

# Exploring CQ/X

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**Introduction:** This document describes activities you can perform to explore the various features of the program. Here's a list of the activities:

- **Activity 1: Exploring the Help Menu**
- **Activity 2: Starting a New Contest and Reviewing Resulting User Interface**
- **Activity 3: Defining a Set of Messages**
- **Activity 4: Planning a Route for Non-GPS Operations**
- **Activity 5: Assigning Function Keys**
- **Activity 6: Connecting and Using a Keyer**
- **Activity 7: Making a QSO**
- **Activity 8: Building a Route for use with a GPS**
- **Activity 9: Simulating a trip using the GPS Simulator (SimGPS)**
- **Activity 10: Connecting and Using a GPS**
- **Activity 11: Connecting and Using a Radio**
- **Activity 12: Setting Up User-Supplied Help**
- **Activity 13: Using the Startup Wizard**
- **Activity 14: Exploring Other Menu Items**

## Activity 1: Exploring the Help Menu

1. Open the item **Help | Getting Started | Hardware You Need** to review the hardware required to run this application.
2. Open the item **Help | Getting Started | Route Info and GPS Options** to view a number of optional ways to use CQ/X each with its own hardware and planning requirements.
3. Open the items **Help | Getting Started | Operating With/Without a GPS** to get a feel for the differences when using and not using a GPS. It is strongly recommended that you use a GPS especially if you are planning to go mobile in a state QSO party or the Grid Chase. The main advantages offered by CQ/X require the use of a GPS.
4. If you're interested in using CQ/X for the Grid Chase you should eventually review the documents that can be found via sub-menus of **Using CQ/X in ARRL Grid Chase**, especially the Overview, State QSO Party, and Cross-Country items. As you get further into planning a trip the other three documents found under that menu should also prove helpful.
5. Open the item **Help | User Manual** to view an Acrobat version of the program documentation. Explore some of the topics in the manual. Be aware that the document is approximately 150 pages so you probably will find it most useful in electronic form rather than as paper. Also be aware that some of the topics are dated and need revision. Many of the really important topics are covered in separate notes.
6. Open the item **Help | Program Use** to view program documentation in the form of a 32-bit on-line help file. Explore some of the topics and print any of them you find interesting. Note: If you are running Win 7 you may get an error when trying to view this help file. If you want to use this form of the help document you will need to download and install WinHlp32.exe from Microsoft. There is also a way to read the 32-bit help in Win 10 but it is more involved and it is probably best to just use the User Manual which is a pdf and not give any problems.
7. Open the item **Help | User Notes for Mobile Ops** to view a set of notes describing key assignments, etc that I use for mobile operation.
8. Open the item **Help | Configuration Decisions** to view a description of decisions you will need to make when setting up the program for mobile operation.
9. It's good to be aware of the three help topics related to use of Google Maps but you will probably want to defer viewing them until you become more familiar with the rest of the program.
10. Open the other items further down the Help menu if they peak your interest, most of their titles are self-explanatory.

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## Activity 2: Starting a New Contest and Reviewing Resulting User Interface

1. Use menu item **File | New Contest** and select a QSO Party from the drop down box.
2. On the resulting dialog select to participate as an “Inside” participant.
3. Fill in or select the required information for the selected contest.
4. Once satisfied with the information press Ok.
5. Review the Scoring area and note that all bands and modes of the contest are represented.
6. Review the Log area and note that the header contains the logging items required by the contest. If the Score grid is in the central part of the display choose **Display | Move Score to Left Panel** and note that the Log area has been enlarged by the amount previously occupied by the Score display. Perform a similar action using **Display | Move Notes to Right Panel** to enlarge the Log display area further. You may also want to experiment with different fonts in the Log area using menu item **Display | Log Display Fonts**. This may require you to resize the columns of the log display. Do that the same way you would change the column sizes in an Excel spreadsheet.
7. Review the column headings of the grid in the Check area and note that the columns correspond to the required QSO exchange information. You can resize those columns also if desired or necessary.
8. Click on the Multipliers tab of the right hand page control and note the organization of the multipliers into regions. If you selected to be an “Inside” participant the Multiplier tab will contain all of the multipliers that are available to a participant operating from inside the state. To see the multipliers in a given region click on that region.
9. Return to the **File | New Contest** menu item and change the participation to “Outside” and press Ok.
10. Following this, review the multiplier list to see that the counties of the state have been organized into regions. Also note that these are the only multipliers available.

To keep the discussion specific in the next few activities, use the **File | New Contest** menu item to choose the Texas QSO Party as the contest and when the dialog comes up specify that you will operate as an in-state mobile.

## Activity 3: Defining a Set of Messages

1. For this activity assume that you are planning to operate as an in-state mobile in the Texas QSO Party and, as is the convention often followed, you will include your call in each CQ with a slash followed by the abbreviation of your current county.
2. Note that on the Messages tab of the right hand tab control there is an Edit Messages button along with a Help button. Use the Help button to view a document describing the various messages. Use the Edit Messages button (or menu item **Keyer | Edit Message Template**) to activate the message editing dialog. Note that this loads the message template into the message array of this dialog. As a starting point you can load a default set of messages appropriate for the selected contest and operating category using the button labeled Load Defaults. Now edit the following messages to include your information
  - a. **CQ:** “CQTQP DE YourCall/#”
  - b. **CQX:** @ 5NN #
  - c. **CQT:** “TU TQP YourCall/#”
  - d. **SP:** “YourCall”
  - e. **SPX:** 5NN # YourCall

where the # sign is the template symbol for the current county, the @ sign is the symbol for the call entered in the QSO Entry box. In the case of the Texas QSO Party the required exchange elements consist of the fixed part (5NN) and a variable part (# = current county). You can perform the insertion of the current county symbols (#) by either typing them in directly or, if you don’t want to remember what they represent, you can position the cursor at the desired insertion point, right-click the mouse, and then choose the desired symbol from the pop-up menu.

