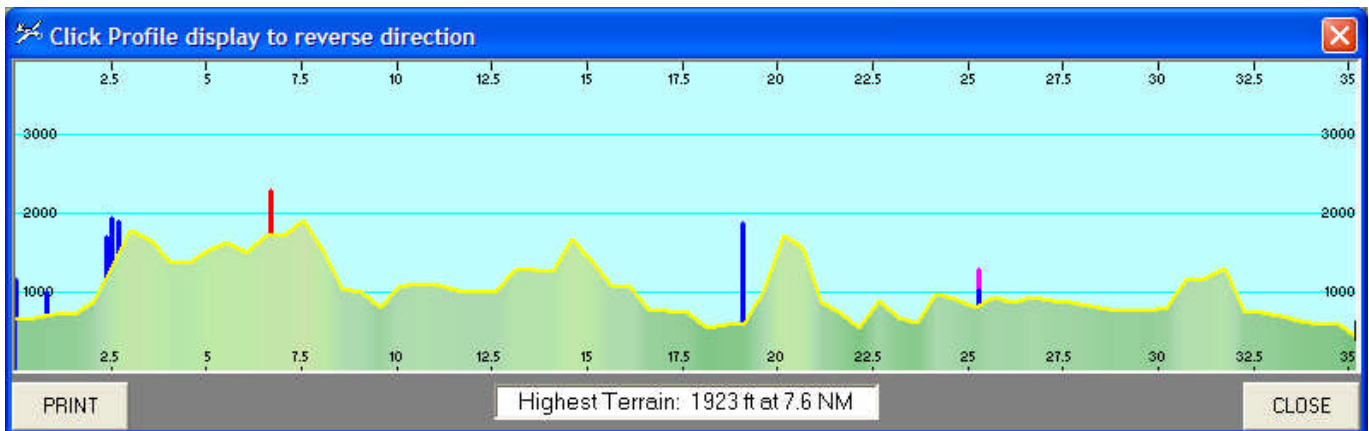
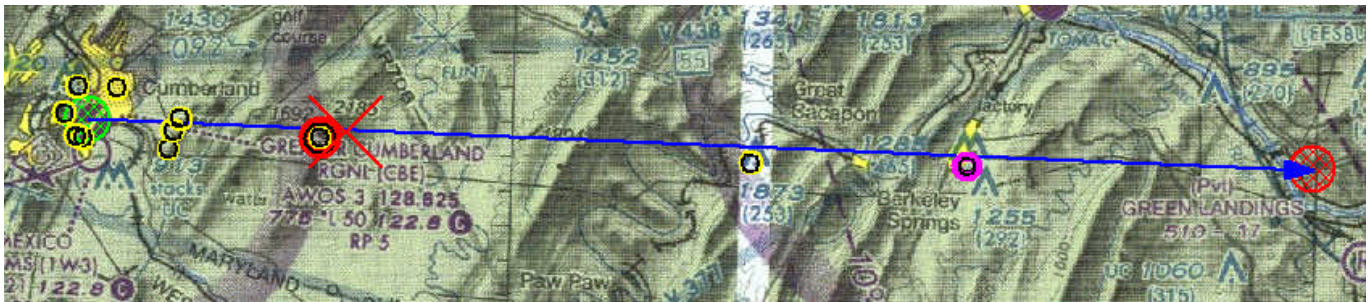


# Helicopter Emergency Medical Service (HEMS)

## USER GUIDE V5.7.0



**READ THIS DOCUMENT.  
IT CONTAINS VERY USEFUL CONCEPTS  
ENABLING YOU TO FLY A MISSION  
WITHIN A FEW SECONDS OF A CALL TO ACTION.**

# **DISCLAIMER**

**For the purpose of finding and displaying Obstacles on a chart, you are advised that ED/iT, Inc. obtains both the FAA Obstacle Database (NOD), revised every 56 days, and FAA Chart Bulletins, revised every 28 days but spanning a three month coverage period, in order to display that FAA provided information. ED/iT, Inc., cannot be held liable for any inaccuracy in the FAA data nor failure to display and report obstacles accurately either due to defects within the eSectionals software, ability to download FAA data in a timely manner, or failure in the transmission of this data due to connection disturbances, or failure of your computer or software to process this data.**

**In addition, you are advised that the Obstacle data may not be current even if you have downloaded the “latest” FAA data. That is, there can be about a 27-day gap between the most recent FAA Chart Bulletins and the erection of an obstacle. A flight brief should provide NOTAMS that include KNOWN new, changed, revised, or deleted Obstacles.**

**We suggest that you maintain contact with local officials responsible in your area for building permits and any other construction activities for the purpose of advising said officials of the critical nature of your services in conjunction with new obstacles that said officials have documented. In addition, you should similarly maintain contact with local construction firms, especially those who are known to deploy cranes, towers, build tall buildings, tanks or similar obstacles. Doing so means that you might have local “NOTAMS” before the FAA obtains them.**

# **V5.7.0 NEW FEATURES AND SUPPORTING INFORMATION**

**We fixed certain issues with the Flight Elevation Profile. It was reporting an incorrect “highest terrain” value and, in some cases, not displaying obstacles correctly.**

**We added the Route Filename to the Route Report and the Area Filename to the Area Report. This appears on the top line of the report following the report date.**

**The following instructions may help you understand the difference between using the software to find obstacles for General Aviation versus for HEMS Reporting.**

**GENERAL AVIATION** – needs neither the robust FAA Obstacle Reports for Routes or Areas nor requires very quick reporting. As such, the GA pilot would normally fiddle with a Route (or Area), then Show Obstacles. Doing the latter immediately displays and, optionally prints, the obstacle table page(s). If they want a Flight Profile, they can separately select the Show Profile menu item to display and optionally print.

**HEMS** – pilots needs the ability to draw a route or area (or Recall a route or area) and **immediately** PRINT and FAA Obstacle Report with no need to preview the data. (If you want to preview, you can so do AFTER printing your Report. Or you can simply follow the general aviation methods.)

## **CLARIFICATION OF THE VALIDITY OF THE FAA OBSTACLE DATABASE**

As you know, FAA Obstacle Database (NOD) is revised every 56 days. We wish to emphasize what this means in terms of what that “current” database covers. It is current only to the following extent. (The example is from a two consecutive and recent FAA database update date span explanation.)

