Introduction
Journeyman contester, active some in the late 50s early 60s but most activity since 1974. I operate primarily DX, 160, and NAQP contests.

Where are you from?

What level of contest experience?

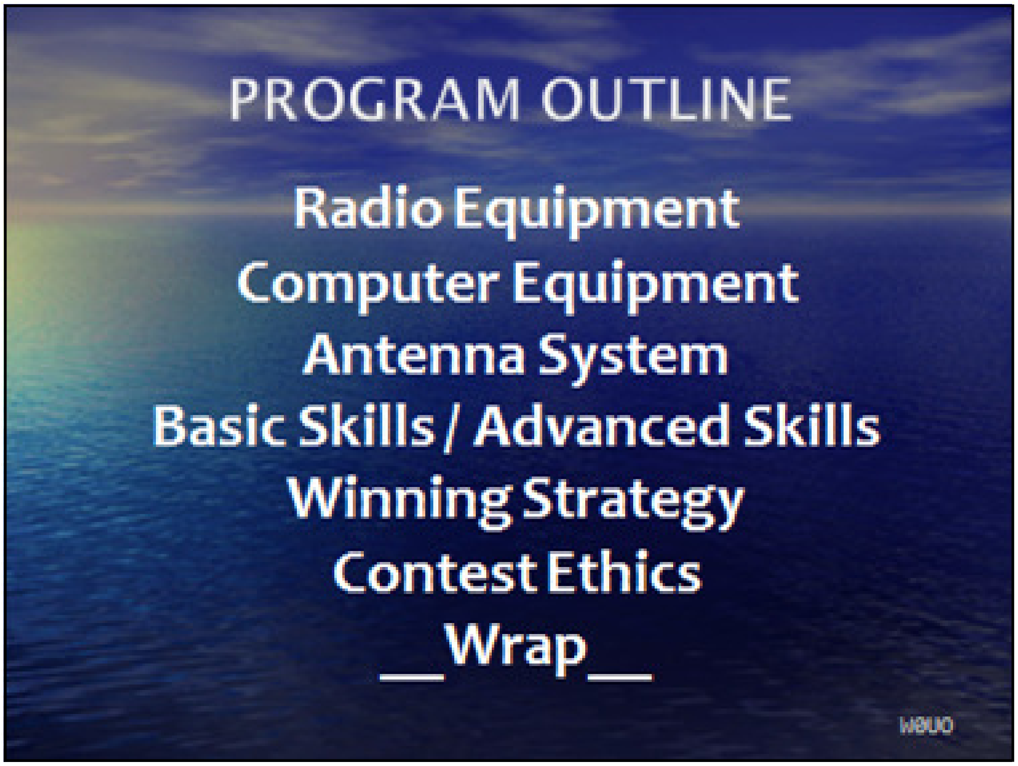
What clubs are represented?

There are no secrets to improving your contest efforts. There are, however, best practices we can implement.

This presentation will explain some of them.

All notes and slides for this presentation will be available from the DFW Contest Group website. We appreciate them providing the space to post these so you can enjoy them later.

Their website is DFW Contest <dot> com



These are the basic topics we will cover today………

Radio Equipment
Computer Equipment
Antenna Systems
Basic Skills & Advanced Skills
Winning Strategies
Contest Ethics

Take-Away notes

First let's talk about radio equipment in general

Four key measures of performance

Sensitivity - Most receivers are more than adequate

Selectivity - Most modern receivers are more than adequate

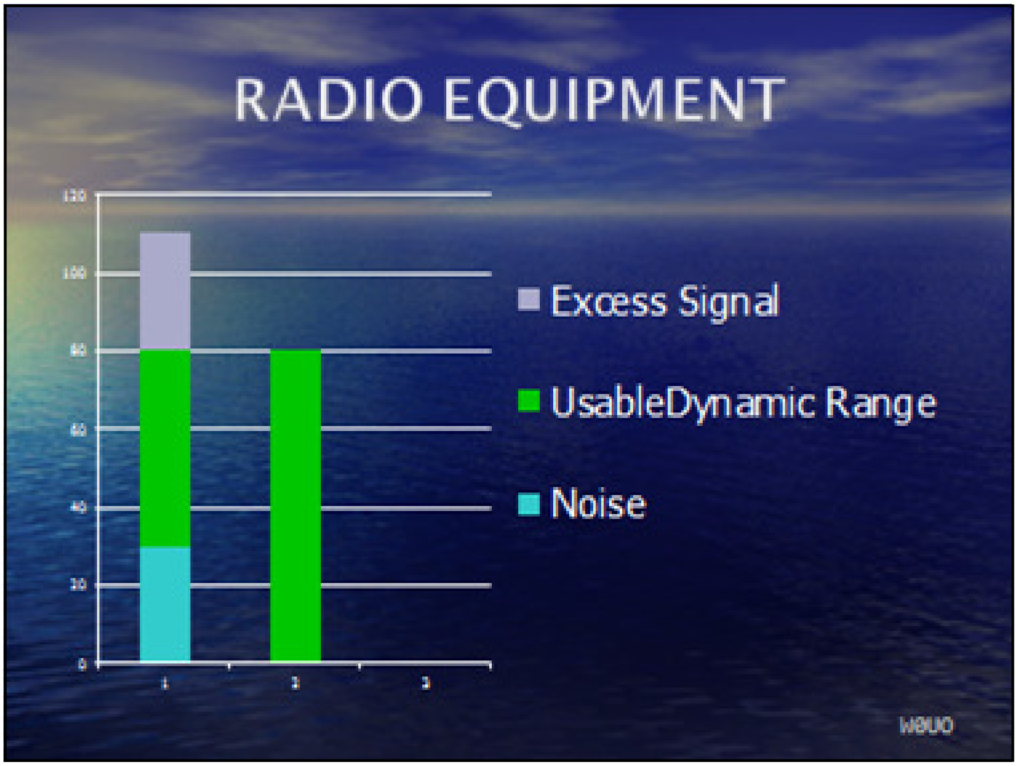
Third order dynamic range- A measure of strong signal handling capability

Phase noise - A measure of internally generated noise

Receiver performance data is available on Rob Sherwood, NC0B 's web page. A link is included in the handout.

In modern receivers and transceivers, the major remaining weakness is the ability to handle strong signals. Nowhere is this more important than in contesting where you are working hard to hear weak signals among very strong ones.

In my experience, the single best thing you can to improve the strong signal handling capabilities of your receiver is to use your attenuator appropriately.



This simplified example shows a receiver with an 80 db dynamic range operated with no attenuator vs the same receiver in the same situation with a 30 db attenuator in the presence of signals 80 db above the noise. The useful dynamic range is improved by 30 db., the same as the amount of attenuation.

This is a 60 percent improvement in usable dynamic range.

By the way, this is just about right for an IC-765 (80 db close in dynamic range) operating on a transmit antenna on 160 meters.

There is another benefit to the use of an attenuator. If the noise can be reduced to the level just before AGC action begins (perhaps less than SØ), weak signals tend to “stick out” a little more since the AGC does not attenuate them.

Radios, such as the K-3, allow adjustment of both AGC threshold and slope allow the operator to control the AGC system according to his or her taste.

Now for the transmitter.

