



# APPLICATION NOTE SERIES

Information Technology Group  
Computer Software & Systems  
U.S. Coast Guard Auxiliary

## Address Entry Tricks for the Public Education Database\*

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\*Includes special information for Puerto Rico and U.S. Virgin Island addresses

### Background

The Coast Guard Auxiliary's Public Education Database is the official repository of public education courses being offered by the Flotillas to the general public. The database may be searched (by zip code) by members of the public, at any Auxiliary WOW website, at the National Website "cgaux.org", and at the U.S. Power Squadron's national website (through a data-sharing agreement).

All of the relevant information about an upcoming Public Education course may be entered in the "Configure" mode at any WOW website, or from the central PE Database dashboard at:

[http://wow.uscgaux.info/PE\\_signin.php](http://wow.uscgaux.info/PE_signin.php)

Addresses entered into the PE Dashboard by the PE officer, instructor, or unit commander, are *verified* as to accuracy, according to the U.S. Postal Service's standards. The reason for this verification is two-fold:

- To avoid inconveniencing a student with an erroneous address, and additionally making the Auxiliary look bad; and
- To have an address accurate enough to *geocode* it into the exact latitude and longitude of the location the course is being taught, for the purposes of the Course Flyer. Showing an online map to the course location in the flyer with the *wrong* location is unfair to the student.

In general, the PE Dashboard will not accept (save) a course record with an address that cannot be identified and geocoded. This Application Note explains how the geocode process works behind the scenes, describes where errors come from, and offers suggestions as to researching and entering addresses that will verify and geocode the first time. In addition, special procedures for Puerto Rico and the U.S. Virgin Islands are discussed.

### Printable Course Flyer

One of the most significant features of the system, in addition to being able to find a course by entering a zip code and distance (radius), is that the potential student may request a printable "flyer" describing the course, and the details about where and when it is meeting, the price, contact information, and especially a *map showing the course location*.

### Google Map Showing Course Location

In addition to the course flyer with included map, the potential student may also click on a "Map" link, and get a Google Map showing the location of the course.

Clearly, it is in *everyone's best interest* that the location depicted on the two maps *actually be the exact location of the course!* It is also in everyone's best interest for the address of the course shown in the flyer to be accurate. An accurate address reduces confusion with the students, and makes the Auxiliary look more professional.

### *Address Verification and Geocoding by the System*

At the time the PE officer or Instructor enters the course information into the PE Dashboard, the “location” and “address” that he/she enters is checked for validity, as follows:

1. The entered address is sent to Yahoo!’s online geocoding service for verification. If the address is a valid (known) address, Yahoo will return to the PE dashboard program a “normalized” version of the address (i.e., in the U.S. Postal Services “official” style), the true zip code, and a quality factor (a number from 0 to 87, where 87 is “perfect match”). Yahoo! also sends back the actual latitude and longitude of that address, *which the PE database will use as the location for the map marker on the Course Flyer*, and for the Google map link.
2. The normalized version of the address that is returned is validated by the Dashboard as follows; any mismatch will cause an error message:
  - a. The zip code the PE officer entered must match the zip code as returned by Yahoo!.
  - b. The city entered by the PE officer must match the city (or neighborhood in Puerto Rico) returned by Yahoo!.

Errors that can occur are as follows:

1. A city or zip code mismatch will generate an error message;
2. An address not found will generate an error message;
3. Two (or more) “records” found by Yahoo with the same address will generate an “ambiguous” error.

In the event of an error, the Dashboard will *not* accept the PE database entry until address errors are resolved. Resolving them is the main purpose of this Application Note.

### **Typical Reasons for Address Errors**

Here are the main reason for address errors:

1. The address you are trying to enter is simply *wrong*. All addresses should be verified by independent means *before* attempting to enter them into a PE course record. (More on independent verification, below).
2. You are entering the correct data in the *wrong* fields. *Part of this comes from confusion about the differences between the “Location” field, and the “Address 1” field.* This is covered in detail under “Entering Addresses”, below.
3. The “official” address at that location is actually in an adjacent town or adjacent zip code. This situation is more frequent than one would think, and catches even PE officers who have lived in the area their entire lives. It also is found on occasions for locations or institutions that deliberately (and occasionally through poor assumptions) publish their address in official literature (including websites) “in the next town over” (such as “Little Rock” versus “Podunk”).
4. The address is in Puerto Rico or the U.S. Virgin Islands, which have so many issues they are covered in a special section below.

## Incorrect Flyer Map Marker Locations

All PE Officers or instructors entering their courses into the PE Database should *always* check both the Flyer and the Google Map link, to make sure that the Map Marker is in the correct location. The online version of the Flyer, which can be called up directly from the Dashboard (rightmost column of each course record) features an *interactive map*, which you can zoom in to make sure the marker is right on, or right next to, your meeting location's building or parking lot.