FAA Release Date of 13 JAN 2011 reflects changes from 18 OCT 2010 to 12 DEC 2011

FAA Release Date of 10 MAR 2011 reflects changes from 13 DEC 2010 to 6 FEB 2011

**You need to know that if you have downloaded the 10 MAR 2011 update, the most recent change in that database is for some obstacle added, changed, or deleted on or before 6 FEB 2011.**

**Therefore the FAA Obstacle Report you print covers up to 6 FEB. You still need a FLIGHT BRIEF or obtain NOTAM coverage for your area or route to append or modify the Report.**

# INTRODUCTION

## Obstacle and Terrain Reporting

eSectionals<sup>®</sup> gives you the ability to Draw Routes, find Obstacles either side, find the highest Above Ground Level (AGL) and the highest Above Mean Sea Level (AMSL) Obstacle, and find the highest terrain for each flight LEG of your Route. You can view and print a Flight Elevation Profile including scaled obstacles and a fully documented leg by leg report.

eSectionals<sup>®</sup> gives you the ability to Select an Area and find all Obstacles, find the highest Above Ground Level (AGL) and the highest Above Mean Sea Level (AMSL) Obstacle, and find the highest terrain for the selected Area. You can view and print the selected Area Map along with a fully documented area report.

The purpose of this User Guide is to provide you with an outline of methods and procedures that should enable you to use features within eSectionals<sup>™</sup> to:

1. Preset eSectionals<sup>™</sup> resources to quickly load typical flight configurations, and
2. Recall preset resources, modify a mission Route, save, view found Obstacles and print a Report for your records.

eSectionals<sup>™</sup> provides you with the ability to obtain two types of Obstacle Reports. You can generate an AREA REPORT and/or a ROUTE REPORT.

Note: In all following content, we refer to “charts”. Any reference to a “chart” applies to a Sectional Chart or Terminal Area Chart (TAC)

### **USING PAPER SECTIONALS TO ATTEMPT TO CONFORM TO A021**

The National Aeronautical Chart Office (NACO) produces your paper charts by hand. They consist of a base map with the topography, rivers, highways, and power lines “preprinted”. Just about everything else is place on this paper layer by moving objects (airports, nav aids, obstacles, and text boxes in such a manner as to be CLOSE to their actual location. CLOSE is keyword...they adjust the positions of any object so that it fits or does not conflict with text or other features. SECTIONALS WERE DESIGNED FOR PILOTAGE.

Recently, NACO started geo-referencing the charts. eSectionals<sup>™</sup> includes a LatLon Overlay feature that place RED lines on top of the preprinted dashed black lat lon lines. Thus you are able to see how perfect the geo-referencing is. (We check and often adjust the FAA referencing when needed.)

However, when we added the Airport Database, we knew that the latitude and longitudes are exact but when displayed on the Sectional, as you are able to confirm, they rarely display ON THE SPOT. You will find this also true with the FAA National Obstacle Database.

When the FAA proposed that HEMS operators need to know obstacle locations prior to flight, we contacted several officials at the FAA and they “suggested” that one way to do so was to use Sectional Charts. The FAA

knows that the charts do not show EXACT object placements and suggested that pilots use a fairly broad means to find obstacles along a route. Without going through tedious tests, we are certain that if you use the marked locations of airports and the marked locations of obstacles, you may not find all the obstacles. In addition, you should already know that, unless you obtain the FAA Chart Bulletins (found on their web site AND published in the Airport Facilities Directories) and manually markup your charts every 56 days (database revision cycle) or every six months (chart revision cycle), you would not find all the obstacles. (Additionally, you already know that you must get a flight brief to find NOTAMS that are even newer than the published data.)

We think the Show Obstacles feature, newly added to eSectionals™ along with our ability to compile data using the FAA Chart Bulletins, and the FAA National Obstacle Database, and the National Elevation Database to mark up a current chart will help you make a better determination for this new requirement. In our opinion, we firmly believe that any pilot who with extensive flight experience within flight areas of interest, will already KNOW where obstacles are located without needing to resort to pilotage type paper charts and/or databases which may not have perfect information.

You should also know that Sectionals and TACs do not show obstacles that are under 200 ft AGL.

You should also know that it is nearly impossible to find the highest terrain within either an AREA or along a ROUTE by attempting to read the fine contour lines on a chart.

### **AIR AMBULANCE RESPONSE TIME**

Patient transfers (hospital to hospital) are preplanned missions where response time is usually not an issue. Emergency scenes are and response time is very important. Compliance with A021 is also important. Not only is it an FAA regulation, but doing so significantly improves flight safety.

Using a paper chart in preparation for a flight to an emergency scene requires that you plot your course, attempt to find the obstacles, log your findings, and then parse the data to find both your terrain and obstacle worst case values. Not only is this a time consuming process, but it is not accurate for reasons previously noted.

eSectionals<sup>®</sup> enables you to create a set of routes covering all your typical emergency scene flights. How? You mark a chart with your depart point, an arbitrary waypoint to the scene, an arbitrary waypoint to a hospital, and a return to base arrive point. Then, when you are about to respond to a scene, you recall that arbitrary route, drag one of the waypoints to the scene, drag the other waypoint to the hospital, and print your FAA Obstacle report. It takes less time, than the time it took to type this sentence.

#### **The benefits are:**

- **A021 Compliance in less than 30 seconds.**
- **Precise, complete, and accurate data.**
- **Immediate leg by leg minimum flight altitudes at a glance.**

In the following sections, we show you how to create and use both the AREA and ROUTE features. After you learn the basics, you will find that you have created an inventory of Areas and Routes that you can recall in seconds, nearly instantly preparing you with the information you need to make a rapid response.

**We know that most HEMS providers keep the ADDS Aviation Weather Center active on their base computer active 24/7. You should also keep eSectionals<sup>®</sup> active on your computer for the same reason.**

The intent of this User Guide is to show you how to preset eSectionals<sup>®</sup> in advance. You will learn how to obtain FAA Obstacle Reports for AREAS where your flight path is unknown and for ROUTES where your flight plan is known. In both cases, obtaining your Report is accomplished in less than 30 seconds.

