

# A Few Points on Getting More Points

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## Abstract

**Metal-in-air, butt-in-chair, submit your log.**

That mantra goes a long way, but there is much more to learn and do to improve your contest score. This guide has suggestions everyone can implement on any budget. Contesting takes practice and patience. Start by making a few improvements here and there, and over time it will add up to bigger scores for you and the club.

## 1 Introduction

Welcome to AEØEE's guide to getting more points in contests. I hope you will find the suggestions here useful. Topics have been arranged into three primary sections: operator upgrades, station upgrades, and technique upgrades. Not all of the tips will fit neatly into the categories. *Operator upgrades* concerns things which can be improved by increasing and demonstrating your own knowledge—these tend to be cheap, but require time. The second category, *station upgrades*, concerns things you can do to improve your station's hardware and software. Station upgrades tend to cost money, but an emphasis is placed on things which can be done relatively cheaply. The final category, *technique upgrades*, consists of things you can do during the contest to maximize your efficiency.

This is not a comprehensive guide, but a compendium of things I have learned about how to improve as a contester, geared toward lower-budget situations. I welcome additional material, questions, comments, and clarifications.

## 2 Operator Upgrades

### 2.1 Overview

Some of the most cost-effective ways to improve your score come from within. By maximizing your own knowledge and skills, you will maximize your score.

### 2.2 Maximized License

Upgrading your license is very useful for contesting. With the higher license classes come greater privileges on the HF bands. HF contesting is almost impossible with a technician

license (10 m CW and SSB, plus some CW on 15, 40, and 80 m). A general license is therefore a huge improvement. Furthermore, during the busy DX contests, having access to the extras-only parts of the CW and SSB bands will allow more big gun stations to be worked—especially some of the rarer DX. SSB DX on 40 and 80 m can be very tricky without an extra license due to differing allocations in the ITU regions.

License upgrades are also generally inexpensive. The exam fee is presently \$15. Study guides are often available in your library, several are available online, and there are plenty of Elmers willing to help you take your license to the next level. In the process, you'll learn about some of the details of radio which will help you make informed decisions about the hardware and techniques you employ. I have found the practice exams at Copasetic Flows to be quite useful, as it gives immediate feedback on each question.

## 2.3 New Modes

Just as important as upgrading your license is making sure that you can use all three primary contest modes (SSB, CW, and RTTY or other digital). For many ops, the clear places to focus are learning CW and trying out digital modes. A few ops would benefit from purchasing (or dusting off) a microphone [you know who you are, hi hi].

There are many resources for learning CW. From the CWops' CW Academy, to the Straight Key Century Club, to computer programs, there is a method to fit your style.

Personally I got my start with the computer program *Aldo*, which is free and runs on Linux. I also used AA9PW's Morse Code website to generate MP3 files of example QSOs. I supplemented those with *ebook2cw*, which could turn an ebook (I recommend adventure non-fiction) into a CW audio file. My graduate school living situation left me unable to get on the air from my apartment. However, it did allow me to have the ebook playing in the background much of the time, so as I cooked dinner or folded laundry I could be learning CW. I even left it on softly overnight, so I could listen to it as I fell (back) asleep. When I was able to get on the air, I joined the SKCC and began working on contacting 100 different SKCC members to earn a level advancement within the organization. But I digress.

Digital modes are another good opportunity to improve your capability. There are free programs out there for your computer, and they work reliably. It may take a little work to set them up, to get the right cables for your rig (though newer rigs may have a plug-and-play USB connection). Fortunately, there are plenty of hams who have managed to set it up, so if you need some 1-on-1 help, they are there.

## 2.4 New Friends

There is a lot of experience and talent in your local large contest club. We should all make use of that. See if you can find someone with whom to discuss your plans for an upcoming contest, get their feedback and advice, then follow up afterward (and after submitting your log!). It has been my experience that good contest ops often enjoy talking about what they do before and during a contest to rack up a big score. Metal-in-air, butt-in-chair, and submitting your log are all fairly obvious things, but there is definitely more to it, so see if you can coax [how many syllables did you read in that word?] some tips out of them. If you're an experienced

contester, you should help encourage some of the newer contesters, and teach them the ways of winning Sweepstakes and other contests.

You can also find yourself a contest buddy. Someone who will help encourage you to get in the contest in the first place, to submit your log afterward, and to keep your rate up in the middle. Contests with a serial number and multiple band/mode contact opportunities are a great opportunity, because when you hear your buddy on the air, you can make a contact and surprise them with how many contacts you've made!

