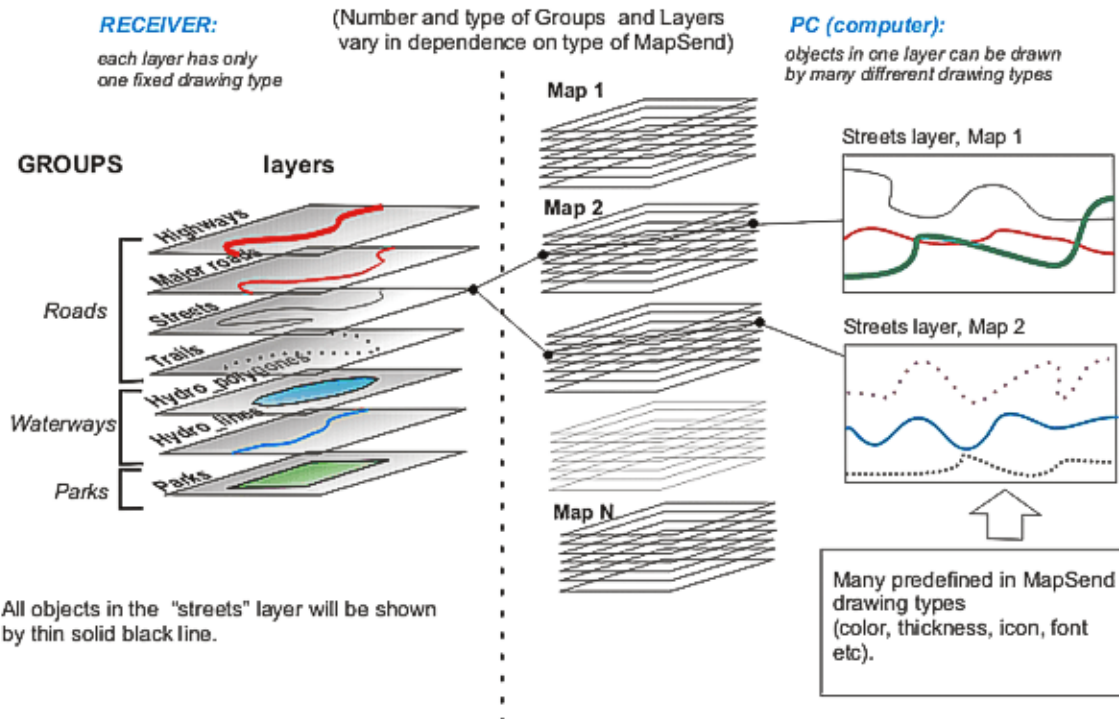
<sup>1</sup>. For Explorist 500, for other receivers and firmware can be different.

In the above example Labels from freeways, highways, major\_road, streets, trails, alternate\_rds will be in the ROADS search group.

Note: layers of different type can belong to the same group (i.e. WATERWAYS group contains labels of the layers of area and line types).

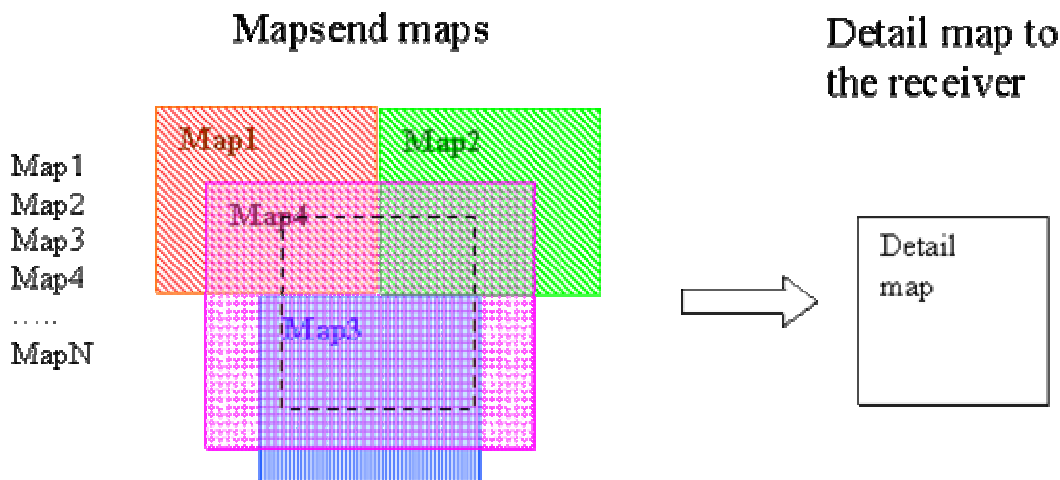
Note: Some layers can be blank (rare case), in spite of they contain some objects they are not shown on PC or the receiver (i.e. Alternate\_Rds layer).

MapSend structure is shown schematically in the following figure:



Subdivision to smaller maps of the whole MapSend map make sense only for search on PC, when exported to the receiver all objects are parts of a single detail map. While exporting, data from all smaller maps in the selected region will be computed.

In the following example objects from Map1, Map2, Map3 and Map4 within selected region will be used to build one detail map.