## **eSectionals<sup>®</sup> KEY FEATURES**

This aviation charting software application is extremely feature rich with two features that are directly applicable to low-altitude flights. These two features are DRAW ROUTE and SELECT AREA. Additional assets include FIND LAT LON, STORE LOCATIONS, FIND AIRPORT, and SHOW AIRPORTS.

*(You will find very comprehensive HELP at any time by pressing the F1 key. You can also hover over menu items and press F1 to learn what that menu item does.)*

The **DRAW ROUTE** feature enables you to draw a route on the computer instead of marking up a paper chart. This is done by simply clicking the mouse to place Depart, Waypoints, and Arrive. Air-Ambulance flights are typically from a BASE to a SCENE to a HOSPITAL and a return to BASE. Or, flights may be HOSPITAL TO HOSPITAL PATIENT TRANSFERS. Routes can be STORED and RECALLED. Thus you can prerecord Hospital to Hospital Transfers. Every 56 days (when the databases are updated), you simply RECALL a stored route and generate a new Obstacles Report.

The **SELECT AREA** feature is also applicable to Air-Ambulance missions. Often, you will not be provided with a specific accident scene location nor a specific hospital. The Select Area feature enables you to either draw an area encompassing a broad area.

No matter what your flight is based on, a ROUTE or an AREA, the eSectionals<sup>™</sup> SHOW OBSTACLES feature scans both sides of each flight leg (for a ROUTE) or scans an entire AREA and generates a report that documents the Highest Obstacle and Terrain for each Route Leg or for an entire Area. And it additionally uses the FAA Height Tolerance value to add that inaccuracy to the overall height. For example, a specific obstacle might have a Height Tolerance of +/- 150 feet. If the AMSL for that tower is 1000 feet, we add 150 feet to it.

The **FIND LATLON** feature activates a form where you can enter both a latitude and longitude in any format. eSectionals<sup>®</sup> then names the Sectional chart including that point, loads that chart and marks the location with a large RED X.

The **STORE LOCATIONS** feature can be used with the FIND LATLON feature. With the RED X marker displayed, you can then store that point as a "location", giving the location a name for later recall. The LOCATIONS feature can also be activated using a simple RIGHT CLICK of the mouse at any point on a chart. For example, when you are just viewing a chart, a right click will place the RED X marker at that point. Again, you can store that location for recall.

The **FIND AIRPORT** feature enables you to get airport information identical to that contained in the Airport Facilities Directory. And this information is current. You can find an Airport either by ID or by STATE and CITY. When you use this feature, the FIND AIRPORT form will display both basic and extended airport

information. And similar to the FIND LATLON feature, will load the chart, zoom to that Airport, and place the RED X marker.

The **SHOW AIRPORTS** feature (similar to Show Obstacles), enables you to select the type of airport such as Helipad, SeaPlaneBase, etc., and then display the entire inventory on the chart as blue circles. Moving the mouse over a blue circle then reports the essential airport information on the Toolbar.

Also note that eSectionals™ gives you instant access to the latest Sectional and Terminal Area Charts via downloads from our server. *(You do not need to be “on-line” to use eSectionals<sup>®</sup>. Internet access is ONLY required to download charts AND to update eSectionals<sup>®</sup>.)*

The next two topics show you illustrated examples of both the AREA and ROUTE Obstacle Reports. Then this User Guide shows you step-by-step instructions for creating AREAS and ROUTES.

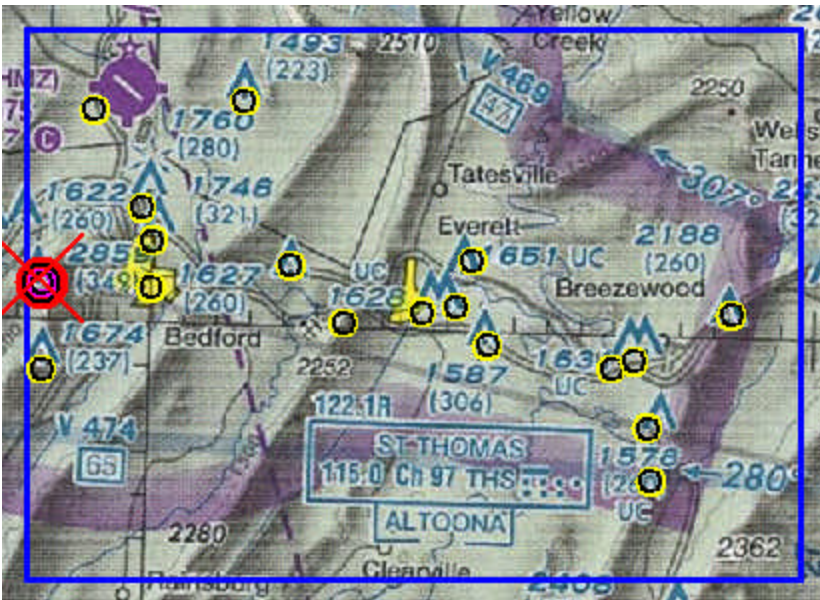
## GENERATING AREA OBSTACLE REPORTS

An Area Report can be generated using the eSectionals™ SELECT AREA feature. With that feature you can either DRAW an area of any size or rectangular shape or DEPOSIT an area box (frame) whose size is preset using the Preferences Menu > Route/Kit FrameSize. (When using Nautical Miles as Units, you have a choice of 20, 30, 50, or 50 NM frames.) A 50 NM frame is the largest frame that can print on one sheet of standard LTR sized paper.

When you DRAW or DEPOSIT an AREA, then Show Obstacles (Map Menu item), eSectionals™ scans both the National Obstacle Database AND the FAA Chart Bulletins data for all Obstacles that are within the Latitude and Longitude (upper left corner and lower right corner) of the area frame.

After this scan, the chart displays all Obstacles within that Area. The Obstacles are small circles outlined with both a black and yellow border to contrast with various colors of the underlying Sectional. There are no FAA Chart Bulletins for this area but if there were, they would be shown as red OVALS. (You can move the Mouse over an Obstacle and the Mouse Tip will report the FAA Obstacle data.)