Nothing is more important that to produce a clean signal. There are still too many signals with easily avoidable key clicks.

Causes include: Improper rise and fall times
improperly functioning QSK systems or by overdriving amplifiers.

On SSB, splatter, along with over processing is all too common. Mind your gain control, compression levels, drive levels, and background noise. Don't become a one man pileup.

On CW

No key clicks and minimum phase noise

Now let's look quickly at computer equipment

The computer doesn't need to be the latest and greatest
The computer must have enough serial, parallel, or USB ports to support your efforts., keying, voice messages, or station automation.

There are a variety of logging programs available, at least two are free.

Features vary, choose one that supports your needs both for operating and for record keeping

Computer & Station integration - Let the computer do as much work as possible so you have more time to work Q's

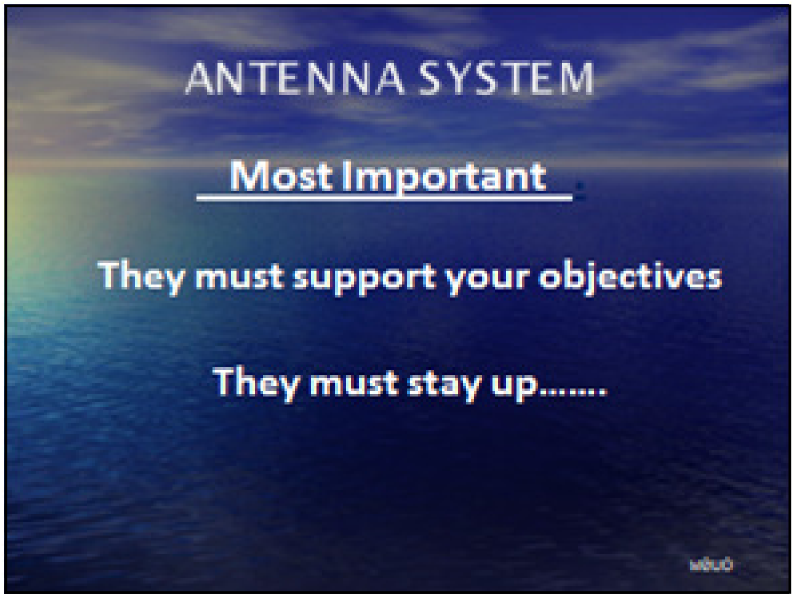
Minimum – log program will track radio band and frequency for you

Better – use wave files and CW macros to send exchange and CW calls

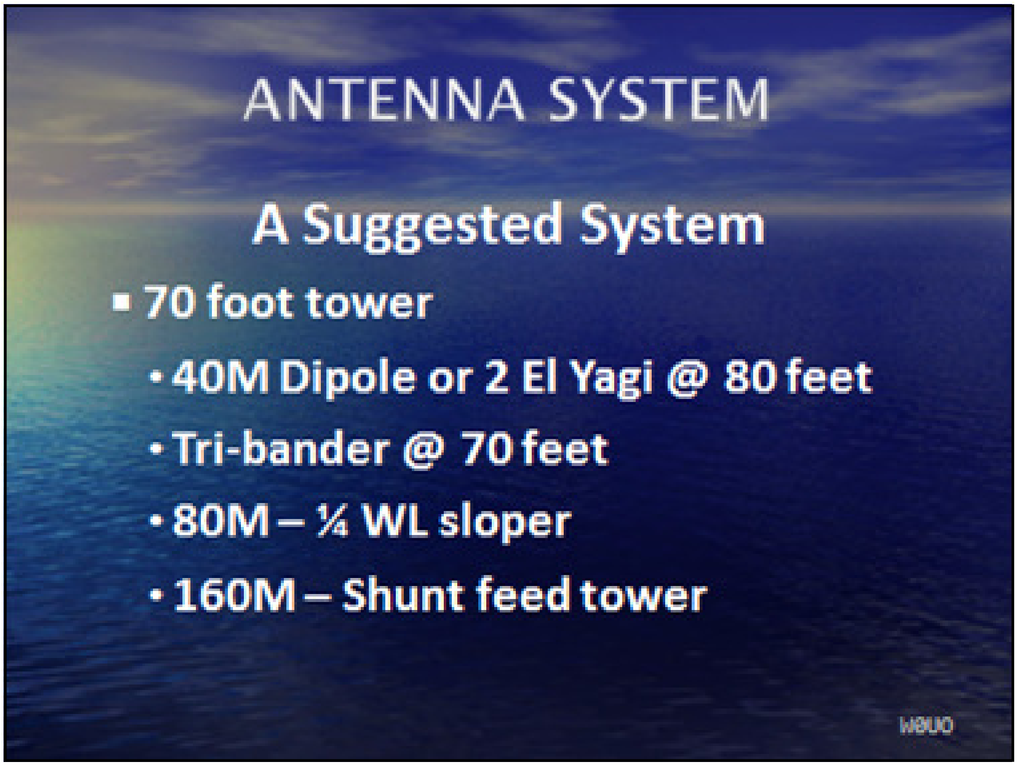
Some programs can change bands, tune spots, etc. Some also can manage antenna selection and direction for you.

<u>The more the computer does, the more time you have</u>

Now for antenna systems



If there is one area of ham radio with the most misinformation, it is antennas. The League will not accept advertisers gain, bandwidth, or front to back claims unless they can be modeled and verified in NEC4. Many fail the test. Comparison reports, based on measured data, for tribanders and multiband verticals are available. Check the classified adds in QST. Be sure to become familiar with antenna theory and with the requirements for the kind of contesting you want to do. That said, it might be more important to have antennas that stay up and require minimum maintenance than to have the extra half db of gain. In any antenna installation, pay serious attention to feed lines and connectors. **A BEST PRACTICE** is to ground feedlines at both the top and bottom of the tower. This minimizes the potential difference between the tower and feedline, preventing voltage induced pin holes in the feedline which will allow water to enter the cable. Another **BEST PRACTIC**E is to install PL259s as described the K3LR. The method is detailed on his web site, http://www.k3lr.com



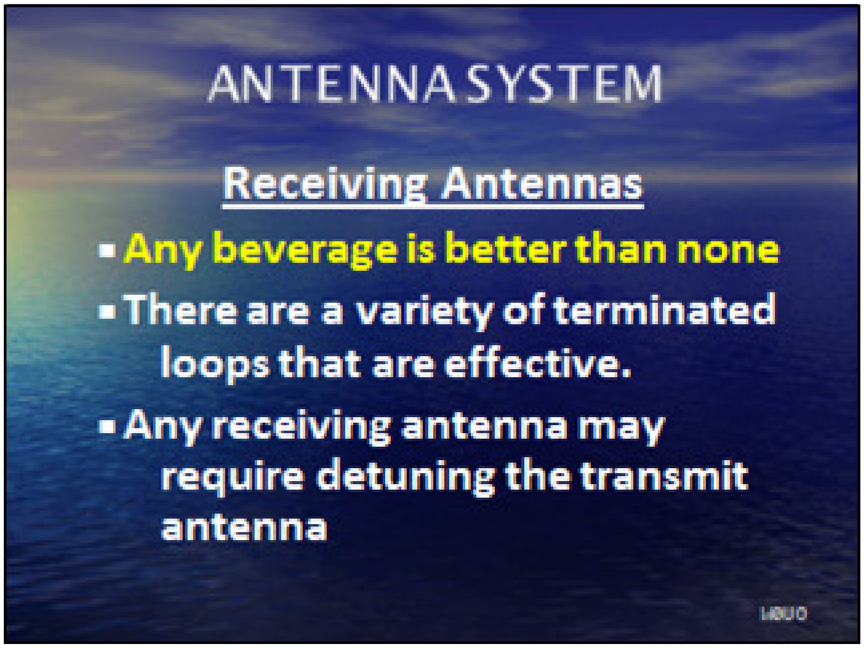
If you have the room and can afford a 70 ft tower, antennas can be arranged as shown. The performance of the 80 and 160 M antennas is dependent on a good ground radial system. Get as many radials down as you can manage.