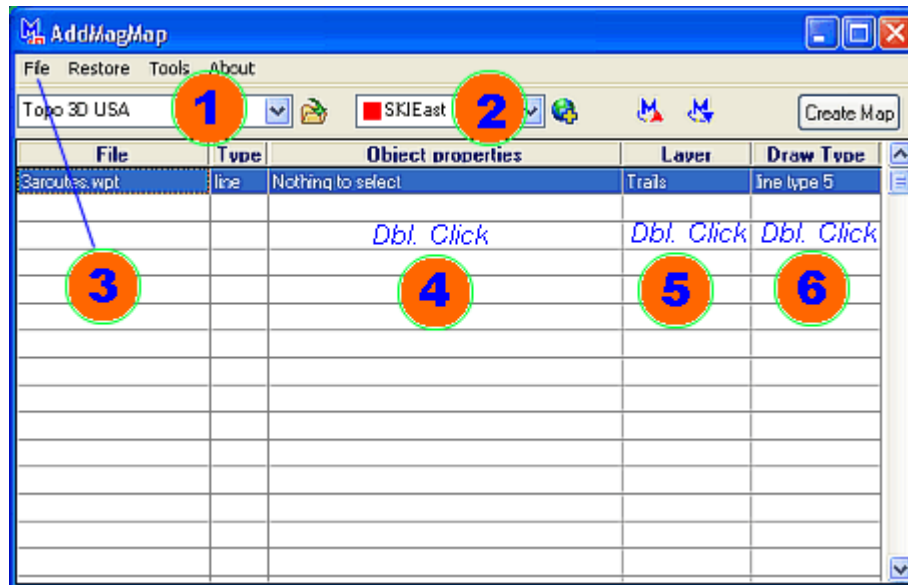


## 2. AddMagMap program

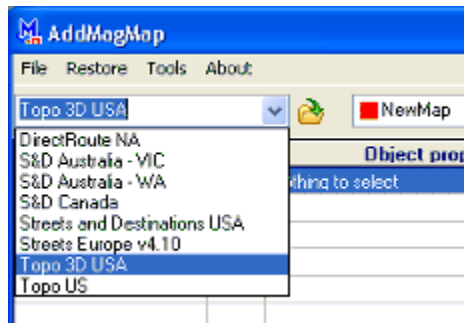
### 2.1. Overview

To import some objects a few simple steps must be performed:

- 1) Select MapSend (if several installed)
- 2) Select map where to export (or define a new map)
- 3) Select file with the data
- 4) Select what to export (in dependence on the file type)
- 5) Select to which layer and group the data belong to
- 6) Select how data will look on PC



**1** Select MapSend (if several installed). AddMagMap automatically searches all installed MapSends, all found MapSends appear in a drop-down list.

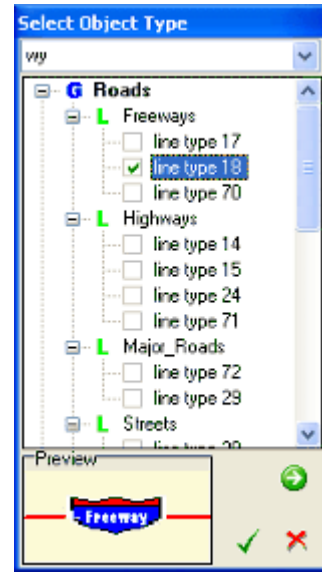
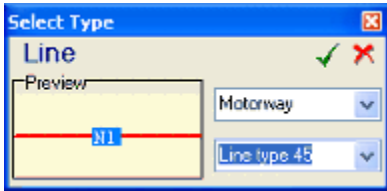


Alternatively (if not found) MapSend can be pointed with “Browse” button. In this example 8 different MapSend applications are installed on the computer.





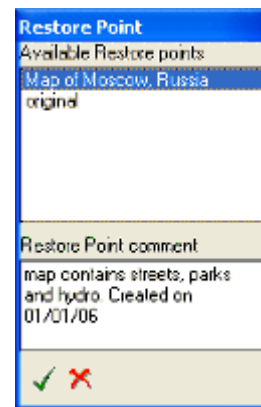
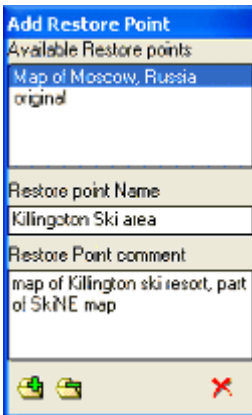
Double click to the “Draw type” column to select how the object will be shown on PC screen. Insert at the bottom shows how this drawing type looks on MapSend screen. Since different maps can use different drawing types, the drawing type can be selected from any of the existing maps (including custom) by selecting the map from the drop-down list at the top. Alternatively, drawing type can be selected from any predefined in this MapSend types, to show this dialog press “green arrow” button at the right. Typically there are more predefined types that are used by the maps. In this example (US Topo 3d) we draw line with “motorway” type (blue square) which is not used in any of the the Mapsend Topo 3d maps. For some line types label can be surrounded by the icon, there are special rules for such labels, please see next chapters for details.



## 2.2 Restore

### 2.2.1 Restore points.

When the very first map is being created the restore point with the name “original” is being created automatically. At any moment MapSend can be restored to this original installation by selecting the “original” restore point. This restore point is not removable. At any moment another restore points can be created (with some comments if needed). At any moment MapSend can be backed up to the selected restore point, all maps created later than this restore point will be removed (in the case of “original” restore point all custom maps will be erased). The restore points are accessible from the “Restore” menu. In this example (at the right) there are 2 restore points: 1) “original” restore point which turns MapSend to its original configuration and 2) “Map of Moscow, Russia” restore point.

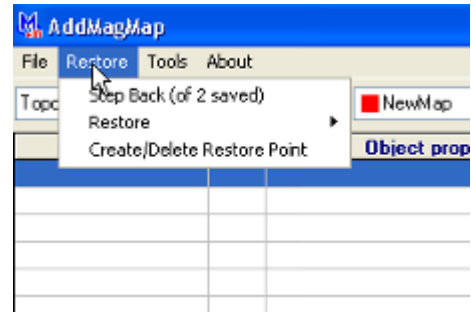


Good practice is to create restore point when map is created and tested and you are fully satisfied with the results. Picture at the left shows dialog to create or delete restore

points. It shows 2 existing restore points and one newly created Restore point with brief description. Please do not use paragraph (Enter) when you enter the description.