### AREA EXAMPLE



This picture shows that an “area frame” was drawn by RIGHT CLICKING at the upper left corner and dragging the blue box down to the SouthEast. (Alternatively, you can RIGHT CLICK without dragging at the center of a desired area and “deposit” a frame whose size is dictated by the Route TripKit Frame Size selection (found on the Preferences Menu).

Observe that eSectionals™ has marked the HIGHEST AGL Obstacle in Magenta and the HIGHEST AMSL Obstacle in RED. In this particular area, The HIGHEST AGL and AMSL tower is the same tower. The highest terrain for this area is marked with the RED X symbol. In this particular case, the highest terrain also happens to be the location of the HIGHEST AMSL Obstacle...typical of tower placements.

## AREA REPORT EXAMPLE

You can then print and view the AREA REPORT by selecting the File Menu > Report FAA Obstacles. The AREA REPORT consists of a Pilots Overview followed by one or more pages containing a detailed listing of all the obstacles within the selected area.

## PILOTS OVERVIEW PAGE



AREA: 18.2 W X 12.2 H NM (SCALE: 1.4) AREA SCAN FOUND 18 OBSTACLES

OBSTACLE AREA REPORT DTG: 5/4/2010 3:57:23 PM  
FAA NATIONAL OBSTACLE DATABASE VALID FROM 4/8/2010 TO 6/3/2010

AREA SCAN FOUND 18 OBSTACLES

HIGHEST AMSL IN AREA (RED CIRCLE): 2859' AMSL 349' AGL (plus 125') TOWER BEDFORD, PA

HIGHEST AGL IN AREA (MAGENTA CIRCLE): 2859' AMSL 349' AGL (plus 125') TOWER BEDFORD, PA

HIGHEST TERRAIN IN AREA (RED X): 2556 FT at LAT: 40.01500 LON: -78.55500

ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 2984 FT (OBSTACLE)

# OBSTACLE DETAIL PAGE

OBSTACLE AREA REPORT DTG: 5/6/2010 8:42:32 AM  
 FAA NATIONAL OBSTACLE DATABASE VALID FROM 4/8/2010 TO 6/3/2010  
 AREA UPPER LEFT CORNER: Lat: 40.1107 Lon: -78.5650  
 AREA LOWER RIGHT CORNER: Lat: 39.9070 Lon: -78.1678

HIGHEST	AMSL	AGL	LATITUDE	LONGITUDE	HV	QTY	OBSTACLE	CITY, STATE
	2030	170	39.94370	-78.24557	5E	1	TOWER BREEZEWOOD PA	
	1578	260	39.96417	-78.24805		1	TOWER BREEZEWOOD PA	
	1674	237	39.97975	-78.55164	2C	1	TOWER BEDFORD SPRINGS PA	
	1610	322	39.98639	-78.26611	2C	1	TOWER VALLEY-HI PA	
	1631	315	39.98944	-78.25555		1	TOWER VALLEY-HI PA	
	1587	306	39.99445	-78.32858	1A	1	TOWER EVERETT PA	
	2349	199	40.00111	-78.40083	5E	1	TOWER EVERETT PA	
	1290	270	40.00611	-78.36222	5E	1	TOWER EVERETT PA	
	2188	260	40.00806	-78.20722	2C	1	TOWER WELLS TANNERY PA	
	1628	260	40.00861	-78.34500		1	TOWER EVERETT PA	
	1180	100	40.01250	-78.49805		1	TOWER BEDFORD PA	
AMSL AGL >	2859	349	40.01286	-78.55305	5E	1	TOWER BEDFORD PA	
	1627	260	40.02250	-78.42861	2C	1	TOWER EVERETT PA	
	1651	258	40.02622	-78.33725		1	TOWER EVERETT PA	
	1748	321	40.03075	-78.49814	2C	1	TOWER BEDFORD PA	
	1760	280	40.04333	-78.50361	1C	1	TOWER BEDFORD PA	
	1311	112	40.08025	-78.52866	5E	1	TOWER BEDFORD PA	
	1493	223	40.08556	-78.45389	4D	1	TOWER BEDFORD PA	

OBSTACLE COUNT: 18

QTY \* INDICATES OBSTRUCTION FROM FAA CHART BULLETIN OF DATE

HIGHEST TERRAIN IN AREA: 2556 FT at LAT: 40.01500 LON: -78.55500  
 HIGHEST AMSL OBSTACLE IN AREA: 2859 FT plus 125 FT  
 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 2984 FT (OBSTACLE)

MANUALLY OBSERVED AND RECORDED MAXIMUM ELEVATION FIGURE (MEF) FOR AREA: \_\_\_\_\_

KEY TO TABLE FEATURES:

RDIST is distance along leg where Obstacle is located.

ODIST is distance of Obstacle either side of leg at RDIST.

QTY OBSTACLE CITY STATE described the Obstacle

HV is the FAA data accuracy pair where...

The H value is a key to the LOCATION ACCURACY (Example: 4 is +/- 250 Feet)

The V value is a key to the HEIGHT ACCURACY (Example: E is +/- 125 Feet)

LOCATION KEYS: 1=20' 2=50' 3=100' 4=250' 5=500' 6=1000' 7=0.5 NM 8=1 NM 9=Unknown

HEIGHT KEYS: A=3' B=10' C=20' D=50' E=125' F=250' G=500' H=1000' I=Unknown

If the KEY is V, then the FAA is unable to VERIFY the stated value.

However, the only items "missing" from THIS Report are any FAA Chart Bulletins. There were none. If the area contained FAA Chart Bulletins regarding Obstacles, the QTY column would mark it with a \* and the description information would be different.

## GENERATING ROUTE OBSTACLE REPORTS

A Route Report can be generated using the eSectionals™ DRAW ROUTE feature. With that feature you place a BASE DEPART point on the chart, followed by optional WAYPOINTS, and ending with your BASE ARRIVE point.

Unlike an Area, you need to find Obstacles along your Flight Path. To this end, your Flight Path must be defined by a Route Corridor Width to enable eSectionals to scan your Flight Path to locate Obstacles either side of the Flight Path. When you make a Route/Kit FrameSize selection, the value selected determines the Route Corridor Width as follows.