Sweet spots:
40 M ½ wl, 70 to 80 ft – first overhead null
20 M 90 to 100 ft
15 M 70 ft
10 M 50 to 60 ft

If you are limited to a smaller tower, antennas can be arranged as shown here. On 160 meters the bandwidth will be restricted unless an extender wire can be added near the top of the tower to make it closer to resonance on 160.

Possible variation – Install a trap in the sloper and use it on two bands

This setup may not be as effective for Dxing, but will still play well for domestic contests.
If you have the means and time to evaluate terrain and wave angles think Dayton and Europe

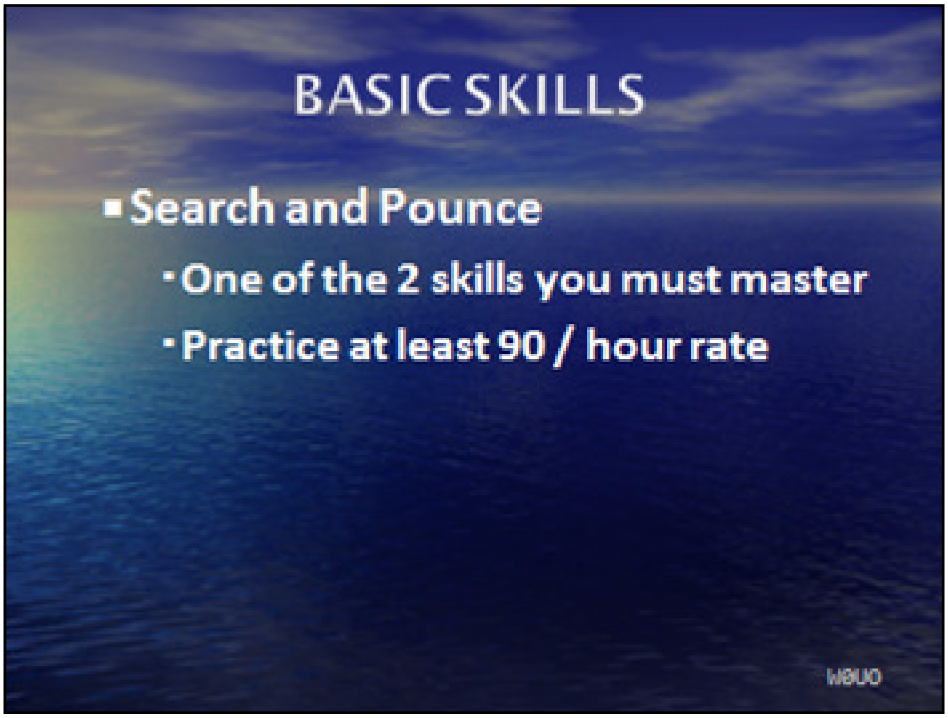


Magnetic Loops, Flags, Pennants, BOGs, Beverages all can be an immense help reducing interference and improving the signal to noise ratio on DX signals. The old saying is that any beverage is better than no beverage. Any receiving antenna is better than none.

Which ones you can employ depend, mostly, on how much real estate you have available. On smaller lots some form of loop, flag, or pennant antenna is probably the best bet. You will, however, probably have to detune your transmit antenna when receiving. For instructions on how to do this, consult http://www.w8ji.com and for further info on beverages http://www.qsl.net/k1fz/beveragenotes.html

Describe my bog system

Now on to the basic skill you need to be successful



The term "Search and Pounce" refers to tuning up (or down) the band, finding stations calling CQ or running stations, and working them quickly

Successful "S&P" operation requires that you be able to quickly place your signal where the other station is listening

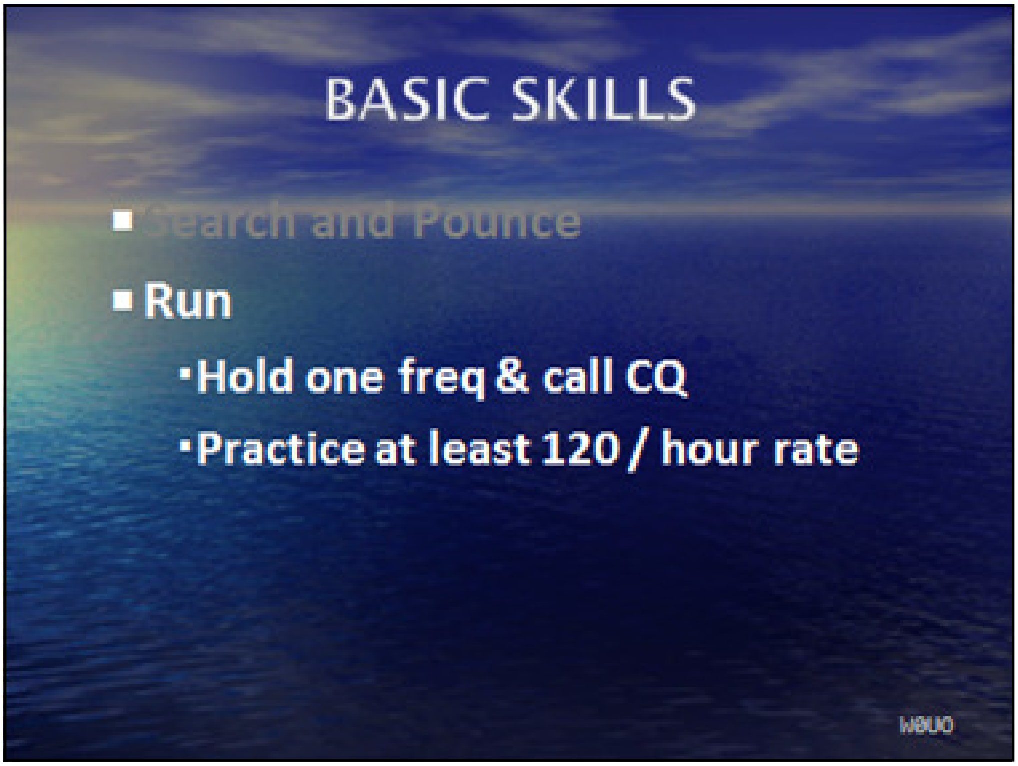
On CW, many stations do not listen exactly on their transmit frequency and may use a narrow filter. If they don't come back when you think they should, try moving up or down 100 Hz or so, your signal will not be loud if it is down the slope of the filter skirt

Don't get distracted. There is a tendency to go Dxing or for the fangs to come out and get into the "pileup crunching mode". Both are a waste of time.