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3. Once through editing use the “Update Template” button to complete the template definition task. This template will be used until you modify it. The template is saved across a restart so you will not need to go through the message definition process following a restart of the program. However, you may also want to save the template as a separate named file. To do this use the **Save as** button on the message edit dialog.
4. On updating the template you should receive a warning advisory that there are unresolved county symbols and several options for resolving the county symbols in the messages. For now choose the “Resolve Later” option by simply pressing the escape key.
5. Now let’s assume that, for whatever reason, you are not going to interface the radio to the program. Use the menu item **Radio | Track Left Radio Manually**. In the dialog box that appears select the band and mode and press **Apply**. This will set the frequency appropriate to the selected band and mode and these will be the mode and frequency that will be logged on each QSO until changed. Under manual tracking it will, of course, be up to you to maintain these in sync with the radio. Once in the manual tracking mode you can change the frequency by, for example, hovering over the frequency display and right clicking to obtain a popup from which the desired band can be selected. Similarly hover over the mode display and right click to obtain a popup menu from which the mode can be selected.
6. Now attempt to send CQ by pressing the key assigned to the CQ message (F1 is the default). You should again receive the warning advisory message as in step 4. Again exercise the option to resolve later.
7. Now attempt to send a search and pounce message (SP) by pressing the key assigned to the SP message (F5 is the default). You should again receive the warning advisory message and again exercise the option to resolve later.
8. Now attempt to enter information in the QSO Entry window. Again, the pesky warning advisory message will appear so it looks like it is time to resolve the county symbols! This takes us to the next activity.

## Activity 4: Planning a Route for Non-GPS Operations

In this activity again assume that you are going to operate as an in-state mobile in the Texas QSO Party but without GPS capability. In this case we will set up a simple sequence of counties that we plan to travel through.

1. Use the menu item **QPTools | Plan Route as a Simple Sequence** to access the route planning dialog. You should see a county outline map of Texas as well as combo boxes for choosing the first county and next county in the route.
2. Choose a first county in the route and notice that it, along with its abbreviation, is copied to the Counties in Route list box and that the Next County combo now shows a list of all of the counties that are adjacent to the first county. You can check this by finding the chosen first county on the outline map. For simplicity you might want to choose a county up in the Texas Panhandle such as Potter.
3. Next choose the second county from the Next County combo box and use the Add button to add it to the Counties in Route. You should notice that it, along with its abbreviation, is copied to the Counties in Route list box and the Next County combo has now changed to show a list of all of the counties that are adjacent to the most recently chosen county in the route.
4. Continue adding counties to the route in this manner until you are satisfied that you have designed a route with enough counties noting that the number of unique counties is shown to the right of the Counties in Route list box.
5. The route you have specified will continue in use, including across a restart, until you make modifications or change to another QSO party. So there is limited need to save the route but if you wish to do that there are buttons on this dialog that provide that capability as well as the capability to reload the route from a file. To test this save the route to a file, then delete all entries, and then reload the route from the saved file.
6. Now let’s assume that you are ready to start the route – see the warning below for a check you should perform prior to actually committing to the route. You can start the route by double-clicking on the county in which you wish to start – it could be the first county in the route or one of the later counties if, for example, you have shut down the program for some reason and are just restarting.
7. On double-clicking a selected county you should see the county symbols in the Message tab converted to the abbreviation of the selected county.

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8. Now try to make an entry in the QSO Entry box and notice that the warning message concerning unresolved county symbols is no longer activated. Do the same for sending CQ and for sending the SP message.
9. Now you can use the menu item **QPTools | Manually Change County | Next County** to change from one county to the next. Doing this you should see the message content change appropriately. You can also move backward through the county sequence using **QPTools | Manually Change County | Previous County**.
10. Now it's time to make a QSO but first let's assign some function keys to support that activity.

## Activity 5: Assigning Function Keys

For efficient operation in a contest and especially in a mobile environment it is useful to be able to perform various tasks without using the mouse. In this activity we'll set up some function keys to perform various tasks.

1. As is standard in windows programs you can use Alt plus the first letter of the menu item to drop down that menu. Pressing Alt + K will cause the Keyer menu to drop down. Then press F or use the cursor up/down keys to navigate to the item Assign Function Keys. Pressing Enter will then activate the dialog for assigning function keys.
2. This dialog is simply a list of keys F1-F12 plus the Ctrl+Fx, Alt+Fx, Shift+Fx, and Insert, and Plus keys, as well as PageUp/Down keys together with a combo box for selecting the task to be performed by the given key. On selecting an item from the combo box an explanation of the task to be performed is shown in a small window. Click on the combo box associated with F1 to see the possible tasks that can be assigned to that key.
3. Make the following assignments:

F1	SEND_CQ	Assigns F1 the task of sending the CQ message
F2	SEND_CQX	Assigns F2 the task of sending the message containing the exchange
F3	SEND_CQT	Assigns F3 the task of sending the thank you message and logging the contact
F5	SEND_SP	Assigns F5 the task of sending the S&P call message
F6	SEND_SPX	Assigns F6 the task of sending the S&P exchange
F7	SILENTLY_LOG_QSO	Assigns F7 the task of logging the QSO without sending a message
F12	ACCESS_LOGS	Assigns F12 the task of accessing the log list at the last item.
PageUp	Increment Speed	Assigns PageUp the task of increasing the speed of the keyer
PageDown	Decrement Speed	Assigns Page Down the task of decreasing the speed of the keyer