## 2.5 New Skills, New Buttons

Another way to improve your performance throughout the contest season is to become familiar with your radio, and to do so through frequent practice. Each day or each week, pick one of the buttons or functions on your rig that you rarely or never use. Find out what it does, and under what circumstances it is useful. Are there times during a contest when it would be needed? It's easier to put in BIC time if you're doing something you enjoy, so between contests, learn something new about your hobby. Try VHF weak signal modes, or satellites. Read about antennas which differ vastly from the ones you've used. Be curious, and experiment!

Getting on the air outside of the major contests is good too. Call CQ on your favorite band. If you enjoy RTTY or CW, try your hand in the NCCC sprint on Thursday nights, or the CW Ops tests on Wednesdays. For a more laid back CW contest experience, join the SKCC and take part in their weekend sprintathon or SKCC sprint. Take your station to the field and pretend it's field day—finding a clear frequency will probably be much easier, though you may have to wait longer to get a response to your CQ.

# 3 Station Upgrades

## 3.1 Overview

In this section, you will find suggestions on how to improve your equipment. Most of these are geared toward the budget-conscious amateur (both in money and in space). Sure that 3-element 40 m monobander up 120' and 6/6 on 20 would be a great upgrade, but most of us can't do that (either in money or in space). So read on to see what *you* can do on your budget.

## 3.2 Metal in Air

After your radio, the antenna is probably the most important piece of equipment you have at your station. You can't make many contacts without some metal up in the air. Choosing a good antenna (or good antennas) is therefore crucial. The key here is to start simple and build up.

During a contest, you will make fewer contacts if you only use one band than if you can use several (obviously excepting the ARRL 160 and 10 m contests). Covering all of the contest bands is therefore highly desirable, and even more so in contests where multipliers count per band (e.g. CQWW DX).

In the summer of 2014 when I first moved back to Minnesota, I only had 15/40 m covered. Despite a lot of butt-in-chair time, I put up only modest numbers in NAQP and a few other contests. To remedy the situation, I built two resonant feedline dipoles (described elsewhere), one for 10 m and one for 20 m. The difference was immediate and immense. Building with quality materials, I spent maybe \$200 and a long afternoon for the two. A second pair of hands and more experience attaching connectors would have cut the time down significantly.

While I could have built a non-resonant antenna, such as a G5RV, I would like to be able to operate portably without a tuner. Additionally, non-resonant antennas are inherently less efficient, and that was a compromise I chose not to make. Your decision may not be the same as mine—every situation is unique, and station limitations and operator preferences are highly variable. The big idea, though, is you need some metal in the air and want to cover as many contest bands as possible. There are plans online and in the *ARRL Antenna Book* for all kinds of antennas, including the simple and cheap multi-band fan dipole. Find something to your liking and build it; call your Elmer (or ask for one!) if you need assistance.

For the low bands, consider a receive antenna, such as a K9AY loop, or a Beverage antenna if you have the space for it. There are plenty of designs out there, and it may be worth taking a look at Beverages and Other Low-Band Receive Antennas by Ward Silver, N0AX. QST had plans for several loop arrays for 160 m—including one rotatable loop array—in the March 2015 issue.

### 3.3 Labels

Once you have several antennas or bands to choose from, it can be complicated to keep one feedline separate from another. Use colored electrical tape or another labeling scheme to make quick identification of which band(s) a given feedline is for, or the length a spare cable. You may also want to mark your tuner and amplifier (or create a chart) with the approximate settings for each band. Think now about which cable goes where and does what, label it, and spare yourself the mental effort during the contest.

### 3.4 Baluns, Toroids, and RFI Suppression

Getting the signal to your antenna is important, but so is keeping extraneous signals out of your rig. Baluns, toroids, and other forms of RFI suppression can all help lower the noise, increasing your signal/noise ratio. This topic is far too extensive to cover fully here, so I will give an overview and strongly recommend K9YC's RFI, Ferrites, and Common Mode Chokes For Hams for a more comprehensive treatment.

A balun isolates the antenna from the coaxial feedline. After all, the shield of your coax is itself metal in the air, so it will act as an antenna if you let it. By using a balun, the outer part of the shield encounters high impedance, so current does not flow there. Use another choke at the radio end of the feedline to isolate the shield there, too.

During my time at the UC Berkeley amateur radio club, we had a terrible time with any vertical antennas we put up at the club station. A tri-band vertical was donated to us, in working order, but when we put it up, the antenna analyzer went crazy. We lay it down on the table, and it was just fine. Tilt it up, and it went crazy again. Some time later, in testing

my resonant feedline dipole, we pointed out to one of the new hams to the station where the AM broadcast towers were across the salt mudflat.