Practice S&P until you can do so at a rate of at least 90 per hour. Upwards of 120 per hour is achievable.

On both CW and SSB timing is critical, on CW signal placing is also critical

Most of us will need to search and pounce for a significant portion of a contest.

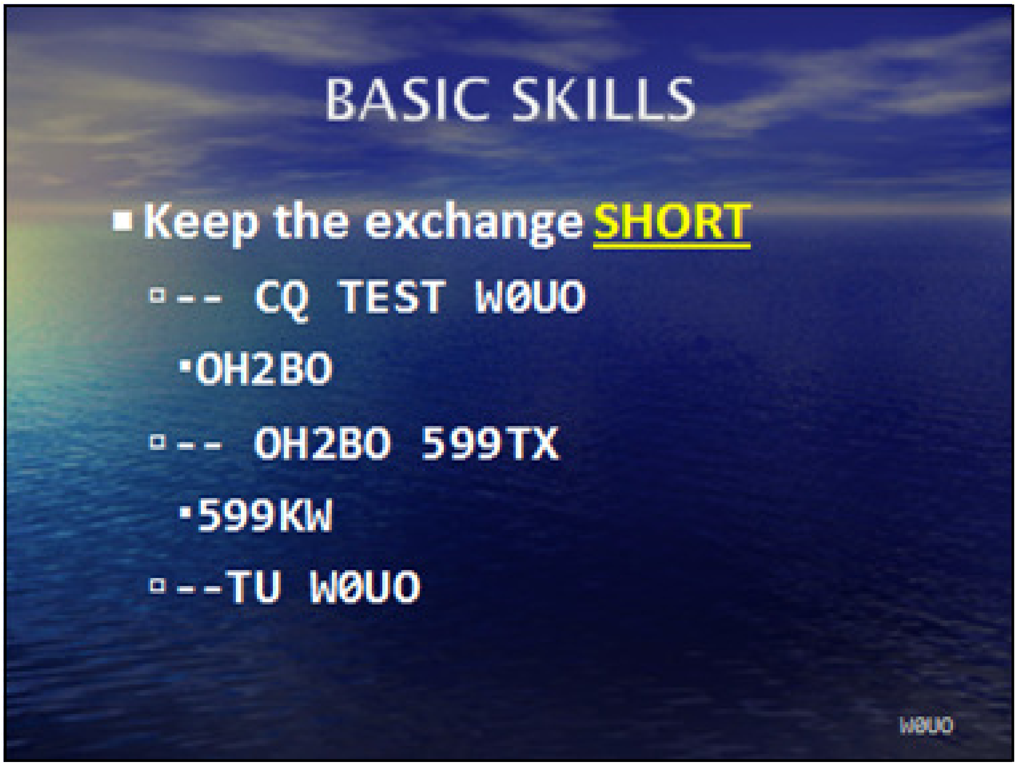


The skills necessary for effective "running" rest in your ability to pick one call out of many and the hand skills necessary to log them correctly at a high rate

How do you establish your first run frequency?

As a practical matter, the strength of your signal in the target area determines the place in the band where you can hold a frequency.

Keep busy, you should be in QSO or calling CQ every 3 to 4 seconds.
Silence invites encroachment.

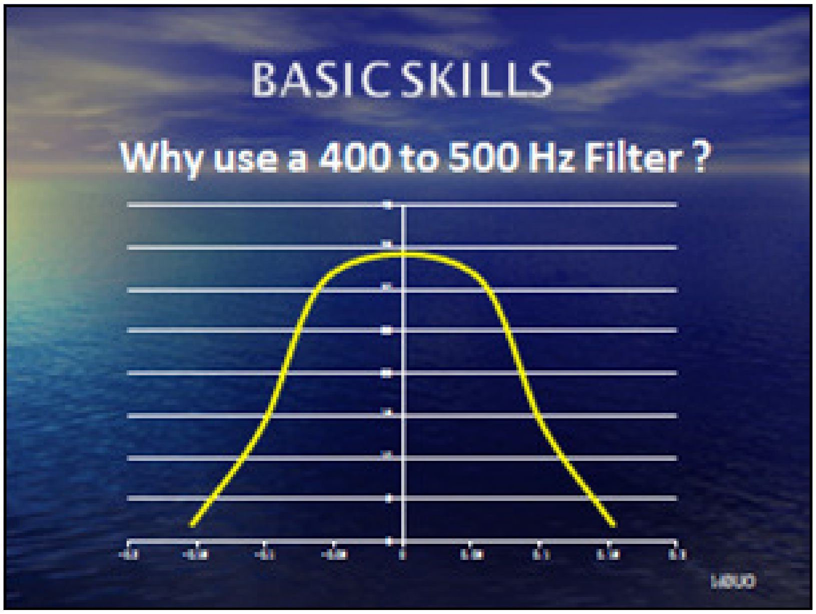


The length of exchanges can dramatically influence rate.

Keep your exchanges short, transmitting only that which is necessary to insure a valid QSO

When you know you have more than one station calling, respond only with TU or dit dit, You can shorten the response with use of the escape key

AVOID EVERY UNNECESSARY CHARACTER



I took some time during the 2010 WPX CW to try to determine the frequency range of stations answering a run station.

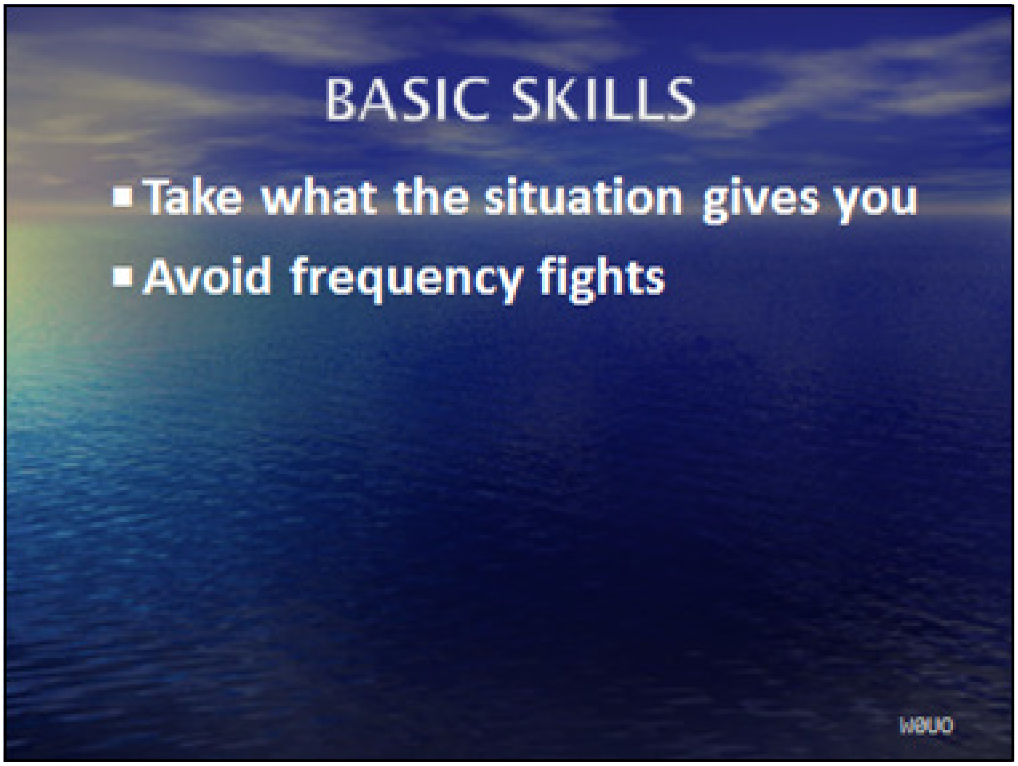
The samples were very similar, in this one, the mean was very close to zero beat and the standard deviation 51.1 Hz. The range. Then for 95.7 percent of callers is about + or – 153.3 Hz or 306.6 Hz.