4. Use the button labeled Emulate NA to activate a dialog for selecting and enabling various key assignments used by the NA logging program. Once satisfied with the assignments use the button Assign Keys to close the dialog.
5. The Commands tab on the right hand page control will then show the key assignments and the Message tab of the same control will show those keys that are assigned to the messages. These assignments will remain in effect across a restart of the program so once they are setup there is no need to go through the key assignment process unless it is desired to modify the assignments. Of course one reason for modifying the assignments would be in response to a change in the contest being worked in which some key assignments may not continue to be useful (e.g. the INCREMENT KEYING SPEED command when the contest is an SSB only contest). For this reason it may be desirable to save sets of key assignments to separate files for later use. There are buttons on the key assignments dialog for doing this. Now let's connect a keyer to enable some CW QSOs.
6. The following are hardcoded (not assignable) keys but can be very useful. Those with a \* require that NA Emulation be enabled, which can be done from the Key Assignments dialog.

Shift + Spacebar	Calls CQ if the QSO Entry window is blank
Apostrophe*	Sends CQX Message (the exchange)
Semicolon*	Sends QSO message and logs the contact
[, ], \*	Logs QSO and sends respectively QS0, QS1, QS2

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## Activity 6: Connecting and Using a Keyer

For this activity you will want to have some means of hearing the results of keying by either actually operating your transceiver into a dummy load or setting up an external speaker connected to your keyer.

1. If you are using a K3 you can elect to use the internal keyer of the radio by using menu item **Keyer | Use Internal Keyer of Left Radio**. If you are using an external keyer use the menu item **Keyer | Connect/ Disconnect** to access the Port Assignments/Setup dialog. Select the keyer to use and specify the baud rate (MiLog = 9600, WinKey = 1200) and press the connect button. You can test the external keyer by pressing the Test button and on doing so should hear a VVV or something similar.
2. Close the Port Assignments dialog and note that the keyer indicator panel for the selected keyer now indicates "Keyer On". If you are using the internal keyer of the K3 you may instead get a message regarding speed setting. Check to see that the Page Up/Down keys can be used to change the speed of the keyer
3. Now try sending some CQs and making some imaginary test QSOs using the F1-F3 keys assigned in Activity 5. Are the messages being correctly sent? If any of your messages have a # sign the program will complain about not knowing what the county is. To resolve this problem, without using a GPS, enter a # sign in the QSO Entry window and select a county from the resulting dialog. If you have completed Activity 4 by designing a route as a sequence of counties you may already have resolved the #-signs to a county.
4. Use the menu item **Keyer | Edit Message Template** to set the messages Q1, Q2, and Q3 to the message you would like sent to request a fill for that element in the Check grid. For example, the first column of the Check grid is always the call sign so set Q1 to "CALL?". Similarly the third element in the Check grid is usually the QTH so set Q3 to "QTH?"
5. Now make an imaginary QSO with a station and attempt to log the QSO with no entry or an erroneous (i.e. non-valid) entry for the QTH. You should hear the keyer issue the request for the fill defined by your Q3 message. Repeat for the case where no call sign is contained in the QSO Entry box.
6. If you like using the Enter key use menu item **Keyer | Send CQ With Enter Key**. Now with the QSO Entry window blank pressing the Enter key will cause the CQ message to be sent and if you enter a call of a responding station and then press Enter, the CQX (Exchange) message will be sent. After you log the other stations info, and assuming it is a valid entry, another press of the Enter key will cause the CQT message to be sent and the QSO entered into the log.
7. The WinKey by K1EL is highly configurable. If you're using that keyer click on the More button just below the Mode indicator and select Keyer from the resulting popup. This will activate a dialog from which any of the WinKey parameters can be set. Consult your WinKey documentation for a description of each parameter.
8. Also note that you can change keying speed from the QSO Entry panel. To do this you need to
  - a. Set the speed limits of each keyer using Keyer | Set Parameters item
  - b. Apply the speed limits by clicking on Apply in the Set Parameters dialog
  - c. Now on the QSO Entry window type =25 and press the Enter key and you should see the speed indicator show 25
  - d. Now on the QSO Entry window type K=L and press the Enter key and you should see the keying speed change to the minimum speed you defined for the keyer.
  - e. Now on the QSO entry window type K=H and press the Enter key and you should see the keying speed change to the maximum speed you defined for the keyer.

The only requirement in item 8c-d of the above is that the speed information be entered as the most right hand part of any string that already exists in the QSO Entry panel and must be separated from the rest of the string by at least one space. Following pressing of the Enter key the speed information will be implemented and the speed request information K=X) in the QSO Entry window will be cleared.

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## Activity 7: Making a QSO

Again let's assume that you are operating as an in-state mobile in the Texas QSO Party and that appropriate messages have been defined as described in the previous activities.