Occasionally, the location of the map marker will be off somewhat. Here are some reasons:

1. The "official" location of that address as reported by the Yahoo! geocoder differs slightly from where *you* would have put it. Except in Puerto Rico and the U.S. Virgin Islands, there is no solution for this (other than contacting Yahoo!'s geoservices group, which *is* possible). The Flyer's interactive map *does* have a disclaimer about accuracy, on it. Fortunately, in the 50 U.S. states, this occurs rarely.
2. You forgot to enter the "house number" for a street address. In an address like "113 N. Main St.", the "house number" is the "113". The Yahoo! geocoder (and the PE dashboard) will often accept such an address, but simply notes that that the quality is less than perfect. The *latitude* and *longitude* returned by the geocoder will be the "average" location for that street in that town. For a miles-long street, the map marker may be a long way from where your course is being taught. Fortunately, this is easy to fix – simply put in the correct street number.  
If the geocoder does *not* accept an address missing the house number, the most common error message will be "ambiguous".
3. You put in the wrong address.

## Entering Addresses Correctly

Here is how to enter an address correctly.

### *Research the Address Before Using the PE Dashboard*

Incomplete research is probably the number one reason PE officers and instructors have difficulty getting addresses to verify (or to have the correct map marker location). The following is recommended for any *new* course location, or any *existing* course location (e.g., from last year) where *the map marker is not exact*.

1. Obtain the *de facto* address by visiting the location, recording the street name, and verifying the house number from signage on the building or curb markings.
2. Confirm through research (online, see below) that the *official* street name is what you think it is. For example, the main drag on the San Francisco peninsula is the historical "El Camino Real". However, in some of the Peninsula cities, it is actually called "El Camino". Most locals call it the latter, but the missing "Real" might frustrate the geocoder.
3. Read any published materials about the location (flyers, websites, etc.) to see what the owners or tenants of the building think that their address is. Note, from above, they can be wrong, but not often.
4. Visit the U.S. Postal Service site at <http://zip4.usps.com/zip4>, and *test the address*. Try your test first *without* a zip code, as the USPS website will provide you with the correct zip code if the address is known. 99% of the time, if you can get the address to verify at the USPS site, it will geocode without problem in the PE Dashboard.

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5. Test the PE's geocoder directly (i.e., outside of WOW or the PE Dashboard) at the following address:

<http://wow.uscgaux.info/geotest.php>

The IT Group's geotest program uses the identical software as does the PE dashboard and WOW, so if an address verifies in geotest.php, it will work in the PE Dashboard. But there are some bonuses for testing your address first in geotest.php, before you try to enter it into a PE course record:

- a. The test program actually returns the *entire* location record generated by Yahoo!, including the quality factor (0 – 87). If you get a quality factor below “perfect”, i.e. “87” or “address and street match”, your Flyer map marker will probably be somewhat off.
- b. You may discover that the *official* city or zip code of the address you entered is different than you think it is. If this is the case, *use the looked up values returned by geotest for making your entry in the PE dashboard*. Also, you might have entered “St. Thomas” or “Saint Thomas”, when the geocoder wants “St Thomas” (no period).

This is especially important in Puerto Rico, where the Spanish alphabet is used. Although, for example, you can type the city “Bayamon” into the geotest program, and get a potentially perfect address match, the test program will return the actual spelling of the city, “Bayamón”, with an accented “ó”. *The PE Dashboard will only accept the address if you enter the city with its correct Spanish spelling!*

- c. If you get an ambiguous result (i.e., more than one unique location record), examining each record in detail may give you a clue as to how to resolve the ambiguity. Note: The version of geocode.php as of the original publication date of this Application Note does not return the ambiguous records in this situation. A future version may.

To enter an address into geotest.php, simply write it in one line, as in

1600 Pennsylvania Ave NW, Washington DC 20500

Separate the address and city with a comma, to help the geocoder.

## Put Your Address Information in the Correct Field

The PE dashboard course input record has the following address fields; starred “\*” fields are required:

- Location\* = Description of the location of the course – not an address – such as “City Hall, Room 5” or “Sandia’s Restaurant, Banquet Room”. This location (and “Address 2”) below tells your student where to go *once they get to the address, below*.
- Address\* – Official Post Office mailing address, in terms of “Street Number and “Street”, such as “29 Main St”. It is *this* field that you must research carefully to get correct street address entered. *Under no circumstances enter information other than the so-called street address in this field, always composed of a “house number” and a street name*. Otherwise, the PE dashboard will never accept your course entry. *Post Office boxes are not acceptable*.
- Address 2 – This is extra information that is *not used for the address geocode test*. Rather, it can elaborate on the location field, or refine the address for the student, such as “Second Floor, Room 235”, “Rear Entry”, “Next to McDonalds”, etc. In the U.S. Virgin Islands, where the Post Office often uses the

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name of the Island as the official “city” in an address (i.e., St Thomas), you can put the neighborhood (or town) such as “Charlotte Amalie”) to clarify the address for the student. This field may be left empty.