This would indicate a filter of 400 Hz bandwidth at the -6 db points is about right.

It was interesting to observe that in each sample I measured, the running station was not hearing callers on one end of the distribution, missing about 10 percent of the stations calling.

When S&P, as I have said before, its important to zero beat (or place your signal in the proper spot) .

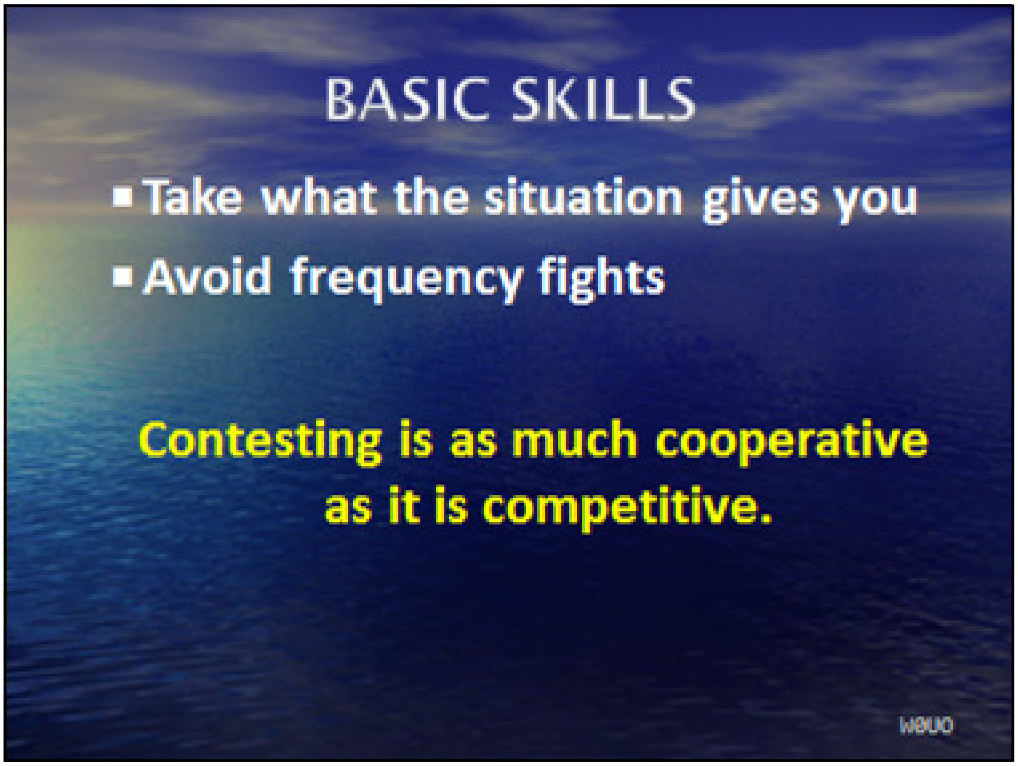
When running it is important to use a sufficiently wide filter.



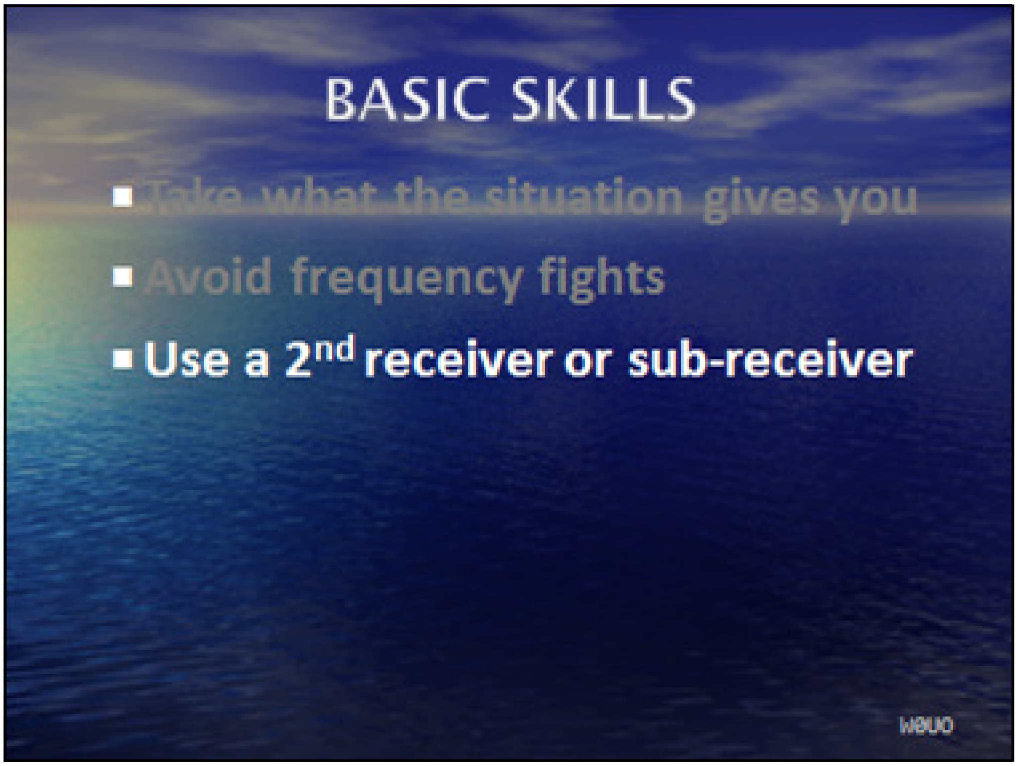
If someone moves directly on you, ask them to move

If they do not, try to work through them, but not for long, you can easily give up more than you gain

If someone encroaches on you, try to move up or down 100 to 200 Hz, often this will solve the problem



Remember, contesting is as much cooperative as it is competitive. Don't sacrifice rate to prove a point.