1. To log a QSO the application needs to know the band and mode to assign to the QSO. Using the Radio menu you can either select the connect/disconnect option or the option to track the radio manually. To keep things simple for now let's assume that you want to use the latter approach. Following selection of the Track Left Radio Manually option, a dialog will appear from which you can choose a band and mode. Clicking on Apply in this dialog will set an appropriate frequency and mode to log. You can also change the frequency by typing, for example, 14040 into the left hand QSO Entry window and pressing Enter. Then type M=CW (or simply =CW) in the same window to set the mode of the left radio to CW. You should note the frequency and mode change in the radio area. To set the mode you can also right click on the "Mode" panel to the right of the frequency entry box and select the desired mode from the pop-up menu.
2. Now with the frequency and mode set you are ready to make a few QSOs and you should find that the cursor is in the Left QSO Entry box. If it isn't move it there with the mouse.
3. Press the key assigned to the CQ message (default is F1) and, imagining that a response comes back from K5NG, enter that call in the entry box. You should see K5NG also appear in the call sign column of the Check grid area along with the default signal report of 599. Assuming you have set **Keyer | Send CQ With Enter Key** Press the Enter key to send your CQX message and now imagine that the responding station sends back the message 559 GRIM K5NZ indicating that you have copied the call incorrectly and that Mike is probably pulling your leg but has sent a "non-standard" signal report. Entering GRIM K5NZ the entry box now reads K5NG GRIM K5NZ and you should observe that the Check grid shows K5NZ 559 GRIM. But what about that 559 signal report. Enter the value as 559R to override the default. Now the Check grid should read K5NZ 559 GRIM. Pressing the Enter key will cause the CQT message to be sent and will log the QSO. You should note in the Local Log area of the display that the QSO has been recorded properly. You should also note in the Scoring area of the display that the QSO has been properly accounted for with a QSO in the proper band and mode and the total mults should increment if this is a new mult. Total Q's should also increment if this is not a dupe and the total score should change accordingly.
4. In the Texas QSO Party in-state mobiles can work DX and each DX country is counted as a mult. Also states, other than Texas, count as mults as do the Canadian provinces. So imagine that W3BBO answers a CQ, and then sends his exchange as 5NN PA. Log this QSO. Next PA1XX answers your CQ and you enter PA1XX and press the Enter key to send your exchange. The response from PA1XX is 5NN PA and you enter that information in the QSO Entry box which now reads PA1XX PA. You should notice in the Check grid that the QTH has been slightly modified to PADX to resolve an ambiguity with the PA QTH. Pressing the Enter key again causes the QSO to be properly logged with a new mult (PADX) and a new QSO. As you work other DX you will notice a similar modification to the QTH for countries such as OH, ON, TN, etc.
5. Now call CQ again and imagine that a station returns your call but all you hear is OT and you enter OT into the QSO Entry box. Holding down the left shift key and pressing the Enter key you should hear the message "OT?" issued by the keyer. Then imagine that the responding station sends K5OT which you enter separated from the original OT with a space and then you hit Enter. You should hear the message K5OT + the exchange message being sent by the keyer. K5OT responds with SHAC but you only copy the HA part which you enter into the QSO Entry box. Holding down the left shift key and pressing the Enter key you should hear the keyer send "HA?" K5OT repeats the county SHAC which you copy and enter into the QSO Entry box which now reads
6. OT K5OT HA SHAC
7. Pressing the enter key you should hear the keyer send the CQT message and see the QSO logged as K5OT SHAC.
8. The QSO Entry window can also be used to enter the following information
  - a. Keying speed – enter K=ss where ss is the desired speed or L or H
  - b. Frequency – enter fffff where fffff is the frequency in Hz or L or H for lower (upper band limit)

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- c. County – type # and then select the desired county from the list. This is mostly useful when a GPS is not being used and you have deviated from your original route plan and need to manually enter the current county.
- 9. Another use of the right QSO Entry area is to replace it with an area for showing previous QSO information either by station or by multipliers for the station/multiplier entered on the QSO Entry window. To do this use the Display menu item to select “Use Right QSO Entry Area for Previous QSO Info”. Of course this is useful only if you are using only one radio which is almost always the case in a mobile.
- 10. Of course once you have completed the contest and made all those QSOs you will want to finalize your log and submit it to the sponsor. To do this use the menu item **File | Finalize Log**. Review the information under Header for accuracy and enter your claimed score. If you have soapbox comments enter them in the Soap Box area. If you wish to enter statistical information in the soap box use Prepare Statistics and then Paste from Clipboard. The Sample QSO lines area is not enterable but shows a few lines from the log part of your Cabrillo log. Finally use the Browse button to specify where your Cabrillo log is to be saved. Then click on Save.

## Activity 8: Building a Route for use with a GPS

If you plan to use a GPS you have several options for building a route and, actually, the development of a route is somewhat optional, depending on the extent to which you wish to be able to view real-time information like distance/time to the next county, etc. You can read a detailed description of the available options in the document accessed via menu item **Help | Getting Started | Route Info and GPS Options**. One option is to just set the GPS advisory mode to AUTO and let the program do all the work of changing messages etc. That will allow the program to automatically detect the county you are currently in but it will not enable the program to make estimates of the distance and time to the next county. So in this activity let's assume that you want to have a real-time indication of distance to next county shown on the logging screen and you might also want to be able to automatically respond to queries from the deserving regarding what/when is your next county.

In order to have this information available in CQ/X a path file listing the latitude and longitude of each point on your route must be developed and made available to the program and the lat/lon of each of the county line crossings along that path must be determined. There are several ways of doing this but the least labor-intensive method is to download your route from a Google Map that you have drawn and then import it into CQ/X which will then analyze the route and determine each of the county-line crossings. Use the menu items **Help | Use Google Map to Define a Route** and **Help | Use Google Map to Create a Crossing File** to access a two documents that explain this method in detail. Consult these two documents for details of how to perform the following steps.