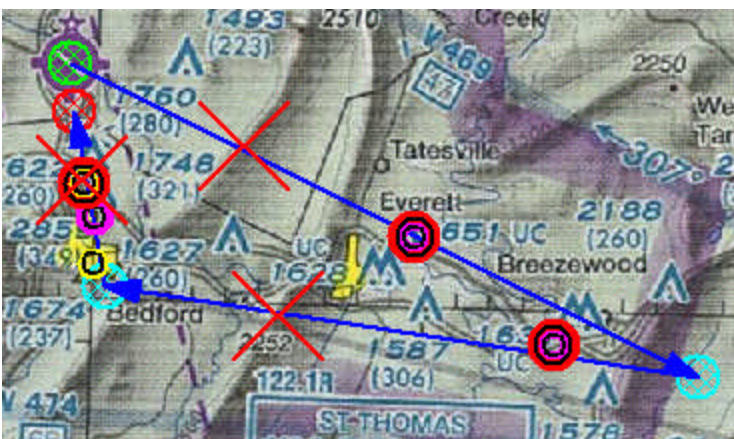
A 20 NM Frame Size is a 0.25 NM corridor width, 30 NM is 0.5 NM, 40 NM is 1.0 NM, and 50 NM is 2.0 NM. A corridor width of 2 NM means 1 NM either side of the Route. We suggest you use the worst case corridor width of 2 NM to give you the broadest flight path in case you require minor deviations.

Although conventional flights consider a landing as an ARRIVE point, HEMS operators may consider that a specific WAYPOINT is the pickup point subsequently followed by a flight to a Hospital for discharge, then followed by a flight back to a base of operations (the original DEPART point).

After you activate the DRAW ROUTE feature, place points, ending with an ARRIVE point, you must “inform” eSectionals that the route is finished, the last point then becomes the ARRIVE point. Doing so, followed by selecting the Map Menu > Show Obstacles, begins the processing of the National Obstacle Database, the FAA Chart Bulletins, and the Elevation Database to find all the Obstacles along the Route as well as obtaining Terrain data.

eSectionals™ begins at the DEPART point, starting at 0 NM and searches a box whose boundaries are specified by the Route Corridor Width as previously discussed.. It then “flies” the route to record all the obstacles either side and records the terrain to compile a list. Each LEG of your Flight Path is treated separately. The results of this scan are shown in the following picture.

### ROUTE EXAMPLE



Just like the AREA, your Chart is marked to show all the Obstacles along the Route and Highlights the AGL and AMSL Objects for quick identification. Let's begin by looking at the flight path. The GREEN crosshatched

circle is the DEPART, an airport. We travel southeast over a high ridge (RED X) and pass directly over the highest AMSL tower near “Everett”. Continuing to the WAYPOINT (CYAN crosshatched circle is the accident scene), we pass the highest AGL tower on our right. After boarding the accident victim, we head northwest to a hospital at Bedford. On the way, we first find the highest AGL tower on our right, then pass several small towers on our right. As we approach the high ridge (another RED X), we find the HIGHEST AMSL tower along with a smaller tower on our right. After we drop off the patient at Bedford, we have a string of towers and another terrain marker.

Note how we drew the Route. Specifically, we did not try to overlap the ARRIVE dot with the DEPART dot. This is so that if you have to edit the Route, the software will not get confused as you try to select one or the other.

## **ROUTE REPORTS**

eSectionals™ provides a Pilots Overview page Route Report and a Detail Route Report. HEMS Pilots have suggested that the Detail Route Report is an excellent document but have requested an overview listing only the key data for each leg.

The Pilot Route Report (next page) shows a minimum flight altitude for each Leg and what that minimum is based on, an Obstacle or Terrain. Note that Leg 2 has 6 towers. Two are nearly overlapped (about halfway of Leg 2). One tower (1587’ AMSL) is marked on the chart. The other tower is 1584’ and is not even on the chart. Perhaps the FAA only wished to show the highest or it might be a new tower.

## **ROUTE REPORT EXAMPLE**

You can then print and view the ROUTE REPORT by selecting the File Menu > Report FAA Obstacles. The ROUTE REPORT consists of a Pilots Overview followed by one or more pages containing a detailed listing of all the obstacles within the selected area.

## PILOTS OVERVIEW PAGE



**ROUTE REPORT DTG: 5/4/2010 10:16:18 AM**  
**FAA NATIONAL OBSTACLE DATABASE VALID FROM 4/8/2010 TO 6/3/2010**  
**ROUTE CORRIDOR SPAN: 0.25 NM either side of Route.**

**LEG 1: 16.2 NM at 114.9° TRU CRS (125.0° MAG HDG) with 1 OBSTACLE**  
**HIGHEST TERRAIN: 2031 FT at 4.4 NM from START of LEG**  
**HIGHEST AMSL OBSTACLE: 1651 FT plus ? FT at 8.9 NM from START of LEG**  
**HIGHEST AGL OBSTACLE: 258 FT plus ? FT at 8.9 NM from START of LEG**  
**LEG 1 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 2031 FT (TERRAIN)**  
(? Indicates Height Accuracy of this Obstacle is either Unknown or Unverified.)

**LEG 2: 13.8 NM at 277.3° TRU CRS (287.5° MAG HDG) with 1 OBSTACLE**  
**HIGHEST TERRAIN: 2090 FT at 9.7 NM from START of LEG**  
**HIGHEST AMSL OBSTACLE: 1610 FT plus 20 FT at 3.4 NM from START of LEG**  
**HIGHEST AGL OBSTACLE: 322 FT plus 20 FT at 3.4 NM from START of LEG**  
**LEG 2 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 2090 FT (TERRAIN)**

**LEG 3: 4.1 NM at 348.2° TRU CRS (358.3° MAG HDG) with 3 OBSTACLES**  
**HIGHEST TERRAIN: 1522 FT at 2.4 NM from START of LEG**  
**HIGHEST AMSL OBSTACLE: 1760 FT plus 20 FT at 2.4 NM from START of LEG**  
**HIGHEST AGL OBSTACLE: 321 FT plus 20 FT at 1.6 NM from START of LEG**  
**LEG 3 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 1780 FT (OBSTACLE)**

The Pilots Overview for a Route differs from that for an Area. It shows a Flight Elevation Profile based on the terrain along with obstacle markers to scale. Flight Legs are marked with a white vertical line.

The next page or pages provide you with the details about every obstacle found for each flight leg.