“Wait! The AM broadcast tower! It’s vertically polarized, high power, and right across a highly conductive mudflat!” With another choke on the feedline where it connected to the analyzer, the crazy SWR readings disappeared, and our antenna was measurable once again. Enough power was going onto the shield to keep the antenna analyzer from making an accurate measurement, but the choke was up to the task of keeping it out.

Toroids can also be useful to keep RFI from radiating from (or into!) ethernet cables, USB cables, phone lines, and other wires connected to electronics. By removing or suppressing these noise sources, you can improve your signal/noise. Remember, you can’t work them if you can’t hear them.

In many cases, toroids or RF chokes are best bought in large quantities from electronics dealers. Consider asking around your club(s) to see if anyone has extras, or if anyone would join in a group purchase. They are non-perishable, and quite handy to have around, so get a few more than you think you need. For \$50–100, you can get a big improvement in your ability to hear. Again, refer to the K9YC handbook or ask your local Elmers for details on what kind of choke is right for your situation.

### 3.5 Rig Integration

Modern radios and logging programs are built to communicate with each other. During a contest, this will save you precious time because your logging program will know what frequency your radio is tuned to, so you don’t have to enter it manually. Sure this isn’t much of a problem when you’re running a frequency, but if you are operating search and pounce, it’s night and day. The difference is big for a skilled typist, and if you are not great with touch-typing numbers, getting the automated frequency input is even more important.

Setting up rig integration takes two things: the proper cable (USB or a serial cable), and contest software which can use the USB ports (unless you have a real serial port on your contest computer). The cable will probably cost \$10–50 depending on what your rig needs and whether you need an adapter for it. Unfortunately, rig integration is not very well supported on Linux, so you may additionally need a computer which runs Windows and plenty of tissues to dry your tears at doing that.

Once you have the hardware, you will need to set your hardware to talk to the rig. This varies from rig to rig and software to software, but in general there will be a setting on your radio specifying its data rate (e.g. 9600 baud on my FT-857d), so you will need to tell the software to use the same rate. You may also need to tell your operating system to assign your USB a consistent name. As you are setting up your station right before the contest, tracking down which cable was assigned what port number is extremely frustrating. Getting things set up the first time can be a challenge. Once they are working, though, they tend to continue working. Ask your local Elmer if you need assistance. Remember, your Elmer is pulling for you; we’re all in this together.

## 3.6 Automated Keying

Does your left foot get tired during CW contests? Setting up automated keying can help. If you have successfully interfaced your rig with your logger, setting up the computer as a keyer should be fairly easy [says the guy who doesn't have this working]. You will need to define some macros before the contest (see the section on suggested macros) for things like your callsign, the exchange, and "agn". Once they are entered, each will just be one button press away, and your computer will key your rig with 100% machine-readable accuracy. HB4SHV will no longer be your nemesis. It does take some of the work out of the contest, but you will gain time from improved sending accuracy [at least, I lose a fair bit of time to poor sending].

## 3.7 Spotting Cluster

Like rig integration, using the packet cluster or spotting cluster can make a huge difference. That's why there are separate assisted and unassisted categories. For the little station, knowing where to find the multipliers makes your life much easier. It also helps to keep the other stations in your club informed as to where to find stations they might be looking for—or what frequencies to avoid calling on even though it may sound clear.

There are probably many different spotting cluster programs out there. I use and have liked CC User, a free spotting cluster client by VE7CC. It runs under Windows, but works well on Linux under Wine too. Setup is quick, taking about 10 minutes. You enter your callsign and location, then select which bands/modes/DXCC entities you wish to see spots for, as well as where the spots can come from. Those filters can be changed easily at any time. It also allows you to chat with or email other users (not that there aren't other ways of doing that these days).

## 3.8 Cluster Integration

Not only is it very useful to have a spotting cluster program, but they interface easily with your logging program. Once you set your filters correctly, and tell the cluster program and logging program which port each is using, you will have a very powerful tool at your fingertips.

Stations spotted on the cluster will be shown on your logger's bandmap. You can then click (or double-click) on that callsign on the bandmap, and your logger will go to that frequency and put the callsign into the entry window. With rig integration, this will additionally move your radio to that frequency. You're all set to get that VE8 station to complete your clean sweep in Sweepstakes.

Another big benefit of cluster integration is that logging programs make adding spots easy. There is often a command (e.g. [Ctrl]-t) to spot the current or last contact. However, remember the main rule of spotting: **work first, spot second**.