### 2.2.2 Step back

When “Create map” button is pressed before any processing of data the previous state is stored automatically, so if something went wrong or you do not like the drawing of your data simply press “step back” menu item and the MapSend will be restored to the previous state. Up to 6 step back operations are allowed. This operation is very similar to the common “undo” operation. The “Step back” menu item shows also current capacity of the “step back” stack. Picture




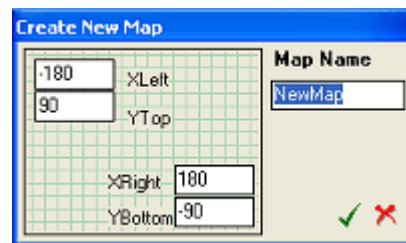
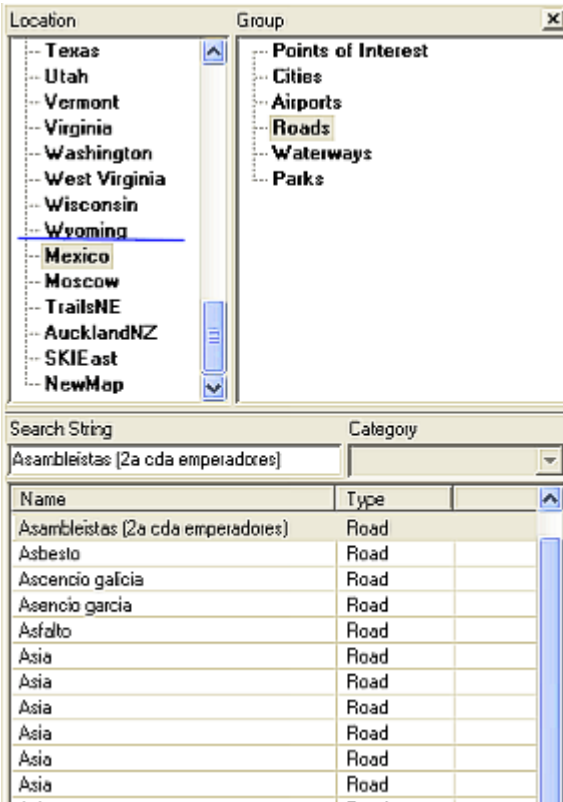
at right shows menu indicating that 2 consequent ‘step back’ operations are allowed. Note: step back operations are allowed even if AddMagMap was closed and then opened again, they work “permanently”.

Both “Restore points” and “step back” are different for different MapSends installed on your computer. They can be used at any moment when this specific MapSend is selected.

## 2.3 Maps

All custom objects must be imported in one of the custom maps. The map definition includes coordinates of map rectangle and the map name. Maps are flexible; they may or may not overlap with the existing MapSend maps or with each other. Maps can be considered as a logical subdivision of custom data. For example you can create one map for all US trails, or create several maps for different areas. Map can be anywhere on the globe, e.g. if you have MapSend for US nothing wrong is to create maps for Australia, Africa, Europe etc. Custom maps will be included to the search screen of the MapSend application. In the example at the right there are custom maps (below blue line) added to MapSend Topo 3d US. The objects in these maps are searchable exactly the same way as for other MapSend maps. In the example some object names from the Group “Roads” of Mexico map are shown. For custom maps Point of Interest, Cities, Airports will be blank, because these groups are a part of the background map but not the detail maps.

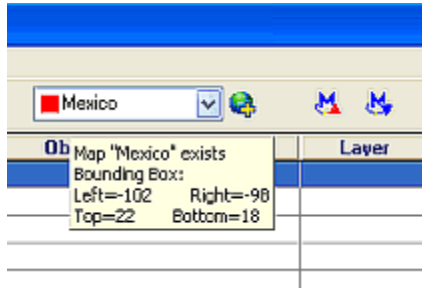
When  button is pressed (“Create new map”) the dialog shown at right appears. You must define Top-Left and Bottom-Right corners of the map rectangle and the map name (Negative X for Western hemisphere, negative Y for Southern hemisphere). Please take into account the following:



- Accuracy of the map objects defined with -180-+180, -90-+90 (all the globe) is about 15 meters at the equator (for X axis, Y is better), smaller maps give proportional enhancement of the accuracy, for example map covering the whole US (-120 - -66) will have ~5 meter accuracy in X direction (Y is better), further reducing the size will produce proportionally better accuracy.
- Some Mapsends are sensitive to the density of objects, so area of map with very high density of objects (for example Mexico city, which has more than 50000 streets in relatively small area) must be small to have less density. When MapSend crashes at high zoom it is most probably indication of this problem. Simply reduce area of the map for maps with high density of objects. For example, Mexico map with the width and height of 4 degree is OK.

c) Map names must not contain “\_” or spaces. You will see warning message if so.

Custom objects can be imported at any time to any of the existing custom maps (or to newly created map). Not necessary to build the whole map in one step. Simply add layer



by layer or add more data to existing layers. To have an idea what is the rectangle of the map place the mouse cursor over the drop-down list with the map names. Example at left shows existing “Mexico” maps with the coordinates -102 - -98 (Longitude (or X)); 18 – 22 (Latitude (or Y)). This way you can easily check if your data fit the range of the map to import.

## 2.4 Data

All data must be WGS84, Lat/Long (native format of the MapSend, please use third party converters to reproject your data if they are not WGS84 Lat/Long).

### 2.4.1 Labels

Data are set of objects of line (polyline), area (polygons) or point type. Each object may or may not contain LABEL (shown on the map and used for search). MapSends are very sensitive to the first character of the label, it must be '0..9', or capital 'A-Z'. AddMagMap will automatically shift 1st character of the label to the capital one ('a-z' to 'A-Z'). If the first character does not belong to the allowed range the label will be skipped (for example, if name has Spanish "Ñ" at the very first position this label will be skipped).

AddMagMap does preliminary detection of the data formats (and also detects delimiters); if some errors are found warning screen will be shown with the first 10 lines of the imported file and brief description of the expected format.

### 2.4.2 Icons

Icons are used to show labels at the line objects in form of special signs, for example show shield-type labels at US freeways, oval or circular labels of major roads, squares of different colors to indicate highways in Europe. The behavior of iconed labels is different in dependence on MapSend version and type of the receiver. *Please do you own experiments* to find out what is good for your MapSend/Receiver. Below are some clues:

#### *PC (Mapsend)*

MapSend Topo3d US and Mapsend DR US: If label contain some name and a digit, only a digit will be shown surrounded with the corresponding icon. For example the following labels "2", "US6", "S-5", "test8", "I-8", "name 3" will be shown as a "2","6","5","8","8","3" surrounded by the corresponding icon (in dependence of line type: Type 18 – blue shield; type 16 – white oval; type 17 – white shield etc. The rule is: for iconed labels there will be no name shown, only the digits.