- City\* – City/Town/Neighborhood in which this address is *officially* located. Returned as “city” or “neighborhood” (if city is returned empty) by the IT Group’s geotest.php program, and as “city” by the USPS’s zip code finder.
- State\* – Two uppercase characters such as “CA”, “PR”, “VI”, “AK” etc. designating the state, territory, protectorate, etc, in the U.S. Postal Service’s official parlance.
- Zip Code\* – the 5-digit postal code of the address.

### Address Field Workarounds

In rare circumstances, after significant research, you are unable to find a specific house number to use in the Address field. In such cases, here are some other things to try:

1. **Intersections.** If your course location is at or near the intersection of two streets, try entering that intersection as “Martinique Drive & Marlin Drive” as the entire Address field (without quotes). You may also enter “N Moore St at West St”, substituting “at” for the ampersand “&”. You can always use “Address 2” for clarification for the student. For example, “Northwest Corner”, or “Adjacent to McDonalds”, or “Pier 25” could be put into Address 2.
2. **“Walk In” the Address.** If you are not near an intersection, but can find addresses with House Numbers on either side of your location, you can try making up an interpolated address between two known addresses. If the geocoder accepts your phony address, check the location of the map marker. You may be able to “walk the marker in” to an acceptable location by tweaking the house number up and down. *Note that this is a desperation move, and will probably fail.* If it fails, choose a nearby intersection (per the previous paragraph) and provide additional instructions in Address 2, or in the Comment field.

## Special Information for Puerto Rico and U.S. Virgin Islands

### Direct Entry of Course Location in Latitude and Longitude

*This information applies only to Divisions 070-01, and 070-16 and their respective flotillas.*

There are some locations in Puerto Rico and the U.S. Virgin Islands where there is no “official” mailing address that either the Post Office Zip Code website or the Yahoo! geocoder service will accept. Or, the address is accepted, but the location of the course marker in the Flyer map is not exact.

In such circumstances, the PE Dashboard offers a simple workaround – direct entry of the latitude and longitude of the course location.

How it works:

1. The PE Dashboard opens up an *extra* data entry field, below Zip Code, entitled “Course Location Lat/Lon Override”).
2. The PE officer or instructor types in the *decimal* latitude and longitude, separated by commas in that field. Example: “18.339940,-64.930123” is the lat/lon of the USCG MSD base in Charlotte Amalie. You would enter the data *without* the quote marks, of course.
3. The geocoder will then *ignore* the “Address field” (see above), and only validate the address as to correct city spelling and correct Zip Code.

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4. The map marker on the Course Flyer and in the Google Maps link will be placed exactly at those coordinates.

This capability places *additional responsibility* on the member entering the course into the PE database:

1. You must independently verify that the latitude and longitude are exact, and
2. You must continue to use the Location, Address, and Address 2 fields (described above) to provide *as accurate a description for the student* as you can. The gold standard would be if you could address a letter to the address you entered, or provide it to a taxi driver, and the letter – or you – would end up there with no difficulties.

### *Accurately Determining the Course Location Lat/Lon*

To accurately determine the geodetic coordinates (lat/lon) of where your training will be held, try one of the following:

1. Visit the course location, stand in front of the correct entrance, and acquire the coordinates with a handheld GPS, or an appropriate GPS application on your smartphone. *Put the GPS/app in “Decimal GPS” mode; do not attempt to do the conversion yourself from degrees, minutes, seconds, or degrees, decimal minutes, even if you are a math wizard.* If you get it wrong, we all look bad.
2. Find the location in Google Earth (not Google Maps) using your tablet or personal computer. Zoom into the spot where you would stand in “1” with your handheld, and move your cursor to that point. Google Earth continuously reads out the decimal latitude and longitude of the cursor location. Copy it down, and enter it into the override field.

Option #2 is what Auxiliary IT engineers use for testing the PE geocoding capability, as it is so easy to open a Google Earth window at the same time that one is entering a course into the PE Dashboard.