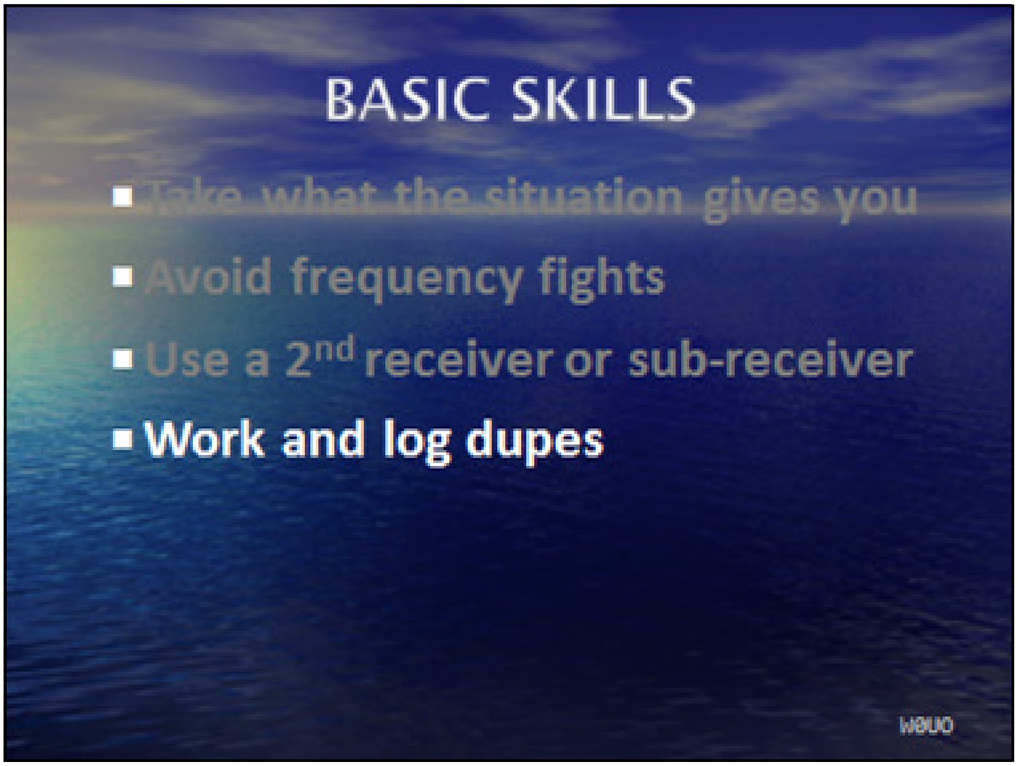
If you are fortunate enough to have, or be able to borrow, a second radio, within your capabilities:

Use it to spot band openings

During slow periods use it to pick up occasional extra multipliers on another band

Use it either to move multipliers or to honor a request to move

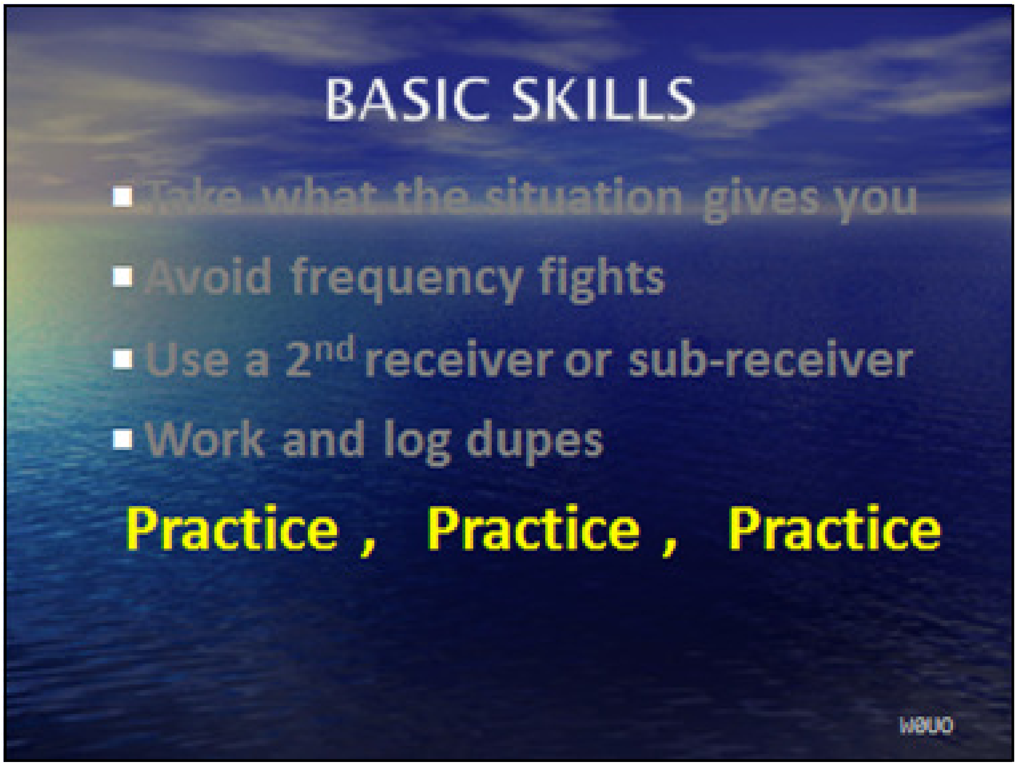
Full time use of two radios is an acquired skill. At first it is very confusing and remains so for many operators. Given that, it can still be useful.



There is no problem submitting a log containing duplicate contacts, they are automatically removed

The station may be in your log but not in his, failure to work and log him may result in a penalty to you and no credit to him

It is generally quicker to work them than to argue



Take every opportunity to participate in contests, even if only for an hour or two

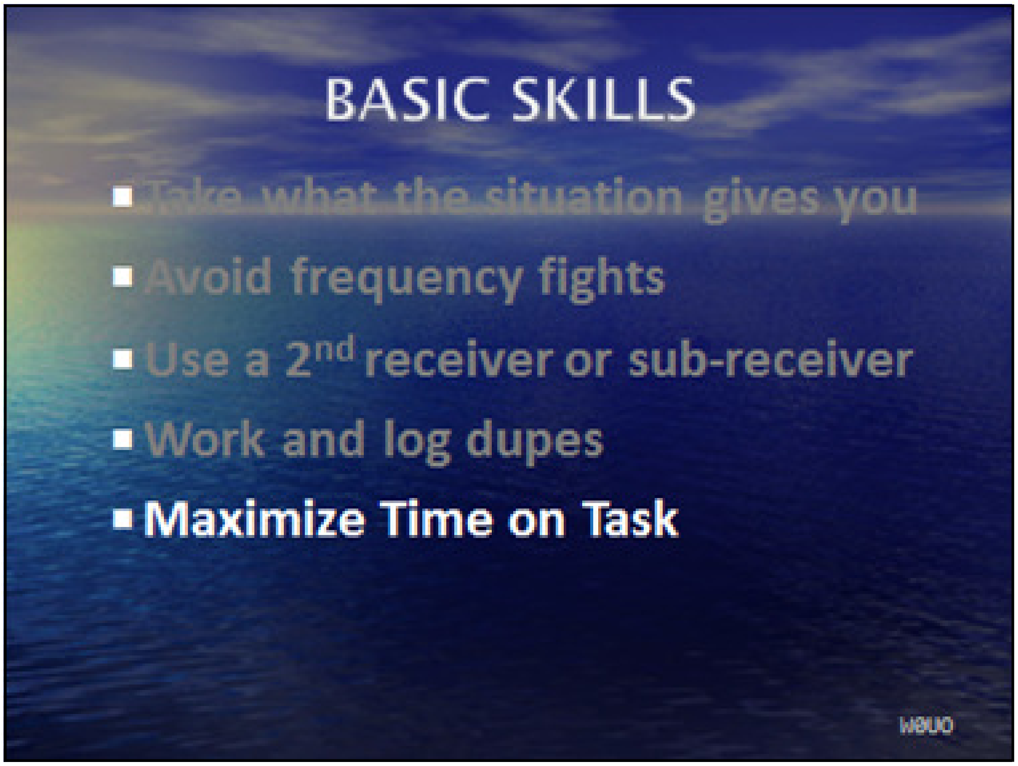
This will help the contest community recognize your call sign