Mapsend Topo US, icon includes both name and digit, but name is truncated to 4-5 characters.

## ***Receiver***

In the receiver there is only one type of data for, for example, highways, to draw different icons there is an additional rules for the name. Below are some examples for Explorist500:

Digits only (1-4 digits): will be shown in a red square;

"USX" (where X is some digits): white shield;

"S-X": white circle;

"I-X": blue shield;

Combination of any character and a digit (i.e. "U8", "M5", "I8") will be shown in blue square;

Combination of any characters and at least 1 digit (total=3) (i.e. "UU8", "M55", "I88", "M5A") will be shown in green square;

If name contains more than 3 characters and they are not all digits, the name will be shown as is (if all of characters are digits, the digits will be shown in red square).

### **2.4.3. Lines (polylines)**

Files of the following types are supported:

#### **2.4.3.1 Row ASCII text (\*.csv, \*.txt).**

This format is similar to Excel \*.csv format. Different delimiters (SD-space delimiter) can be used to separate fields (e.g. comma, comma+space, TAB, semicolon etc) and decimal delimiters (DD- decimal delimiter) (dot or comma) can be used. AddMagMap automatically recognize them. Label can be blank, but delimiter is needed, see examples below. All coordinates in the first row must contain decimal delimiter because this row is used for detection of the decimal delimiter (example: coordinate is 42, but it must be written as 42.0). The file may have as many lines as needed. All data in the file must have the same SD and DD.

*Label; Y0; X0; Y1; X1; Y2; X2;....* (Y is a Latitude; X is a Longitude)  
(*semicolon is used as SD only for example, others can also be used, see below*)

*Examples:*

Example 1:

(SD is ', ' (comma+space); DD is '.' (dot))

*TestLabel1, -0.04000, 26.00000, -0.04000, 26.05000, -0.04000, 26.10000*

Example 2:

(SD is TAB (0x09); DD is ',' (comma))

```
TestLabel2 -0,05000 26,00000 -0,05000 26,05000
```

#### Example 3:

(SD is ‘;’ (semicolon); DD is ‘.’ (dot))

```
TestLabel1;-0.04000;26.00000;-0.04000;26.05000;-0.04000;26.10000
```

#### Example 4:

```
Line1, -0.04000, 26.00000, -0.04000, 26.05000, -0.04000, 26.10000  
Line2, -0.05000, 26.00000, -0.05000, 26.05000, -0.05000, 26.10000  
, -0.04000, 26.00000, -0.04000, 26.05000, -0.04000, 26.10000  
Line4, -0.05000, 26.00000, -0.05000, 26.05000, -0.05000, 26.10000
```

In Example 4 the label for line 3 is blank, the line will be shown on the map but without any label.

This format does not have any options to tune while importing (‘Nothing to select’ will be shown in the third column of AddMagMap grid).

### 2.4.3.2 Column ASCII text (\*.txt)

This format may be useful when small amount of data are imported, editing the data may be more simple than for the raw format, because there are no long lines. The rules for the space delimiter and the decimal delimiter are the same as for Raw ASCII format (2.3.1.1). File begins with “[LINE]”; label starts with “@” (if there is no label just use “@” alone); pairs are Y,X (Latitude, longitude); data for each objects ends with “end”. DD must be presented in the first raw (i.e. 42 must be written as 42.0).

```
[LINE]  
@line1  
0.00000, 26.00000  
0.00294, 26.00500  
0.00476, 26.01000  
0.00476, 26.01500  
0.00294, 26.02000  
0.00000, 26.02500  
-0.00294, 26.03000  
-0.00476, 26.03500  
-0.00476, 26.04000  
-0.00294, 26.04500  
0.00000, 26.05000  
0.00294, 26.05500  
0.00476, 26.06000  
0.00476, 26.06500  
0.00294, 26.07000  
0.00000, 26.07500  
-0.00294, 26.08000  
-0.00476, 26.08500  
-0.00476, 26.09000  
-0.00294, 26.09500  
0.00000, 26.10000  
end
```

```
@line2
-0.01000, 26.00000
-0.00706, 26.00500
-0.00524, 26.01000
-0.00524, 26.01500
-0.00706, 26.02000
-0.01000, 26.02500
-0.01294, 26.03000
-0.01476, 26.03500
-0.01476, 26.04000
-0.01294, 26.04500
-0.01000, 26.05000
-0.00706, 26.05500
-0.00524, 26.06000
-0.00524, 26.06500
-0.00706, 26.07000
-0.01000, 26.07500
-0.01294, 26.08000
-0.01476, 26.08500
-0.01476, 26.09000
-0.01294, 26.09500
-0.01000, 26.10000
end
```

This format does not have any options to tune while importing ('Nothing to select" will be shown in the third column of the AddMagMap grid).

### **2.4.3.3 Mapsend routes (\*.wpt)**

This format is extremely useful when MapSend routes are imported (either converted from tracks or drawn with MapSend). There are several ways to convert track to route either with Magellan/Sportrack/Explorist or with the MapSend software. Please refer the user manual for the procedure. MapSend uses the same format of file for waypoints and routes, so when \*.wpt file is used for importing lines or areas (see below) the route part is used, when the \*.wpt file is used for importing the points, waypoint part is used instead. AddMagMap program extracts all routes from the files and uses the route names as labels (Note: route names are not the same as the file name).

This format does not have any options to tune while importing ('Nothing to select" will be shown in the third column of the AddMagMap grid).