### *Validation of the Lat/Lon: Check the Flyer Map Immediately!*

After you have successfully determined and entered the latitude and longitude of a course meeting location, you should *immediately* open up the Course Flyer for that course, and *verify that the map marker location is correct.*

### *Other Data Entry Requirements – Puerto Rico and U.S. Virgin Islands*

#### *Highway (carretera) Addresses*

A typical Puerto Rico highway address might be:

Carretera 113 Km 5 (or) #1200 Carretera 113

Instead of “carretera”, you must use “PR-”, so these addresses would be written:

PR-113 Km 5 (and) #1200 PR-113

#### *Mileposts (Kilometer markers)*

Many course locations will need to be specified by the name of the road, and a milepost marker, such as

Calle Los Corderos Km 11

entered into the “Address” field. There are several things to observe:

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1. If you can research and discover a valid “House Number” (numerical address) such as “12415 Calle Los Corderos” for that milepost location, use it;
2. Always write the milepost “Km 11” *after* the address, *never before*, or if you are having verification problems, in “Address 2”.
3. The geocoder will *never* use the milepost location to provide an accurate location, so an address like “Calle Los Cordero Km 111” will yield a map marker location which may be *many kilometers distant* from where you are holding the course. In such a case, you will discover that the map marker and Google Maps link are *wrong*, and you must determine and enter the correct decimal latitude and longitude of the course location in the “Override field”, as described above.

*House Number Position in Street Addresses (Address Field)*

When you are lucky enough to have an address with a house number, like “213 Camino Los Torres” (the “213” is the house number), always enter it *before the street name, not after*. That is, “Camino Los Torres #213”, with the house number *after* the street name, may not verify.

*Accented versus Unaccented Characters in Puerto Rico Names*

For Puerto Rico locations, city names must *always* be entered in the “City” field with correct Spanish characters, for example:

Bayamón, instead of Bayamon

Mayagüez, instead of Mayaguez

Street names *should* be entered with their correct spellings in Spanish, but if they don’t verify, and everything else looks good, try replace the accented characters with their unaccented equivalents.

For example, if “225 Calle Lucas Fernández” fails to verify, try spelling Fernández without the accented “á”, e.g. “Fernandez”.

*Island Names in the U.S. Virgin Islands*

The geocoder is more comfortable with using the island name as the “City”, whereupon you could place the town name, such as “Charlotte Amalie”, in Address 2, which is not checked. However, our recommendation is that you use the town name as “City”, and *always* put in an override Latitude and Longitude for the course location. This way, you can have your cake and eat it too: A very readable address for the Flyer, and a deadly accurate Flyer Map and Google Map Link.

If you *don’t* use the lat/lon override, and have difficulty with validation, try writing the island name out fully, and abbreviated, with and without a period. For example: “Saint Thomas”, “St. Thomas”, and “St Thomas”. You can also experiment with entering the “City” field with a structure like this:

“Charlotte Amalie, St Thomas”

“Christiansted, St Croix”

With the lat/lon override, however, none of this is necessary.

## Other Tips and Tricks – All Users

1. **Offering a course that you offered last year?** Just open up the PE dashboard, find the old course, open it up, and *change any information necessary* to update the record to this year. Then, do a “SAVE AS” and a new course record will be created for this year’s course. This save a lot of typing. NOTE: You can also do a SAVE instead of a SAVE AS, and the old record will be *reused* for this year’s course. (This is the preferred method, as it keeps the database small, saving the Auxiliary data processing storage and backup costs).
2. **You’ve spent 45 minutes typing in a new P.E. course into the Dashboard, and the address won’t verify.** Don’t panic; you can save your work. Just change the start date of the course to year 2000, and put in your own mailing address as the course address. This should verify, and allow you to save the record. Then, go research the correct form of the address per the instructions in the pages above, and *test the address* in the geotest.php utility program. Once you have it right, go back to the dashboard, put in the good address, and change the date back to this year. (Setting the date back prevents the course from showing up in the Course Finder, until you can fix the data).
3. **Researching a Course Address from your living room.** You can do as IT does when fielding complaints about “addresses not working”: do a Google search on the institution where you are holding the course, and find their website, and look for their address. If their address is a PO Box (or anything else without a house number and street), call them on the telephone, and say “I need your correct street address for a UPS (or FedEx, etc.) delivery.” This usually works unless they come back with “Loading Dock, Back Street, Bad Neighborhood, CA” or some such.

You can also do the same search in Google Earth, if you have installed it (free) on your computer or tablet. Google Earth has proven quite good at finding *places*, such as “Joe’s Bar and Grill, Sweetwater, GA”, though going from there to a street address may require additional address research.

## Feedback

If you have comments on this Application Note, or have found situations or addresses not covered, please open the PE Dashboard and click on “FEEDBACK/BUG REPORT” at the bottom of the “Add/Edit Pubic Boating Courses” page and submit your comments. If you have an address that has failed to validate, after you have followed all the suggestions above, *you must include the location and address information that you tried to enter*, in the bug report.

SCJ: February 2015

Initial Release

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