1. Generate a county overlay using CQ/X menu item **QP Tools | Route Planning Using Google Maps | Generate a County Overlay for Google Maps**
2. Access the Maps application on your (free) Google account and Create a new map
3. Import the overlay from Step 1 into the Google Map to be used as a guide
4. Draw a Google Map representing where you will go and covering the desired counties
5. Download and Save the Directions part of the Google Map on your machine as a KML file
6. Use the KML file as the source file in the dialog that results from using CQ/X menu item **QP Tools | Route Planning Using Google Maps | Build Plan Using Google Map Data** and identify where to save the results of the analysis. After a few seconds or minutes depending on the length of your route a listing of each of the county crossings will be presented.
7. To demonstrate step 6 there is a file NO5W-TQP-2017-SAT-CQX-LatLon.kml in the PathKMLs sub-directory which is c:\Program Files (x86)\CWSoft\CQXClient\Documents\PathKMLs\ which you should copy to a directory that you create in your User space for this and the next activity.
8. As suggested by the file name this KML file is for a Texas QSO Party trip so be sure you have selected the Texas QSO Party as the contest.
9. Now use menu item **QP Tools | Route Planning Using Google Maps | Build Plan Using Google Map Data** and when the Finding County Line Crossings dialog comes up browse to the file from step 7 as the Input file and choose a name of a file in which to capture the results. The results will be a text file so something

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like NO5W-TQP-SAT-CountyCrossings.txt would be a good choice. Once the files are specified click on the Process button and watch the status area to see the progress. On my system (10 year old Sony Vaio laptop with 6G ram) after about 2 minutes a form listing 33 county line crossings will be presented.

10. On the form presented in Step 9 there are some export options near the bottom. One of most useful options is the one labeled CSV for CQ/X Waypoints. Using that option and clicking on the Export button will result in a form where you can specify the name of the exported file. This again is going to be a text file of way points so a good name might be NO5W-TQP-SAT-CountyCrossings-WP.txt. This file is actually a space delimited file consisting of entries of the form FROMCounty-ToCounty Latitude Longitude.
11. Before leaving the form listing the county line crossings click on the Apply button to register the Path with CQ/X so that on the next restart of the program it will be the default path. This would be a good time to exit CQ/X while the GPS simulator is set up.

Next we'll use the GPS simulator to simulate segments of the route developed in Steps 7-11.

## Activity 9: Simulating a trip using the GPS Simulator (SimGPS)

Now let's use the GPS Simulator (SimGPS) to model the route developed in Activity 9. Here is what we will need

- The SimGPS.exe file to which we will use to send simulated GPS sentences to CQ/X.
- A pair of virtual serial ports (VSPs) through which SimGPS will communicate with CQ/X.
- A file of simulated GPS sentences that will simulate a trip on the NO5W-TQP-2017-SAT-CQX-LatLon path.

1. **Install a pair of VSPs** - There is a good chance you already have some VSP software if you have done any work with Software Defined Radios. If not, two sources of free VSP software are: VSPManager by K5FR and com0com. Google either of those terms to find download sites. On my system I have the following pairs com40-com41, com42-com43, and com44-com45 but you can set up other pairs. Just be sure you do not define a VSP pair where one of the com ports is already in use.
2. **Create a short cut to the SimGPS.exe**. The exe can be found in the GPS\_Simulator subdirectory.
3. **Create a Trip File** – For this we will use SimGPS menu item **Trips | Create a Trip from a KML File**. After starting SimGPS use the Create a Trip menu item to bring up a dialog for initiating the creation process. In the dialog be sure to use your copy of the path KML from Step 7 of Activity 8 for the KML Input. For the GPS Output file something like NO5W-TQP-SAT-SimGPS.txt would be a good choice.
4. Now use the Browse button to select the file just created as the Playback file. If you are interested in what the GPS sentences look like use the associated view button.
5. Use the Browse button for the optional Waypoint file to locate the file of waypoints created in Step 10 of Activity 8. After loading these waypoints you should see the drop down in the Start Playback area come alive with waypoints. Importing these waypoints will allow you the option to start the simulation at various distances from the waypoint (in this case county lines).
6. Now connect the SimGPS to one end of a VSP pair, click on the Connect/Playback button, and then on the Play button to start the simulation. You should see the Starting Current and Ending positions of the file and should see Playing near the middle of the main SimGPS screen.
7. Startup CQ/X and you should see a note alerting you to the fact that a path KML is being loaded – it should be the one Applied at Step 10 of Activity 8. So say Yes to that dialog.
8. Now use CQ/X menu item **GPS | Local GPS** to bring up the Port Assignments dialog and on that dialog find the com port paired with the one connected to SimGPS. Specify the Device (GPS), Device Type (General NMEA), and accept the defaults for the other parameters. Finally click on the associated Connect button and after a few seconds you should see "Connected" in the status window.
9. Close the Port Assignments dialog and after a few seconds you should see the GPS panel on the left hand side of the display come alive with data.
10. At this time you can review some of the data on the GPS panel including distance/time to next county, grid square, etc and you will note that the Waypoint dropdown is empty. One set of waypoints that could be imported are the ones found in Step 10 of Activity 8. To import these use CQ/X menu **GPS | Define Waypoints**

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and when the dialog comes up choose to Load Waypoints from Text File. You should see the Waypoints drop down on the GPS panel come alive and shortly after the distance to the currently selected waypoint will be updating. You should also see the messages being populated with the current county abbreviation wherever there is a # sign.

11. Sometimes it is useful to look out ahead of the current position to see which waypoints may be coming up – especially useful for waypoints that represent turns in the road or highway changes. For this you can use the Multiple Waypoint Tracker (MWT) which can be initiated using menu **GPS | Track Multiple Waypoints**. When the small dialog comes up you will have the chance to specify to show either X number of down the road waypoints or to specify to show all waypoints with D (driving) distance from the current point. Of course as the trip goes on the waypoints and their distances shown in this dialog will be changing. If it is desired to put a given waypoint that is in the MWT double-clicking on that waypoint will copy it to the drop down on the GPS panel. Give that a try.
12. If you have waypoints defined in SimGPS you can jump it ahead/back by first clicking on the Stop/Reset button and then specifying how many miles before a selected waypoint you wish to start. When you do this you will probably see an N/A (not available) appear for the Miles to Next county. This happens because the county detection logic assumes, for efficiency, that the next county is in the set of counties that are adjacent to the current county. A jump may go across several counties ending up in a county that is not adjacent to the current one. When this happens you will need to restart the county detection logic using menu item **GPS | Restart County Detection**. This jump phenomena only occurs in the simulated world but something similar can happen in the real world where the path passes through a tiny (<.20 mile) sliver of an adjacent county where the time spent in the tiny sliver is less than the time between GPS updates. Fortunately these cases are rare and when they do occur the program handles them automatically.
13. If you have additional virtual serial ports installed you could then set up a GPS Pass Through connection to allow real-time position tracking on a Streets & Trips or Street Atlas map file. The Pass Through connection on the CQ/X side of the exchange can be set up using the **GPS | Set GPS Parameters** dialog that is accessed from the GPS main menu. On the upper right hand area of the resulting dialog there is a checkbox for enabling pass through and a dropdown box for selecting the com port. The mapping program side of the communication will, of course, have to be configured in the mapping program.