### **2.4.3.4 OZI Explorer routes (\*.rte)**

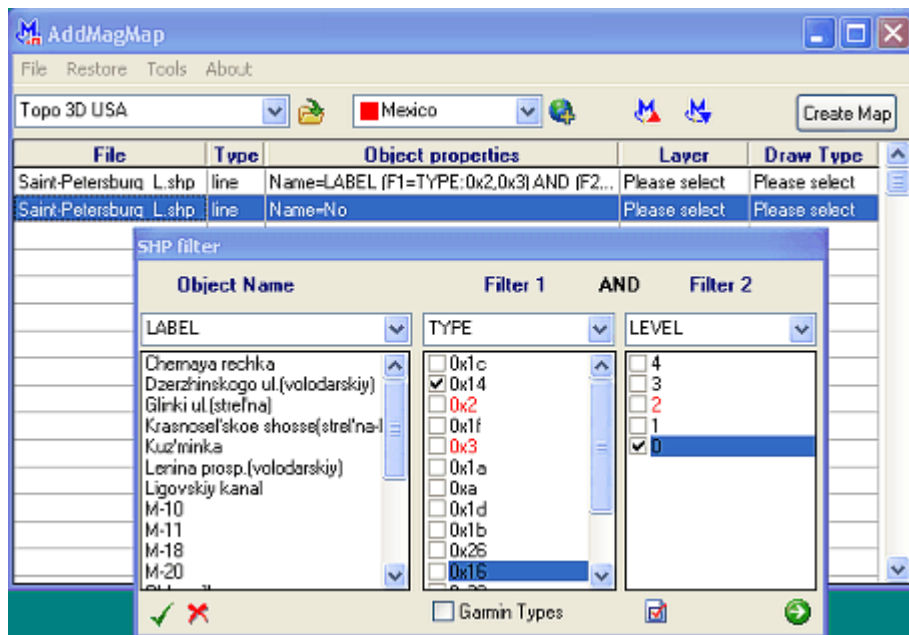
OZI Explorer is a very popular program for GPS navigation. It has support for many different types of GPS receivers and, more important, it is based on raster (image) maps rather than on vector graphics. OZI Explorer can be used to draw objects on the raster

images (aerial photos, Google maps, scanned maps etc). OZI Explorer route file format is a text file, labels can be long, but they are always in capital. AddMagMap has an option to change OZI's labels to lower case format (with the first capital). When OZI Route is imported you will see "Name conversion: No (click to change)" in the third column of the AddMagMap grid. With "Name conversion:No" labels will be shown as is (i.e. in capital characters), to convert labels to lower case with the first capital double click to the corresponding cell of the grid, "Name conversion: Yes (click to change)" will be shown.

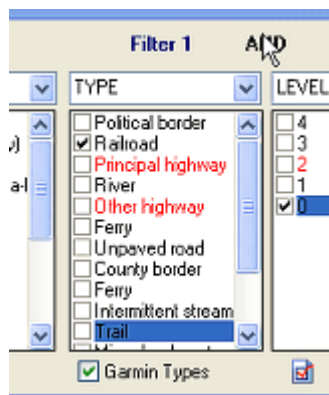
### 2.4.3.5. ESRI shape files (\*.shp)

ESRI shape files is one of the most developed geo-data formats. It may have many data fields with different information. AddMagMap program has advanced support of this data format. This data format is also used for importing Garmin maps (with build in Garmin source to \*.shp converter). With AddMagMap data can be filtered using 2 fields (logical AND); any data field can be selected as a label source. AddMagMap has also a statistics screen showing how many objects exist with the selected filters.

When the shape file is imported "Name=No" is shown in the third column, it means all objects will be imported without labels and without any filtering. To enter object selection screen double click to the corresponding cell of the grid. The following screen will appear (example is from the line objects of the Garmin maps (St.Petersburg, Russia):



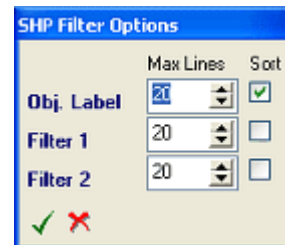
From the Drop-down list at the left (“Object Name”) select the field which will be used for labels. This file contains also fields “TYPE” and “LEVEL” which will be used for




filtering. In the above example we set filter to select only those objects that have (TYPE=0x14) AND (LEVEL=0). Several filters can be selected, i.e. for TYPE filed several values can be checked (for example 0x14 and 0x1c), in this case we select (TYPE=0x14 OR TYPE=0x1c), so both will be imported (but those which have only LEVEL=0 (second filter)). For convenience in red already taken filter values are shown (taken by the first grid line in this example)).

To make import of Garmin data simple there is a Check Box named “Garmin Types”. If checked hex names for Garmin types will be replaced with the Garmin type names (see example at left).

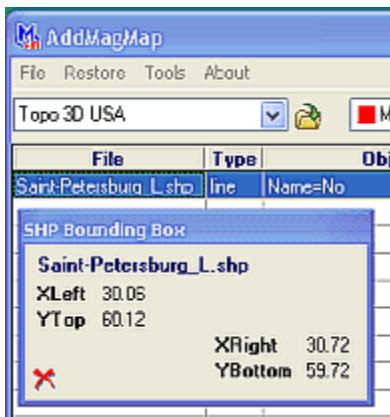
By default the first, second and third windows of the dialog (“Object name”, “Filter 1”, “Filter 2”) shows first 20 lines of *not equal* values. Names are sorted. The output can be changed by click to the “green arrow” button at the right of the dialog. Please note: after next entering to the dialog the settings will be set to the default (this is done to prevent long time waiting if thousand of lines were selected at the previous step).



There is a statistics window to count how many objects with labels and without labels satisfy filtering conditions. To launch the dialog please click  button (bottom-right side of the main dialog). In the example at left we see that with the (TYPE=”Arterial Road, thin” AND LEVEL=0) filters in the above file there are 10176 objects, 5742 of them have a label, the other 4434 do not have any labels. The file contain 21096 records (any type, any level).



Nothing wrong to set output of the main dialog window or statistics window dialog to several thousand lines, it will slow down the process, but may be useful if some known name should be selected.



Here we considered one of the most complex examples, if simple \*.shp files are imported it is necessary just select the field for the labels and leave Filter1 and Filter2 with “Nothing selected”. It will mean that all objects will be imported.

There is another good stuff about shape files, since their header contain rectangle of the area these coordinates can

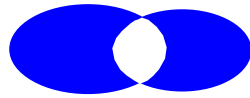
be shown by double click to the first column of the AddMagMap (file name); these coordinates can be used for definition of the Map rectangle.