Exposes you to many different operating environments

In your daily operating, work without an amplifier, this will sharpen your skills

Between contests use a contest simulator such as RUFZ or Morse Runner

Keep sharp, these skills degrade quickly



Time on Task

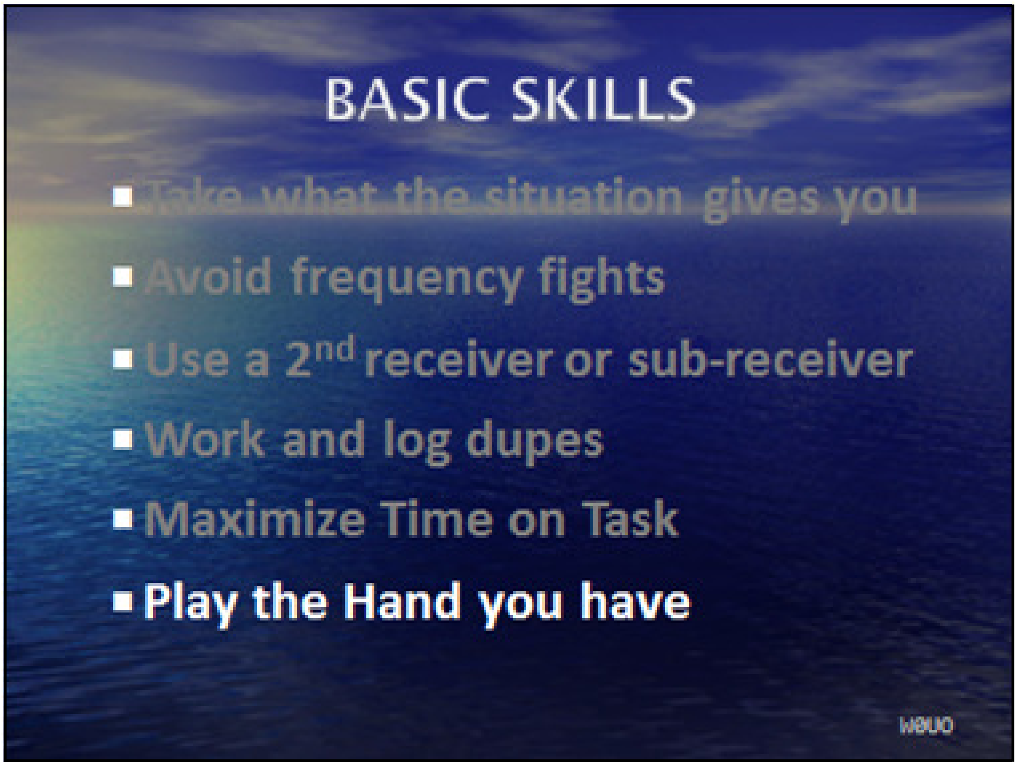
You cannot score well without investing significant time

Some contests such as Sweepstakes and the North American QSO Parties limit the time you may operate

In these instances, be sure to be on during the most productive times

Others, such as the CQWW and ARRL DX Tests do not

In these instances, learn how to
- Be on the air during the best times
- Rest during the least productive times
- Outwork your competition



Learn to Play the Hand with the Cards Dealt You

- Propagation, hardware, knowledge and skill are not evenly distributed among the contest community
- None of us possess every advantage
- Each of us does, however, possess some advantage

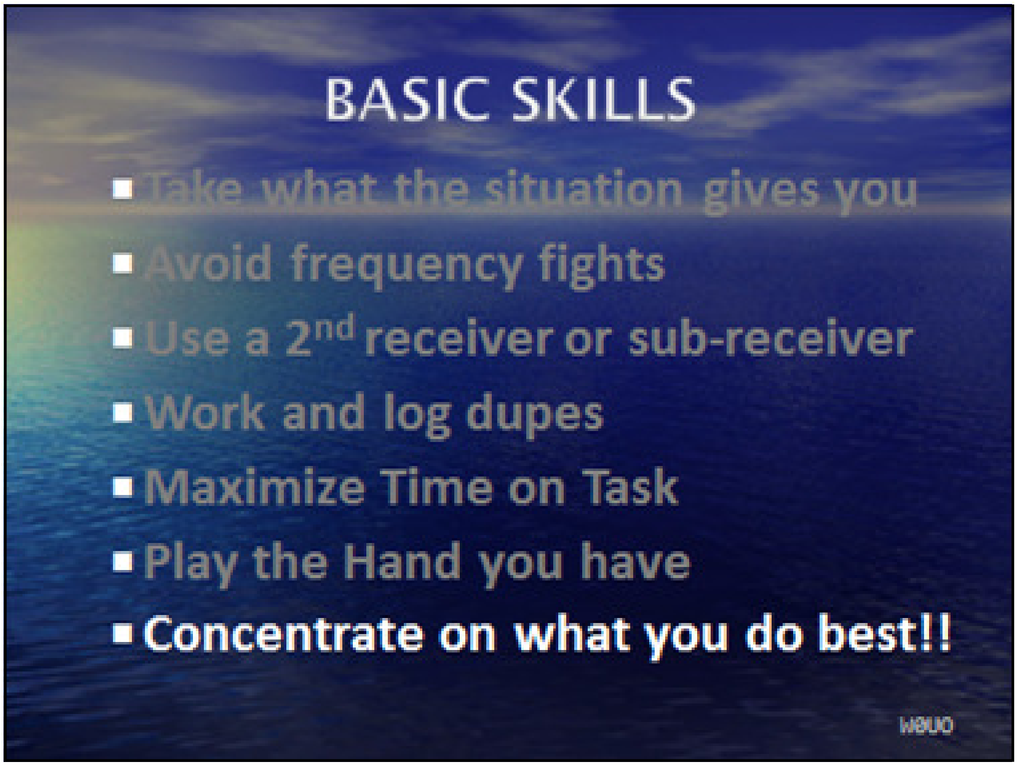
Here are the basics of a contest station – nothing fancy but quite competitive in contesting.
Place Computer Monitors and Radio Displays in Your Immediate View
Group Similar Controls in a Single Area
Place Least Used Controls at the Periphery of the Station
Automate as much as possible

Acquire a Comfortable Chair and Headphones

Thanks to Randy – W8FN

Is the operator right or left handed

Computer glasses



The Law of Comparative Advantage

Simply stated, the Law of Comparative Advantage says you will do best when you concentrate on the things you do best

Successful contest strategy rests on this principle

Assisted class – using spots and packet

Multi class– single or more

SO2R class – developing a split personality
1 operator
2 radios on separate bands at the same time.

QRP class – the ultimate test of contesting skills.