## Activity 10: Connecting and Using a GPS

Now let's connect a GPS and see how the program performs with live data. Most of this has been covered in Activity 9 so the main new thing covered in this activity is for you to supply an actual GPS and to be able to connect it to CQ/X. The requirements for the GPS are that it be able to provide the standard NMEA-0183 sentences and that when connected to the laptop it shows up on a com port. A simple GPS receiver is all that is required and these can be obtained for about \$60. A GPS with full navigation capability is not required and often units of this type do not have capability of being connected to a computer. Also, if you plan to take a trip as part of this activity you should plan on either taking a driver along or to stop when you want to view the display in order to safely devote attention to the display. Of course a good place to start this activity is your driveway to see that the county detection logic is correctly detecting your county.

1. Physically Connect GPS - If your GPS has a USB output connect it to a USB port and if necessary use Device Manager to determine the com port on which it appears. If your GPS has RS-232 output on a DB-9 connector you may need an adapter. It is important to physically connect the GPS prior to starting up CQ/X since CQ/X only determines the available com ports on startup. Any ports established after CQ/X has started up will not be seen by CQ/X and it will be necessary to restart CQ/X in order to have those ports recognized by the program.
2. Startup CQ/X and change the contest to the QSO party for your current state and decline the loading of the previous PathKML used in Activity 9 since it does not apply.
3. Use the menu item **GPS | Local GPS** to activate the Ports Assignment dialog.
4. As you did in Activity 9 find the port to which the GPS is connected, set the Device (GPS), and Device Type (General NMEA). The standard baud rate for GPS is 4800 but some modern units are using faster connections

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- so check the documentation on your unit and set the baud rate appropriately. Click on the Connect button and after a few seconds you should see the status change to “Connected” and you can close the dialog.
5. After a delay of 10-30 seconds, depending on how long the GPS has been shut down, you should see the GPS panel on the left hand page control come to life with the number of satellites, latitude and longitude, current time, current grid, current county, etc. Near the bottom of the GPS status panel you will see a grid area labeled “You are in/near”. In the first row of the grid you should see an abbreviation for your current county with the notation that you are IN that county. The abbreviations for some other nearby counties may also appear but with the notation OUT. If you do not see any counties listed in this area make sure that the contest you have selected is for, or in the case of the regional QSO parties, includes, the state that you are in. You should also see your messages updated with the #‐sign replaced with the abbreviation for your current county. Note that the distances to waypoints and to next county will be showing N/A because you have not entered any information about waypoints or the drive path you plan to take.
  6. Assuming you are planning to use CW and have a keyer connected you should be able to send CQ, CQX, etc. If the pesky box appears asking for resolution of the #‐signs choose the Auto GPS option and try again to send the messages.
  7. If everything seems to be working and there is a different county close by then you might take a short trip to check out the county detection logic. As mentioned previously be sure to take a driver along or if no driver is available plan to stop when you want to check out the display.
  8. **Note regarding the accuracy of the county change** - At a speed of 60 mph you will cover about 293 yards in 10 seconds – the standard GPS update period in CQ/X. So as a worse case at that speed and with a GPS update period of 10 seconds you might see a delay of as much as 300 yards in detecting the new county. If possible you might want to change the update rate of the GPS. Cutting the update rate to 5 seconds would reduce the worst delay to about 150 yards. On the GPS parameters display there is the capability of setting an update rate that will increase (shorten the period) as you get closer to the new county and then once in the new county the rate will revert to its original value but for that to work you need to supply information to CQ/X regarding what the next county is going to be and the drive path you are going to take in reaching that county – that’s one of the benefits of providing a path KML. Another reason for a discrepancy in the change of county vs the county line marker is that the marker may not be placed at the same location as is indicated by the shape files used in CQ/X. Not much you can do about that – one user in Texas sent a note to the TXDOT regarding placement of a county line marker near Midland and as of this date several years later the marker had not been relocated!

## Activity 10: Connecting and Using a Radio

Radios are setup using the same Port Assignment dialog as we used for the GPS and the keyer. The program has been fully tested with the ICOM IC-706MKIIG, IC-7000, TS-480 and K3. It works well with those radios and should also work well with other late model ICOM radios and Kenwood radios but I have not had the opportunity to perform any tests with those radios. The Elecraft K3 has been tested extensively since that is the radio I use in my mobile and other contests. These and other radios are included on the drop down on the Port Assignments dialog.