#### 2.4.4. Areas (polygons)

To draw polygons (area) formats similar to line formats are used. The polygon is treated as area inside the perimeter, drawn by the line. The first and the last points of the perimeter are considered to be connected, so not necessary to draw closed perimeter.

##### *“Islands”*

MapSend format allows drawing polygons with “islands”. If some area is defined by several perimeters MapSend fills the areas and the fills are followed by logical XOR. So if some areas are overlapped, the overlapping area will be transparent. This is correct if several areas are defined with several blocks of data for one object; if the areas are in separate objects, they will be shown as just overlapped areas:



a) 2 overlapped areas are defined in the two blocks of data for one object

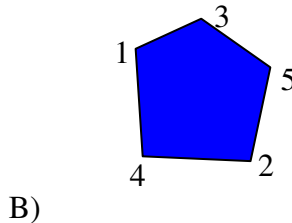
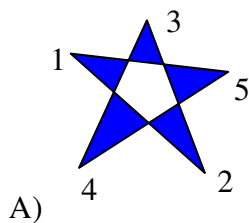


b) 2 overlapped areas are defined in different objects, one block of data each

Only Column ASCII data format and ESRI shapes files support definition of multiples blocks of data for one object, so only them can be used for “island” drawing (see below for details).

##### *Sorting*

MapSend does not care of the order of points which define the polygon. MapSend is just moving to the first, second etc points trying to fill the area in between (using XOR rule). For example is we define a star with the point order indicated the star will be drawn as shown in A). AddMagMap program has an option to sort points automatically around the gravity center. If sort option is used the same star will look like B):



The sort option is applied not for all formats, see below for details)

### 2.4.4.1 Row ASCII text (\*.csv, \*.txt) (Areas)



Format is the same to line format. There is an option to sort points as described above. Double click to the third column and the sort dialog appears. Select “As Is” or “Auto”.

### 2.3.4.2 Column ASCII text (\*.txt) (Areas)

Similar to lines, but one area object can consist of several data blocks. These blocks can be used to draw polygons with “islands”; as discussed in the previous section they will be drawn with XOR rule. If at the block end there is a “+” sign the data in this block will be sorted automatically. Here is some example (the area with 2 islands):

```
[AREA]
@area2
-0.05000, 26.20500
-0.04412, 26.20023
-0.04049, 26.18773
-0.04049, 26.17227
-0.04412, 26.15977
-0.05000, 26.15500
-0.05588, 26.15977
-0.05951, 26.17227
-0.05951, 26.18773
-0.05588, 26.20023
-0.05000, 26.20500
end + //the above block will be sorted automatically
-0.05000, 26.19200
-0.04706, 26.19105
-0.04524, 26.18855
-0.04524, 26.18545
-0.04706, 26.18295
-0.05000, 26.18200
-0.05294, 26.18295
-0.05476, 26.18545
-0.05476, 26.18855
-0.05294, 26.19105
-0.05000, 26.19200
end
-0.05000, 26.17700
-0.04853, 26.17605
-0.04762, 26.17355
-0.04762, 26.17045
-0.04853, 26.16795
-0.05000, 26.16700
-0.05147, 26.16795
-0.05238, 26.17045
```

```
-0.05238, 26.17355
-0.05147, 26.17605
-0.05000, 26.17700
end
```

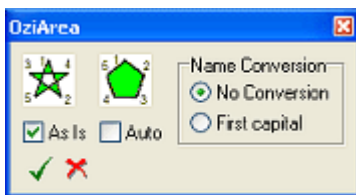
This format has no options (because everything can be defined in the text file), “Nothing to select” is displayed in the third column.

### 2.3.4.3 Mapsend routes (\*.wpt) (Area)

Similar to lines. No import options.

### 2.4.3.4 OZI Explorer routes (\*.rte) (Area)

Similar to lines, but in case of area there is an option to sort the data. When third column is double clicked the dialog will be shown, in which Name conversion and Sort options can be selected.



### 2.4.4.5 ESRI shape files (Area)

Full control similar to lines. Polygons with the “islands” can be drawn, for that several data blocks can be defined for one object, see description of the SHP file format.

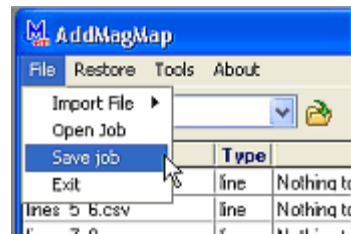
Another possibility to create multiblock area is use Polish text format, and then convert this format to ESRI shape file with the built-in to AddMagMap ptxt2shp converter. See chapter 2.6.2.

### 2.4.5. Points.

Formats are the same to line formats (except of missing Column ASCII text format, because it has no advantages compared to row ASCII text format). For each point the label and pair of Y,X coordinates are defined. Points may have no labels. In case of MapSend \*.wpt format, waypoint information is used (in contrast to the route info as it was for lines and areas). Point type of data typically is not used in MapSend detail maps, so most probably point layers will not be allowed.



## 2.5 Jobs

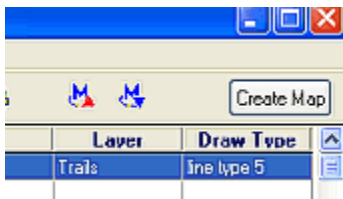
Job is a set of data imported to the AddMagMap with all the settings applied to the moment (including Map definition). Save job can be useful when several data files are imported to the AddMagMap and their properties are set to some values. Jobs save time when some properties should be changed but all the other properties are the same as before. For example you are creating some complex map with many setting for each of the objects, Before “Create map” save the job. If after creation of the map you see that some properties should be changed, perform step back operation to restore the previous state; open the saved job, change one or several properties and try again.