## 3.9 SO2R (Single-Op 2 Radio)

For the more serious contester with a bit more budget to play with, a second radio will keep the rate up. SO2R will require computer integration and automated keying. I don't have personal experience with SO2R and am unqualified to give much advice other than noting it

exists. However, there is a lot of SO2R expertise in your contest club and on the internet, so find an Elmer to help you along. Becoming proficient in SO2R operation takes practice. The Thursday night NCCC RTTY sprints are a good opportunity to try it out and test your set-up. If you start with RTTY, you don't have to decode in your head, and can focus more on pressing the right buttons.

### 3.10 Filters

Some rigs do not have high selectivity (ability to hear a weak signal near a much stronger one), such as the Yaesu FT-857d [I know from experience]. For CW, although you can use DSP so that you don't hear stations outside the narrowed bandpass, if they're loud enough to trigger the automatic gain control, you may not be able to hear the weaker signal consistently. If your rig doesn't let you hear the weak ones within 1-2 kHz of the big guns, you probably need to look into either a crystal filter or a Collins filter. During crowded conditions (Sweepstakes), these filters can make a huge difference. They can be a bit expensive, though. For the FT-857d, it was ~\$250 total for a 500 Hz CW/RTTY filter and a 2.3 kHz SSB filter (or about half that for either one).

## 4 Technique Upgrades

### 4.1 Overview

Now that you have upgraded your mind and station, dive into some other things you can do to improve your score, enjoyment, and odds for victory-flavored pizza at the next MWA annual meeting.

### 4.2 Contest Goals

The contest (and contest season) can be more exciting if you set a few goals. Make them reasonable, and perhaps even have a basic goal and a stretch goal. For instance, you might decide that for a given contest when you don't have full time to operate, you'll make 50 QSOs, with a stretch goal of 100. Or you could set a goal to beat your score from last year. With domestic contests, it can be fun to see if you can work all states. Maybe you make the goal there 40 states, with extra happiness for some of the perennial troublemakers (e.g. VT, RI). For DX contests, can you get 50 DXCC entities? Full DXCC in a weekend? Or you could see if you can work an all-time new one during the contest.

You might also set a goal for the season. It is not unreasonable to attain 1M points if you enter all the MWA-season contests, even from a modest station. If that's too much commitment, try for 500K points. Alternately, you might be the contester who has a goal of getting 3M or 5M points. Set your goal, make it reasonable, then go make it happen!

Write your goals down before the contest. Better still, let your contest buddy (or buddies!) know what your goals are. After the contest, you can compare how you actually did to those goals. It is a great feeling to have your contest Elmer talk with you after the contest and say

“Hey, you made a whole lot of QSOs during that contest! That’s great!”<sup>1</sup>

### 4.3 Submit Your Log

Once you have set your goal and have taken part in the contest, you need to submit your log. First, submit it to the contest organizer. Next, it can be helpful to submit the summary to 3830scores, a contest score reporting page. The latter will send you an email which you can then forward to the club, so your team will get proper credit for your points. When you send the score around to the club, mention what your goals were, and whether you met them. It’s fun to read about others’ experiences after the contest.

### 4.4 Planning

Have a plan for the contest. What is propagation likely to be? Will 10 m be open? Is 80 m going to be usable? During the two hours you have to operate, which band will give you the most contacts for the most points? Will the operators at the location you want/need be on that band at that time? This is where having some experience will come in handy. If you can spare the time, spend an entire (probably non-contest) day, and see how the bands change, when and where you hear operators from various parts of the country and world.

You should also plan things like when you might take off-time if you are putting in a full-time effort and there are mandatory off-times. When do you know it’s time to change bands? When should you abandon a run frequency? How long do you spend in the pileup for the HV0 station when there are plenty of non-mult stations calling elsewhere on the band?

### 4.5 Gain Control

Sometimes it can be advantageous when trying to pull a station out of the noise to turn down the RF gain, and turn up the audio volume (audio gain). When there are lots of big signals around, this can be a necessity to keep the automatic gain control from fluttering the volume up and down.

### 4.6 Help Them Hear You

When operating CW, you can use the non-uniform sensitivity of the human ear to your advantage. Most rigs use a side tone of 700 Hz. Human hearing is more sensitive toward 1.5 kHz – 3 kHz. If you move slightly above the DX frequency (generally 20–50 Hz), they will hear you a little bit more loudly.<sup>2</sup> You can also use this technique to pull out a weak one by moving them to a slightly higher audio frequency (sort of a mini-split). Don’t get too carried away, though, or you are likely to run into another loud station in your passband, or have the DX station not realize you are calling for them.