1. If you are using USB adapters or straight USB connections be sure that they are inserted in the computer before starting CQ/X. Otherwise CQ/X will not see those ports because locates the ports on startup and any ports that appear after startup will not be recognized.
2. After starting CQ/X use the menu item Radio | Connect/Disconnect to open the Port Assignments dialog, find the com port to which your radio is connected, and set the Device (Left Radio) and Device Type (name of your radio selected from the dropdown) and select the appropriate baud rate. After clicking on the Connect button you should see the status change to “Connected” and the Test button will become enabled and will allow you to test moving the band and mode up/down to verify communication from the program to the radio.
3. Make some frequency and mode changes on the radio and verify that the program tracks the correct frequency and mode. If not, and you are using an ICOM radio check to make sure that the radio’s address is set to the standard value and that the baud rate being used by the program and the radio match and that the radio is set to Transceive which means that any changes that occur on the radio are broadcast.

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4. Also note that you can change frequency from the QSO Entry window. To do this you need to Set the operating limits of each band-mode using menu item Radio | Set Parameters. Now in the QSO entry window type 025 followed by the Enter key and you should see the radio change to 25 KHz above the bottom of the currently selected band. Similarly you can enter 14025 and see the radio change to that frequency.
5. You can also change modes from the QSO Entry window but here you will need an equal sign preceding the mode. So type =ssb into the QSO Entry window and you should see the radio change to the proper sideband for the current band and the mode shown on CQ/X will be simply PH.
6. Other ways of changing mode and band involve use of the mouse so they are not preferred in mobile operation. Hover the mouse over the frequency readout and click the right mouse button to bring up a popup menu from which you can select the band. Similarly hover over the button near the frequency readout that shows the current mode and right to bring up a popup menu of mode selections.
7. Also note that some radios have more controllability than others. To access other controls beyond frequency and mode click on the More button and select the radio option. This will activate a display specific to the radio in use and will allow control of some radio-specific parameters. If you are using a K3 you will find a replica of the K3 front panel from which you can issue control signals with the mouse and keyboard. This is useful in remote operation but in the mobile environment where the radio is usually at hand this display is rarely used.

The only requirement in items 4-5 of the above is that the frequency information must be entered as the most right hand part of any string that already exists in the QSO Entry panel and must be separated from the existing part of the string with at least one space. Following pressing of the Enter key the frequency information will be implemented and cleared from the QSO Entry window. Similarly for mode changes. Also the frequency entry should not be used in a contest where numerical data is part of the exchange.

Other radios such as the Yaesu FT100, FT-1000, FT-2000, and FT-9000 have not been extensively tested but DLL files for controlling those radios have been developed and were installed in the Devices subdirectory when you installed the program. If you wish to test the program with these radios and they do not show in the drop list locate the file Devices.dat in the Devices subdirectory and make sure there are no leading //on the entry for the radio you want to test and save the file. These radios will now appear on the Port Assignment/Setup dialog (you will need to restart the program) and you can see if the radio and the program can communicate. If you do perform these tests please send me an email with your results. In the future I hope to be able to fully test the Yaesu radios but in the past Yaesu has changed the CAT instruction set with every model making it difficult to maintain support for their radios. Icom radios generally follow the same instruction set from model to model so if your Icom radio does not show up on the list you can look for an IC-7000 and change your radio's address to that of the IC-7000.

## Activity 11: Setting Up User-Supplied Help

Now let's take a look at the menu item Options | Configure User-Supplied Help. First of all what is user-supplied help? Well, it's any file of information that the operator might find useful during the course of the contest and which he wishes to have quick access to from within the Help menu of CQ/X. These could be text files, bitmaps, mapping program files, excel spreadsheets, web pages either on-line or downloaded versions, etc.

1. Clicking on menu item **Options | Configure User-Supplied Help** will activate a dialog for defining the items to be included on the Help menu as User-Supplied Help.
2. Let's set up the county outline map for your state QSO party as one of these help items. To do this enter a label for the help which will appear as a submenu item on the Help Menu. For example enter the label "TX County Outline Map" and then use the browse button to locate the outline map in appropriate subdirectory under the Maps directory. This will bring the file name into the edit box and you can press the Add button to add the item to the list or you can first preview the item using the Preview button.
3. If you are using Streets & Trips and have a map of your route, Browse to the file and include it in the list with an appropriate label.

4. Now click on the Apply button to install these items on the Help Menu as submenu items under User-Supplied Help.
5. Go to the Help Menu and you should see the items you defined in the previous steps. Select the outline map item. You will see the outline map come up in a dialog box. On the box is a button labeled "Dock It". If you wish to have the outline map always available but wish to return control to the main program click on this button and note that the outline map now appears in a small scrollable window under a tab on the right hand page control.
6. Now select the item on the Help Menu corresponding to the Streets & Trips file. This should cause the mapping program to open the specified file.

Some other items I have found useful to include under user-supplied help are the email confirmation of Saturday night lodging, downloaded copy of the rules of the party saved as a single file web page (.mht) or, if available, as a pdf file.

### **Activity 13: The Startup Wizard**

With the addition of the GPS and its various options there are a number of steps in the startup process and it is easy to overlook something. The Startup Wizard is an attempt to assist in the startup process. It is mostly self-explanatory but the following will provide a review of each of the steps. It will be assumed in the following that you are resuming operation of a real contest so attention will be focused on related steps. If CQ/X is running shut it down and restart it.

**Startup Tab:** On each restart of the program the first screen allows you to select any of the following:

- Resume Previous Contest
- Start a New Contest selected from a list of supported contests
- Select options for how the Wizard should behave during startup and extent to which devices should be automatically connected
- Set up CQ/X as a standalone program or as a network client – this feature is not currently supported. Contact NO5W via cqxsupport if your use requires networking two or more instances of CQ/X

Assume you want to resume the previous contest and continue with the Wizard. Pressing the Next button will activate a containing a button for accessing the Port Assignments dialog. If in the previous session you have connected all your devices and do not wish to change any of the port assignments click the button labeled Restore-Connect-Close to reconnect all the devices.