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Let's talk for a minute about Winning Strategies

Contest Planning
- Goal Setting
  - Aim high
  - QSO and Multiplier Goals by Band
  - Band Changes
  - Scheduled Off Times
  - Scheduled Rest
  - Be a Contrarian?
  - Be Flexible
- The benefits of goal setting
  - Keeps you focused
  - Gives you a target when to going is rough or when you are tired

A recent study by Sylvan, VE5ZX, has shown that, in general, the number of multipliers in a contest tracks the number of QSOs in a linear fashion

Rate is key

Within limits, the multipliers tend to take care of themselves

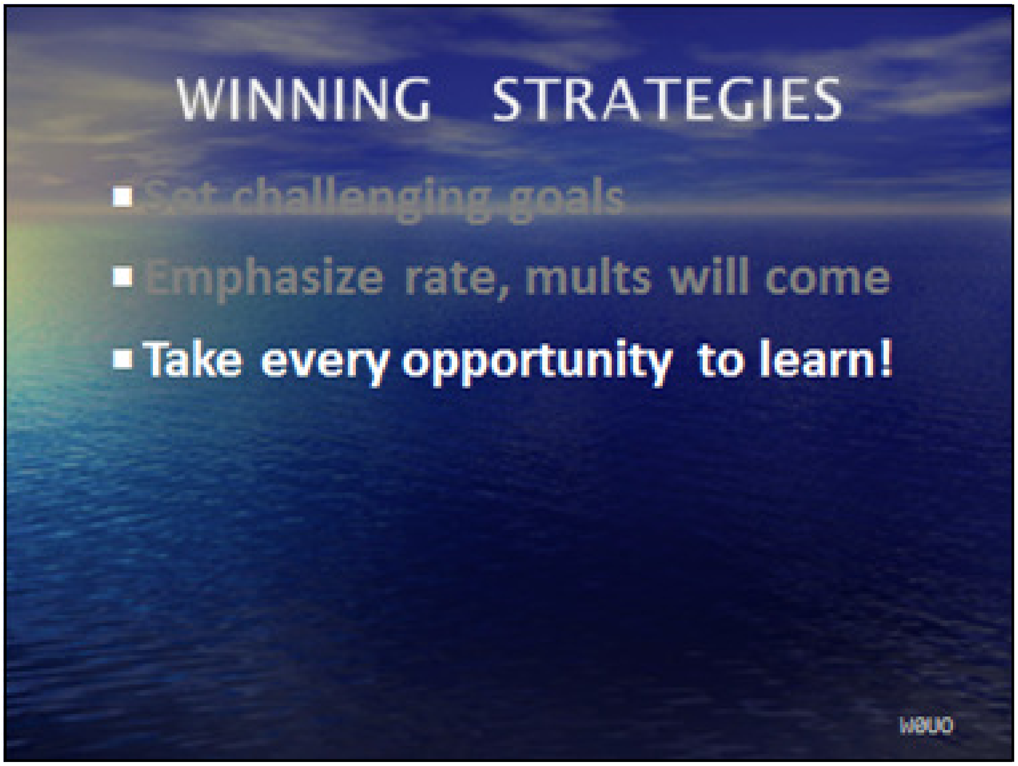
What can you do in slow periods?

Keep moving (keep the rate up)

Check your goals, what can you do to meet them?

Use a second radio or sub-receiver to spot unusual openings on other bands

Move multipliers (possible in SO1R, easier in SO2R, easy for a multi-operator effort)



Study contest rules and results.

This helps you make realistic plans

Read other contester's write-ups

Steal other's ideas freely

Study your Log Checking Reports

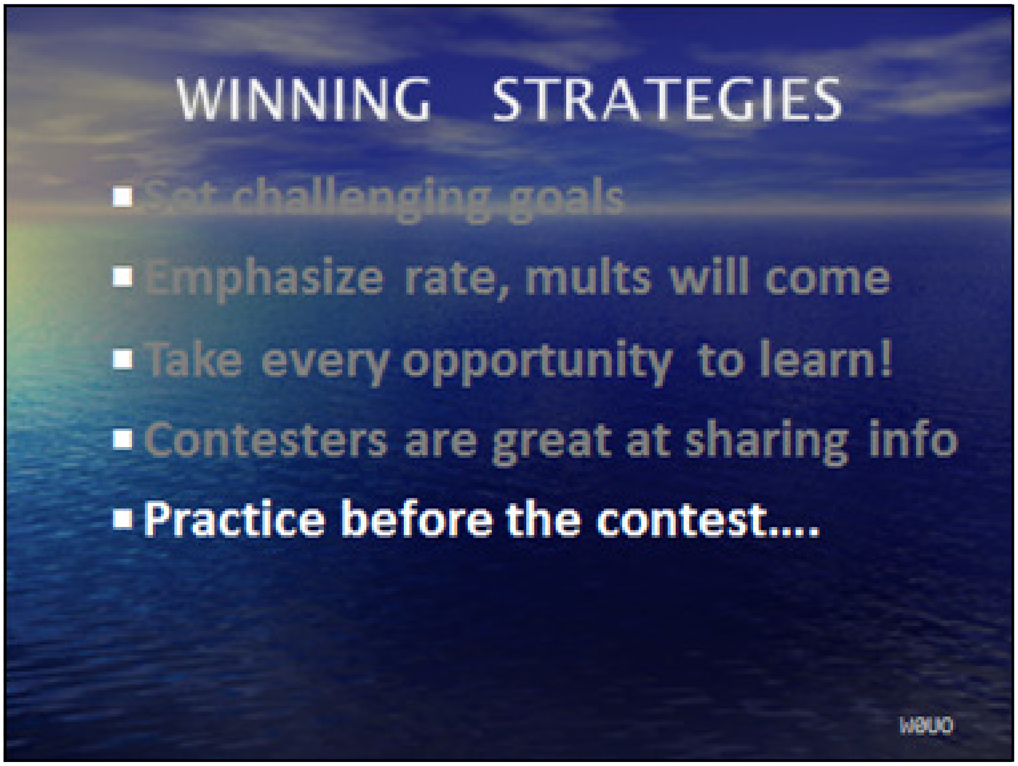
Detect and correct your habitual mistakes

Join a contest club (or a DX club if there is no contest club in your area)

Keep in touch with the contesting community via one or more mail reflectors

If given the opportunity, participate in multi single, multi two or multi multi contest efforts

Open your station to younger operators at every opportunity



Spend some time a few days before the contest starts to get conformable with your station and software. Give you ear and brain a chance to brush up on hearing and logging at the same time.

Also, double check the gear, the batteries in the equipment, and all the connections before you need them.


A WORD ABOUT ETHICS
W8UO


A WORD ABOUT ETHICS
Practice good sportsmanship
Follow the letter & spirit of the rules
Keep your transmitted signal clean
W0UO


TAKEAWAY POINTS
W0UO


TAKEAWAY POINTS
Make best use of what you have
Sharpen your skills & add new ones
Set goals that challenge you
Maximize operating time
W0UO


TAKEAWAY POINTS
Make best use of what you have
Sharpen your skills & add new ones
Set goals that challenge you
Maximize operating time
-> HAVE FUN <-
W0UO

As presented at Ham-Com 2012