# OBSTACLE DETAIL PAGE

ROUTE REPORT DTG: 5/6/2010 8:44:10 AM  
FAA NATIONAL OBSTACLE DATABASE VALID FROM 4/8/2010 TO 6/3/2010  
ROUTE CORRIDOR SPAN: 0.25 NM either side of Route.

FROM 40.0892, -78.5129 TO 39.9754, -78.1940  
LEG 1 LENGTH: 16.2 NM TRUE CRS: 114.9° MAG HDG: 125.0°

HIGHEST	RDIST	ODIST	AMSL	AGL	LATITUDE	LONGITUDE	HV	QTY	OBSTACLE	CITY, STATE
AMSL	AGL >	8.9	0.0	1651	258	40.0262	-78.3373	VV	1	TOWER EVERETT, PA

LEG 1 OBSTACLE COUNT: 1

HIGHEST TERRAIN IN LEG: 2031 FT DISTANCE: 4.4 NM at LAT: 40.05986 LON: -78.42488  
HIGHEST AMSL OBSTACLE IN LEG: 1651 FT plus ? FT at 8.9 NM from START of LEG  
HIGHEST AGL OBSTACLE IN LEG: 258 FT plus ? FT at 8.9 NM from START of LEG  
LEG 1 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 2031 FT (TERRAIN)

FROM 39.9754, -78.1940 TO 40.0041, -78.4917  
LEG 2 LENGTH: 13.8 NM TRUE CRS: 277.3° MAG HDG: 287.5°

HIGHEST	RDIST	ODIST	AMSL	AGL	LATITUDE	LONGITUDE	HV	QTY	OBSTACLE	CITY, STATE
AMSL	AGL >	3.4	0.2	1610	322	39.9864	-78.2661	2C	1	TOWER VALLEY-HI, PA

LEG 2 OBSTACLE COUNT: 1

HIGHEST TERRAIN IN LEG: 2090 FT DISTANCE: 9.7 NM at LAT: 39.99472 LON: -78.40528  
HIGHEST AMSL OBSTACLE IN LEG: 1610 FT plus 20 FT at 3.4 NM from START of LEG  
HIGHEST AGL OBSTACLE IN LEG: 322 FT plus 20 FT at 3.4 NM from START of LEG  
LEG 2 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 2090 FT (TERRAIN)

FROM 40.0041, -78.4917 TO 40.0710, -78.5099  
LEG 3 LENGTH: 4.1 NM TRUE CRS: 348.2° MAG HDG: 358.3°

HIGHEST	RDIST	ODIST	AMSL	AGL	LATITUDE	LONGITUDE	HV	QTY	OBSTACLE	CITY, STATE
		0.6	0.2	1180	100	40.0125	-78.4981	VV	1	TOWER BEDFORD, PA
AGL >	1.6	0.0	1748	321	40.0308	-78.4981	2C	1	TOWER BEDFORD, PA	
AMSL >	2.4	0.1	1760	280	40.0433	-78.5036	1C	1	TOWER BEDFORD, PA	

LEG 3 OBSTACLE COUNT: 3

HIGHEST TERRAIN IN LEG: 1522 FT DISTANCE: 2.4 NM at LAT: 40.04486 LON: -78.50518  
HIGHEST AMSL OBSTACLE IN LEG: 1760 FT plus 20 FT at 2.4 NM from START of LEG  
HIGHEST AGL OBSTACLE IN LEG: 321 FT plus 20 FT at 1.6 NM from START of LEG  
LEG 3 ZERO CLEARANCE MINIMUM FLIGHT ALTITUDE: 1780 FT (OBSTACLE)

## KEY TO TABLE FEATURES:

RDIST is distance along leg where Obstacle is located.  
ODIST is distance of Obstacle either side of leg at RDIST.  
QTY OBSTACLE CITY STATE described the Obstacle  
HV is the FAA data accuracy pair where...  
The H value is a key to the LOCATION ACCURACY (Example: 4 is +/- 250 Feet)  
The V value is a key to the HEIGHT ACCURACY (Example: E is +/- 125 Feet)  
LOCATION KEYS: 1=20' 2=50' 3=100' 4=250' 5=500' 6=1000' 7=0.5 NM 8=1 NM 9=Unknown  
HEIGHT KEYS: A=3' B=10' C=20' D=50' E=125' F=250' G=500' H=1000' I=Unknown  
If the KEY is V, then the FAA is unable to VERIFY the stated value.

Now that you have an idea of the basics for finding Obstacles within an Area or along a Route, let's examine a method of "presetting" eSectionals™ to cover most examples of some "typical scenarios". After you explore our concepts, you should be able to customize your methods and procedures to better cover your situation.

## **Summary Routes VS Areas**

You've now observed both types of reporting scenarios. Using Draw Route is best when you are certain of all locations and this would be typical of both hospital-to-hospital patient transfers and emergency scenes where both the accident scene and hospital are known in advance.

On the other hand, an Area scenario is most useful for a flight where the destination and/or hospital points may change. Either you were given only a rough idea of the accident scene or, upon arrival you find that the accident victim cannot be handled by the hospital you were initially directed to.

## **PRESETTING eSectionals FOR YOUR BASE**

The next topic includes step-by-step instructions for creating and storing both AREAS and ROUTES. It is based on a generic HEMS base near or in a city. The instructions are very specific but a brief tutorial here will help you gain familiarity with using eSectionals™. *(You could also gain from reading the HELP topic "First Steps" which is how our General Aviation customer base first learns the basics.)*

**Download a Chart** – FILE MENU > UPDATE CHARTS > SECTIONALS and TACS. This dialog first requests a software version update check. Then, as a first time user, it will automatically update the databases and install them. Then the dialog will display the chart inventory from our server. Put a checkmark to the left of your Sectional and press DOWNLOAD. When it completes, the chart is installed. Press EXIT and the chart is then registered into the master database.

**Loading a Chart** – You can either press the F2 key or select FILE MENU > OPEN CHART USING > USA MAP to activate a USA map. Move your mouse over the map to your Sectional. It will have two blue boxes (north and south). Click on yours! This loads the chart and displays it "Fit-to-Display (the whole chart).