## 2.6 Tools

### 2.6.1. Run and close MapSend

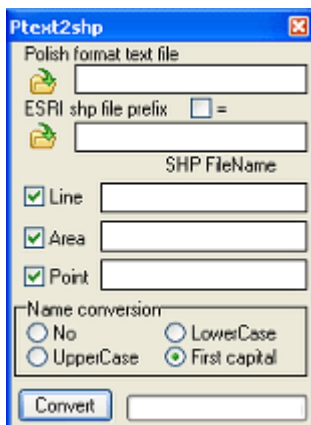
When AddMagMap is running MapSend must be closed. When map is done you may see the result by lurching the MapSend. Press  button to run the selected mapsend and press  button to close the MapSend before you start processing the map with AddMagMap.



### 2.6.2 Polish text to ESRI shape file converter

“Polish text format” was introduced by Stanislaw Kozicki to describe Garmin custom maps. Files in polish text format can be converted to Garmin map (\*.img) files with cgpsmapper program, or, vise versa, unlocked Garmin maps can be converted to polish text format. Please see [www.cgpsmapper.com](http://www.cgpsmapper.com) for the format description.

AddMagMap program has a tool to convert polish text format (Garmin map source) to ESRI shape files, the \*.shp files can be then imported to MapSend. Converter can be



called any time from the “Tools” menu: Tools-Garmin source (polish text) converter. Browse to the polish text file (\*.mp or \*.txt) (upper button), select prefix name with the second button (or just click “=”) to use the same name (in this case the original file will NOT BE OWERRITEN; just file name will be used as a prefix). Select what object type you would like to export (line, area or point) and select Name conversion (if needed, take into account that normally all labels in Garmin source are in capitals). Push “Convert”. As a result you will get files in ESRI shape format. By default files with polylines (lines) object will have \_L suffix, (polygons) area files will

have `_A` suffix and point files `_P` suffix. Please next chapter for more information on importing the Garmin maps.

Another useful stuff about `polish_text_to_shp` converter is that you can define custom objects using any text editor; especially this is useful for areas with “islands” (multiple block areas). Lines are defined under [POLYLINE] block, areas under [POLYGON] block and [POI] for points. Then there must be `Type=` which follows by some word, `Label=` which define your object name and `Data0=(Y,X),(Y,X)...` with coordinates of the object, at the very end of the object there is [END]. For areas several blocks can be defined, that results in drawing of “islands”. After conversion to the shape files the data can be imported to MagSend with AddMagMap program. Below are some examples.

```
[POLYGON]
Type=sometype
Label=Area1
Data0=(-0.02000,26.20500),(-0.01412,26.20023),(-0.01049,26.18773)
Data0=(-0.05000,26.19200),(-0.04706,26.19105),(-0.04524,26.18855),(-
0.04524,26.18545)
[END]
```

```
[POLYLINE]
Type=type
Label=Line1
Data0=(-0.02000,26.20500),(-0.01412,26.20023),(-0.01049,26.18773)
[END]
```

## ***2.7 Import Garmin maps***

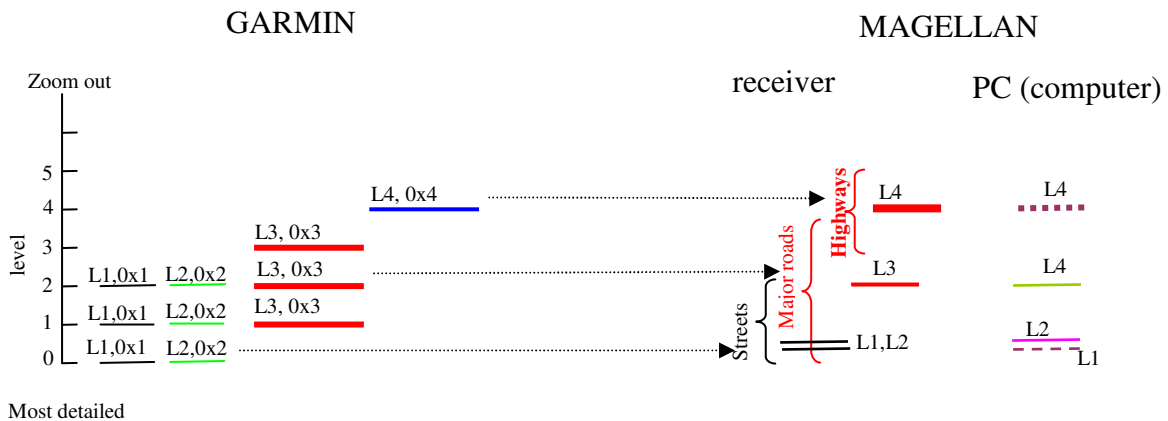
Both Garmin and Magellan maps are vector maps, they consist of set of polylines, areas and points. In spite of both Magellan and Gramin maps have the same `*.img` (`*.imi` for Explorist) extension format of them is absolutely different. To import Garmin map to Magellan map, Garmin map should be first extracted to the set of objects and then each object must be assigned to layer, group and drawing type of the Magellan map.

For Garmin maps so called `polish_text_format` (or Polish Map Format (PMF)) was developed by Stanislaw Kozicki (author of the `cGPSmapper` program ([www.cgpsmapper.com](http://www.cgpsmapper.com)) for custom Garmin maps creation); in this plain text format every object (line, area, point) has the LABEL, TYPE and LEVEL. Unlocked Gramin maps can be converted to PMF and vice versa (i.e. PMF can be used to build garmin `*.img` map). Full description of the PMF can be found at [www.cgpsmapper.com](http://www.cgpsmapper.com).

In Polish Map Format the TYPE is a hex value (there are tens of them) that determines drawing type (color, type of the line, thickness etc) and the LEVEL determines appearance of the object on the map (zoom at which object is visible). LEVELs are similar (but not the same) to Magellan layers. When we put some object to Magellan layer; it automatically defines how the object will look on the map and at what zooms it

will be shown on the map (in dependence on detail settings (high, low, medium etc) which can be set in the receiver). In PMF drawing is independent on LEVEL, look on the receiver's and PC screens is the same and defined by "TYPE=". If some object must be shown at several zoom levels it must be defined for each LEVEL (Levels start from 0, the most detailed layer (shown at higher zoom)).