This will put you back in the Wizard where you can either continue with the Wizard or use the Previous button followed by Skip the Configuration Wizard to terminate the Wizard. Assuming you want to continue with the Wizard the various tabs will walk you through some of the setup tasks. You can either elect to do the task presented by the Wizard or just continue on. The two most important tasks in addition to the Port Assignments are the message definition and key assignments. If you have already set these up satisfactorily in a previous session there is no need to redo them.

**Display Options:** Toward the end of the Wizard is a Display tab that allows you to check off some options that you might wish to change related to the display. Place a check in the box associated with each option. When the Wizard finishes dialogs will be presented for making those changes.

**Session Tab:** This tab allows you to define the operating sessions associated with the contest to enable the session clock to display the remaining minutes in the current session. The information is automatically filled in from the contest definition file but since some contests do not have well-defined yearly dates the option is available for you to change the dates and times of each session. For most contests this should not be necessary. On this tab you can

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also preview the sessions as well as set the rate at which the session clock updates. Once you are satisfied with the session setup and the update rate, press apply to start the session clock. Finally close the wizard and begin making contacts.

Since most of the data associated with the above steps is saved across a restart of the program the above steps consist mostly of quickly reviewing the data and moving to the next step. In fact it should be emphasized that the main use of the Wizard is in the initial setup for a contest. Once you have done that and are satisfied with the setup, including port assignments you can elect the startup option labeled “Load Previous Configuration, auto-connect devices, and skip wizard.

If you are using a tracking map (Streets & Trips or Street Atlas) it will be necessary to start that application and set up the com port that it will use to receive GPS pass-through data from CQ/X. Here it is advantageous to include the file defining the tracking map in the User Defined Help since by doing that you will not need to go searching for the file.

## Activity 14: Exploring Other Menu Items

If you completed all of the above activities you should have a good basis for a successful start using CQ/X. There are a number of other menu items and options you might like to explore most of which are either self-explanatory or are explained in some detail in the on-line help and the user manual. This activity introduces several of these with some brief comments. Also see the Operating With/Without GPS and Route Info and GPS Options items under the Getting Started menu.

**File Menu** – Use this menu to start a new contest and to finalize the log from a contest you have just finished. Be sure to finalize a contest as soon as you have finished it but definitely prior to starting the next contest. All contests use the same raw log file so if you fail to finalize a log it might get overwritten – especially if you ignore the warning that you are about to overwrite an existing log. You can also access the 3830 page for posting your results from this menu as well as setting up a backup log. A few of the items on this menu pertain to networked operation which has not yet been released. Let NO5W know via the cqxsupport page on the website if you are interested in a mobile operation using networked machines

**Edit Menu** – Most of the tasks on this menu can be accomplished with key strokes some of which are dedicated (e.g. Ctrl+W clears the QSO Entry window), and others which can be assigned to a function key of your choosing (e.g. Add Operator Note). It is recommended that you try to assign keys to perform your frequent tasks – use the menu item Keyer | Assign Function Keys or the Assign Keys button on the Key Assign tab.

**Display Menu** – Use this menu to change fonts of the QSO entry window, the log display and the similar calls display. You can also change the score grid from a horizontal grid in the center of the display to a vertical grid in the left hand tabbed area. You can also rearrange the order of the items in the center of the display if for example you want the radio area to be on top, etc. You can also size the display to just include the central area if that is desired. Of course in that case you will need to scroll the display to see the left and right hand tabbed areas. If you are only using one radio you can use the QSO Entry area for the right radio to display previous QSO info. For example, if you are doing S&P in a state QSO party duping is done on the basis of the county in which the other station is operating so in the QSO Entry window you won't see whether a station is a dupe until you have entered his call and county. However if you set up the right radio area to show previous QSO info you will see previous QSOs with a station as soon as you enter his call.

**Radio Menu** – You can use this menu to connect a radio to the program. Once this is done other Radio menu items become enabled. The Set Parameters item under this menu allows you to set max/min frequencies for each band. When doing S&P I like to start at the lower frequency for the particular contest and scan up until I reach the upper

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frequency and then repeat the process by entering F=L in the QSO Entry window. This will move the corresponding radio to the minimum frequency for that band as specified using the Set (Radio) Parameters dialog.

**Keyer Menu** – You can use this menu to connect a keyer to the program. Once this is done other Keyer menu items become enabled. The Set Parameters item under this menu allows you to set max/min keying speeds, speed increments and other keying parameters including Auto CQ. This menu can also be used to choose the option of having the Enter send CQ when the QSO Entry window is blank and for advancing through a QSO – called Enter Sends Message in some contest logging programs. This is also the menu that you use to edit your message and to assign function keys.

**GPS Menu** - You can use this menu to connect a GPS to the program. Once this is done other GPS menu items become enabled. The Set Parameters item under this menu allows you to setup the following: Alert Range at which the GPS calculations are performed at a specified rate usually faster than normal to improve accuracy of county line crossing detection, GPS pass-through for passing data to a mapping program for real-time tracking. This menu item can also be used to select a dialog for defining way points along your route that you wish to monitor -- e.g. distance to important turns and/or highway changes.

**Options Menu** – Included on this menu is the ability to have similar calls, from old logs that you load into the program, presented in a window in the right hand tabbed area as you type in call signs on the QSO Entry window. You can also enable auto-fill of information from previous QSOs in the current contest. It is a good idea to disable the Alt+F4 key combination which is a standard windows key combination for closing a program. You can also disable the screen saver from this menu.

**QP Tools Menu** – This menu changes depending on the contest. It's most extensive form is the one for state QSO parties where it is called QP Tools. Menu items include items for route planning, mapping, operation on a multi-county line; preparation of county logs, statistics, and summary sheets; and preparation of QSL log files for importing into a mapping program.