**Zooming** – The Toolbar has zoom in and zoom out buttons. Try pressing them. Now zoom out all the way back to view the whole chart.. Move your mouse to the upper left corner of where you think your base is located and LEFT CLICK and DRAG southeast to draw a magenta box. Release the mouse and the chart zooms and centers to that box. (You can zoom out by LEFT CLICK and DRAG northeasterly.)

**Moving** – You can move around the chart using the SCROLLBARS (right and bottom of the chart). You can also move the chart with a simple left click. The chart will recenter on your left click.

**Show Airports** – MAP MENU > SHOW AIRPORTS > HELIPORTS. Move the mouse over a blue circle. The mouse tip states the ID and the infobox on the Toolbar shows basic airport data. Deselect the airports by repeating the Map Menu selection.

**Show Obstacles** – MAP MENU > SHOW OBSTACLES. Move the mouse over a black/yellow circle. The mouse tip shows obstacle data. Compare the true (circle) position with the printed tower symbol Deselect the airports by repeating the Map Menu selection.

# INSTRUCTIONS

The following pages provide you with STEP BY STEP instructions for:

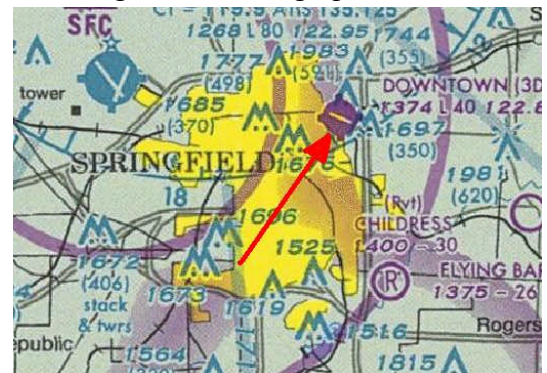
- CREATING and RECALLING AREAS
- CREATING and RECALLING ROUTES

*First, a review. Areas are used for all flights where your accident scene and/or hospital drop point are unknown. Routes are used for flight such as hospital to hospital transfers AND accident scenes where both the scene and hospital are known in advance.*

These instructions are based on the following scenario. Use this scenario as a guide to setting up.

You are the only Air-Ambulance service in your area. You are located within or on the outskirts of a city either at an airport (red arrow). Your service area is 360 degrees around your base and your flights range from close in to 100 plus miles.

The objective is to enable you to have an inventory of areas that cover 99% of your flights. Doing so enables you to PREPRINT your Obstacle Reports in advance so that you can rapidly respond to a scene (without knowing either or both your scene or hospital).



## CREATE/RECALL AREAS

You will be using the **eSectionals** SELECT AREA feature, a button on the TOOLBAR. This feature enables you to either DRAW an AREA BOX of any size OR to DEPOSIT a SQUARE BOX of 20, 30, 40, or 50 NM (based on the PREFERENCES MENU > ROUTE KIT FRAME SIZE option list). For the purposes of this discussion, we are going to use the DEPOSIT feature set for 30 NM.



From left to right, Area is North East, Area is Due East, and Areas is South East. (When you DEPOSIT an area, you Right Click at a center point to place the area box. When you DRAW an area, you Right Click at the north-

west corner of the area and DRAG the mouse south-east and release the mouse. You then see “handles” so that you can edit the size. (Only three of eight possible areas are illustrated. You get the idea.)

The first area, north east of your base allows you to fly anywhere in that area since the resulting Obstacles Report will include all the Obstacles and Terrain bounded by the box. Once you have placed an area box, you then select FILE MENU > STORE > AREA. In the STORE AREA DIALOG, you would type “BASE EAST”, or “BASE NORTHEAST”, or BASE SOUTHEAST”, and so on.

After you create an Area and Store it as a file, you then select FILE MENU > REPORT FAA OBSTACLES to print your report. Remember that the Report is valid only for the valid date range of the Sectional Chart AND the valid date range of the Obstacles Database. When either changes, you simply RECALL > ROUTE, then FILE MENU > REPORT FAA OBSTACLES.

### **Bullet List for Creating and Recalling Areas**

- Press SELECT AREA button on the Toolbar
- To DEPOSIT - Right Click at the center of the Area to DEPOSIT a 20, 30, 40, or 50 nm box
- And fine tune by Right Clicking repeatedly to adjust position
- To DRAW -Right Click northwest and DRAG mouse to the southeast and Release
- And use the box handles to fine tune the dimensions
- Select FILE MENU > STORE > AREA
- Type a name for this area.
- To REPORT – FILE MENU > REPORT FAA OBSTACLES

*HINT: For non-HEMS use, you can create an area and then select Map Menu > Show Obstacles to view the obstacles within that area without printing a report. You will be prompted to print a report, in this case, but it will not include the Pilots Overview Page...just the detailed obstacle tables.*

### **CREATE/RECALL ROUTES**

***First, a review. Routes are used for all flights where you know the accident scene and hospital drop point. Routes are also used for hospital to hospital transfers. Again, the flight path is known in advance. The only difference between the two is that hospital to hospital transfers are preplanned missions usually repeated. Most HEMS bases have a catalog for this purpose. Emergency Scene flights with known scene and hospital points tend to be rare. You are usually in the air before you know exactly where you are going.***

In the Create/Recall Areas topic, we showed you how you accommodate flights with unknown points. Here, we show you how to set up an inventory of hospital to hospital routes AND we show you how you can handle emergency scenes in advance to enhance your response time.

#### **Hospital to Hospital Transfers**

The scenario is that you have three hospitals in your area, St.Lukes, Grady Memorial, and County Regional. You are going to need SIX routes to handle any combination;

- St. Lukes to Grady Memorial
- Grady Memorial to St. Lukes (identical obstacle paths)

- St. Lukes to County Regional
- County Regional to St. Lukes (identical obstacle paths)
- Grady Memorial to County Regional
- County Regional to Grady Memorial (identical obstacle paths)

### **Bullet List for Creating and Recalling Hospital to Hospital Routes**

Accuracy! **eSectionals** includes the FAA Airports Database by CATEGORY. You can mark the Sectional with the ACTUAL airport locations to increase your report accuracy. Do so by selecting MAP MENU > SHOW AIRPORTS. This dialog lets you select ALL or just Helipads, or just Airports, or just SeaPlane Bases, etc.. You will see blue circles marking the ACTUAL positions of same. Now...