The following figure shows this difference. Object L1 exists in 0,1,2 levels, it is explicitly defined for all these layers in PMF, this object will be shown on both receiver and PC screens with the same line type (TYPE=0x1). Object L2 exists in the same levels, but its drawing type is different (TYPE=0x2), the same 0x2 type will be used for the receiver and PC. When L1 and L2 objects are assigned, for example, to MapSend "Streets" layer; they will be shown by the same line on the receiver (type is defined by specific MapSend), but on PC map they can be drawn differently. Visibility properties are defined in MapSend for each layer (zoom range when they are visible on the map; the range depend on specific MapSend). For each layer there are several ranges of zoom (corresponding to detail, medium, high etc. settings in the receiver).



Please find more info on Garmin format at [www.geopainting.com](http://www.geopainting.com) and [www.cgpsmapper.com](http://www.cgpsmapper.com).

To import Garmin map the following steps must be performed:

1. Garmin map (\*.img) must be converted to Polish Map Format (for example with GPSmapper program ([www.geopainting.com](http://www.geopainting.com))). Alternatively, many custom Garmin map can be found in PMF, in this case no conversion is needed.
2. Convert PMF to ESRI shape files with AddMagMap's built-in tool (Menu-Tools). The shp file (for each type of object (line, area, point) has 3 fields: LABEL, TYPE and LAYER.

From the above example the shp line file will contain 10 objects:

LABEL	TYPE	LEVEL
L1	0x1	0
L1	0x1	1

L1	0x1	2
L2	0x2	0
L2	0x2	1
L2	0x2	2
L3	0x3	1
L3	0x3	2
L3	0x3	3
L4	0x4	4

3. Assign one instance of the object (to avoid duplication) to some MapSend layer
4. Define how this object will look on PC.

In Polish Map Format the objects can be also defined by start and end levels (without duplication the record for each level), in this case only one instance of object will be included to shp file. For our purpose there is no difference between these two types of definition, in any case we are using only one instance of the object.

AddMagMap has advanced filtering system to simplify import of Garmin objects. AddMagmap has also an option to substitute hex values of PMF types to real names and has also statistics screen to find instances of the objects. Please see “Data:Lines:ESRI shape files” 2.4.3.5 section and Examples document to see how it works.

Many free custom Garmin maps (\*.img or/and PMF) can be found at <http://mapcenter.cgpsmapper.com/>

## 2.8 Known problems

### 2.8.1 Direct Route

In contrast to many others MapSend application Direct Route (DR) includes some routing information for streets, highways etc. When custom objects of the same layer type are added to the map they can interfere with the routing network in DR if custom objects are in the area of DR routing network. Custom map will be shown without any problems on PC screen, but when exported to the receiver the following message will be shown:

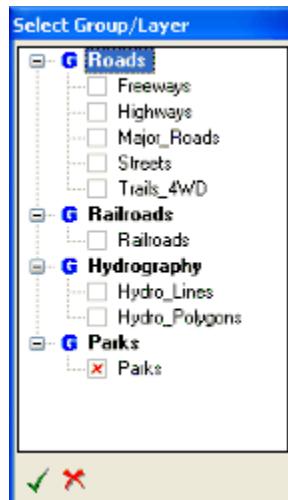


Push OK button and continue. Number of error messages depend on how many custom street, highway etc layers overlap with the DR’s routing network. If the overlap is not

very large, the message may appear only several times (click OK every time). The map created will be OK, routing will work for MapSend objects, custom objects will not be included to routing but will be shown on the map. But if the overlap is large, exporting of the map can become impossible because the message will appear hundreds of times or MapSend will crash while exporting. For areas outside the DR's network this is not an issue. Also there will be no any problem if the exported map is outside of the custom map region. Tested for MapSend DR US (1.0,2.0) only.

## 2.8.2 S&D Australia (ver. 4.0, tested -WA, -VIC)

For some reasons Magellan do not include any layers of Hydro\_polygons type in the S&D Australia (there are no such objects on the map). Actually Hydro\_polygons layers are in the list of used layers, but their header is marked as "Line" type so import of "area" type of objects to them is forbidden. S&D Australia does not use this layer, this layer is empty, only the header exists. Nothing can be done with that, AddMagMap uses the structure of specific MapSend with the type of layer defined in the header.



This is not a problem of AddMagMap program, just reminder that some strange definition can be found in some MapSends.

## 2.9 Troubleshooting

1. *AddMagMap crashed while map creation.* At the very first step of map creation AddMagMap creates some backup info; if AddMagMap has crashed, run it again and click Restore-Step Back from the menu.

2. *MapSend crashes at high zoom levels when in the custom map area.* Most probably density of objects is too high for this map bounding box. Just perform “Step back” and create the map again with smaller map region (see 2.3 Maps chapter).
3. *Some objects are in the MapSend search window but not shown on the map.* Most probably the object is placed in the layer which is not visible at the current zoom level, try to zoom in the area to see. Another possibility is the object was placed in the layer which is not visible on the map (e.g. Alternate\_Rds layer in MapSend US Topo 3d, DR).
4. *Test mode.* This mode is used to gather some information when map is created. Later this info can be sent to me for analysis (*please do not do it unless requested*). To enter the test mode, place the mouse cursor over the drop-down list with the Mapsend names (al left of the AddMagMap) and type “test”. No typing will be shown, but in the caption of AddMagMap “AddMagMap test” will appear. Push “Create Map” button. While map creation some info will be collected in the “C:/Mapsend\_Test\_Info”. To set the test mode off, place the mouse cursor over the same drop-down list and type something different from “test”, the caption will revert to “AddMagMap” and the test mode will be switched off.

## **2.10 Install and uninstall**

AddMagMap does not modify any system files, does not register any services, does not add any hidden background processes and does not send any information over the net.

Installation can be done with setup.exe installation program. The AddMagMap will be installed to the “Program Files\AddMagMap” folder (or any other of your choice); shortcuts will be inserted to the Desktop and to the “Programs-AddMagMap”

To uninstall please use standard Windows procedure “Control Panel –Add or Remove programs”. Before uninstall please click “original” restore point to revert your MapSend to its original configuration, all custom maps will be erased.