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<sup>1</sup>Elmers, it is makes your Whippersnapper feel good when you say things like this after the contest, so remember to congratulate them on a good/tough/exciting performance and a goal well met.

<sup>2</sup>This assumes a USB sidetone, which is often—but not always—true.

## 4.7 Effective Frequency Running

Running a frequency is often more efficient than search and pounce. You don't have to wait through a QSO or two just to find out that you've already worked that station before. For this reason, you should run when you can. Even a barefoot or QRP station can run a frequency, but know you may not hold it long. On the other hand, if propagation is good you might get in lots of QSOs before you lose it or need to move.

Find a clear frequency. Listen on it first, and especially on CW if you have narrow filters, make sure to listen up and down a little bit so you don't stomp on someone else. Before calling CQ, ask if the frequency is in use ("QRL?" or just "?" in CW) and give another station a little time to respond.

Keep it short. "CQ AEØEE AEØEE (con)test" is a good opener. The CW and RTTY skimmers are looking for a pattern of CQ CALLSIGN CALLSIGN (among others, and it is configurable), so by using this call, you will get spotted automatically in those modes. Once you're spotted by the skimmers, they won't spot you again on that frequency at that speed for another 10 minutes.

After the first call, you might switch to the shorter "CQ [contest name] AEØEE". This still gets the message across, and allows other stations to get to you more quickly. Additionally, if you leave off the "k", "test", "contest" or other phrase denoting "I'm done so call me now", it can help spread the pileup out in time. If you tell them when to call, they will all do so at the same time. Give them a chance to hesitate, and some will. You may get the early partial, you may get a late partial, but it's better than getting confusing noise.

When you complete a QSO, be consistent and brief. "Thank you; AEØEE" or "TU AEØEE" will usually suffice, as the "QRZ?" is implied. This allows you to get on to the next QSO more quickly, and saves your voice for making QSOs.

## 4.8 Hear Them

You can't work them if you can't hear them. If you're really struggling to make out their callsign while running, it might be worth your time to say "Sorry, no copy, please try again later" and move on. We all know and understand there are signals too weak to copy. Don't get too bogged down in one. If it is likely to be a new multiplier, you might spend some more time on them. In general, though, if you're trying to maximize your rate (and thus points) don't let the weak ones slow you down.

## 4.9 Spot Everyone

Spotting is a great tool for getting more points, if you remember one rule: **work first, spot second**.

During sideband contests especially, it can be very helpful to others in the club to have an up-to-date bandmap. If the search-and-pounce stations spot the people they hear (work), it helps keep the maps current and improves everyone's productivity. Nobody likes to find out after several minutes that the loud sideband station they have been listening to that finally identifies is a station already in the log. Using assistance can also keep you from running on

what you hear as a quiet frequency but that might have a bigger station on it inside your station's skip zone.

## 4.10 Go on an Expedition!

Read the rules carefully for the contest to see what the requirements are for submitting a log for the club if you are not operating at home. In domestic contests, logs can usually be submitted towards the club score if they were made within the club circle. That means that parts of extreme southeastern North Dakota and eastern South Dakota are still fair MWA territory. By going on an expedition to these parts of the rare WAS entities, you can rack up points as everyone trying to get a clean sweep contacts you, and all your points will count toward the club total. In DX contests, you can sometimes go on a DXpedition and count the points (or proportional points for multi-op efforts from mixed clubs) toward the club total.

## 4.11 Recommended Macros

- \* CQ [MYCALL] [MYCALL] test
- \* CQ [contest] [MYCALL]
- \* [THEIRCALL] [EXCHANGE]
- \* [EXCHANGE]
- \* [MYCALL]
- \* [MYCALL] [MYCALL]
- \* [THEIRCALL]
- \* AGN?
- \* TU [MYCALL]
- \* QRZ?
- \* SRY NIL SRY NIL
- \* GO MWA

## 5 Summary

There are many different things you can do to increase your score over the contest season. First and foremost, **metal-in-air, butt-in-chair, submit your log**. I hope you'll try making one or more of these upgrades this season, be it upgrading your license, trying digital modes, building a new antenna, spotting all the stations you hear, or running a frequency like a champ! While you're at it, see about finding yourself a contest Elmer, or find a Whippersnapper if you're in a position to be an Elmer. I'm looking forward to the season, and to hearing you on the air. Go MWA!