- Press DRAW ROUTE button on the Toolbar
- Right Click on your BASE
- Move mouse and Right Click on St. Lukes Helipad
- Move mouse and Right Click on Grady Memorial
- Move the mouse to “approach” BASE and Right Click (don’t overlap the points)
- Press CLOSE ROUTE button on the Toolbar (button changes to EDIT ROUTE)
- Select FILE MENU > STORE > ROUTE
- On the STORE DIALOG, type STLUKES to GRADY
- Press the STORE button
- To REPORT – FILE MENU > REPORT FAA OBSTACLES

Obviously you will repeat for all the possible combinations.

As in the case of Areas, you now have a complete set of Reports that are valid until the Obstacle Database or Sectional Chart is revised.

### **Bullet List for Creating Emergency Scene Routes with known Hospital and Scene Points**

In this scenario, you can create an inventory of routes for emergency scenes where you know that the hospital and the scene location are undefined but will be provided PRIOR to flight. You are now going to RECALL those hospital to hospital routes (created above) and move one of the points and rename the Route to reflect the change. For example, we will modify STLUKES2GRADY and make it an emergency scene.

- FILE MENU > RECALL > ROUTE > STLUKES to GRADY
- Move the mouse over Grady and RIGHT CLICK and DRAG to anywhere else
- FILE MENU > STORE > ROUTE
- On the STORE DIALOG, type SCENE to STLUKES
- Press the STORE button.
- Press the EDIT ROUTE button to erase the Route

Obviously, you repeat this for the other hospital routes.

When you get an emergency and the dispatcher provides you with the Hospital and Scene Location, you simply recall the appropriate Route.

- FILE MENU > RECALL > ROUTE
- Move mouse to the “fake scene” point and RIGHT CLICK and DRAG to known point
- FILE MENU > STORE > ROUTE
- On the STORE DIALOG, type your corporate “FLIGHT/MISSION CODE NUMBER
- FILE MENU > REPORT FAA OBSTACLES
- Press the EDIT ROUTE button to erase the Route

*Speed Trick Hint – When your RECALL > AREA or RECALL > ROUTE dialog has many files, if you type the first character of the name in the filename box, the file list will refresh to display ONLY those files beginning with that character.*

## FINDING A LATITUDE LONGITUDE POINT

When your dispatcher provides you with the coordinates of a scene, you can locate that point by moving the mouse and guess at the point since the Toolbar shows you the latlon coordinates of the mouse pointer. But there is a better way.

**eSectionals** includes a feature on the Map Menu called FIND LATLON. You can use this feature when your dispatcher is providing you with the coordinates of a scene. In the following example, your dispatcher as already confirmed that St. Lukes can accept this patient.

- FILE MENU > RECALL > ROUTE > SCENE2STLUKES
- MAP MENU > FIND LATLON
- On the Dialog, enter the coordinates
- Dialog responds with the name of the chart and a dashed red crosshair marking the point.
- CLICK on the Chart Name in the picture
- The Dialog closes, loads the charts, zooms to max and places a large RED X on the point.
- RIGHT CLICK and DRAG the arbitrary waypoint to the RED X.
- FILE MENU > STORE > ROUTE > Type your corporate flight number
- FILE MENU > REPORT FAA OBSTACLES
- Press the EDIT ROUTE button to erase the route

What about the format of the coordinates. **eSectionals** handles all three formats. These are:

- DEGREES MINUTES SECONDS (DMS)
- DEGREES DECIMAL MINUTES (DM)
- DECIMAL DEGREES

You select the format from the UNITS MENU > LATLON FORMAT.

In conversations with various HEMS bases and various STATE POLICE facilities, the most common format is DEGREES DECIMAL MINUTES. The problem is that you must be absolutely certain of the format. Most likely, your dispatcher has established this in advance. The problem arises with police, fire, and rescue dispatchers that might be getting their request from an ordinary citizen with a GPS. (Nothing is perfect!)

## **STAYING CURRENT WHERE RESPONSE TIME IS CRITICAL**

Your services cover both emergency scenes and hospital to hospital transfers. Since hospital to hospital transfers consist of well defined routes, you will have created an inventory of those routes. Any time you have to fly one of those missions, you need only RECALL the ROUTE for that mission and print a report. You do not have to do this for the flight. Why?

Sectional and Terminal Area Charts are updated every six months. Some Alaska charts are updated once a year. The FAA Obstacles Database is updated every 56 days (and we notify you in each case). **You need to RECALL ROUTES (based on hospital to hospital transfers ONLY when the Chart or the Database are revised).**

Similarly, since we have suggested that for emergency scenes that have an undefined flight plan (prior to flight), you have created various areas covering those areas. **You need to RECALL AREAS (based on those undefined scenes ONLY when the Chart or the Database are revised).**

The last cases are scenes with well defined missions. These are the ones that are most problematic when you consider response time is critical. To that end, we have advised you that you can create an inventory of Routes that cover most of your emergency scenes. In this case, eSectionals<sup>®</sup> excels in providing you with the data you need VERY QUICKLY. We pointed out that you can RECALL a ROUTE that best matches the scene. Then you drag the arbitrary Waypoint to the scene. Save this ROUTE with your flight number and print the Route Report. **This entire process including printing can take less than thirty seconds.**

## **eSectionals<sup>®</sup> Software and this User Guide**

This User Guide is based on the two activities that most HEMS conduct, AREA OPERATIONS (some use the word SCENES) and ROUTE OPERATIONS. Area Operations are those where the mission requires or may require changes to “waypoints” and the “destination” DURING THE MISSION. On the other hand Route Operations are usually well defined missions to known destinations (such as hospital to hospital patient transfers) with very little possibility of a change in the destination (other than a weather change). We invite your suggestions that may improve this Guide.

**eSectionals<sup>®</sup> was re-engineered to include both Terrain and Obstacle detection and reporting. We have done our best to make these features easy-to-use. Are there any bugs? If you find a defect, please advise us immediately!**

Send reports to [SUPPORT@VFRCOPILOT.COM](mailto:SUPPORT@VFRCOPILOT.COM) and include an email subject line “OBSTACLES PROBLEM:” or “HEMS SUGGESTION”.