

Ham Radio Contesting

Everything You Need To Know



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January 4, 2019

What Is Contesting?



- Also known as "Radiosport"
- Competitive Amateur Radio Operating

Work As Many Stations As Possible
In As Many Places As Possible
As Quickly As Possible

How Popular Is Contesting?

Logs submitted in the "Big Five" HF Contests 1996 - 2010
ARRL DX, CQWW DX, CQWW WPX, DARC, JARL
CW, SSB, RTTY & Mixed-Mode

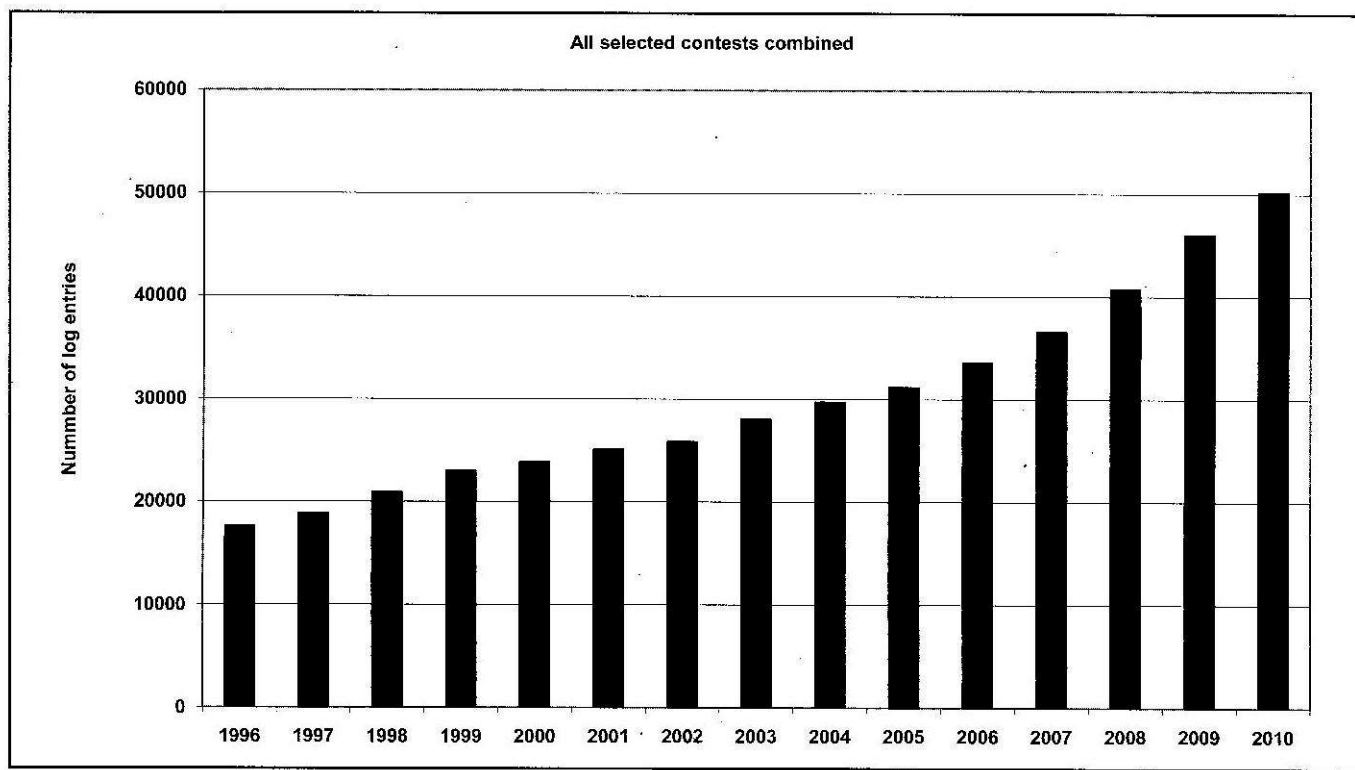
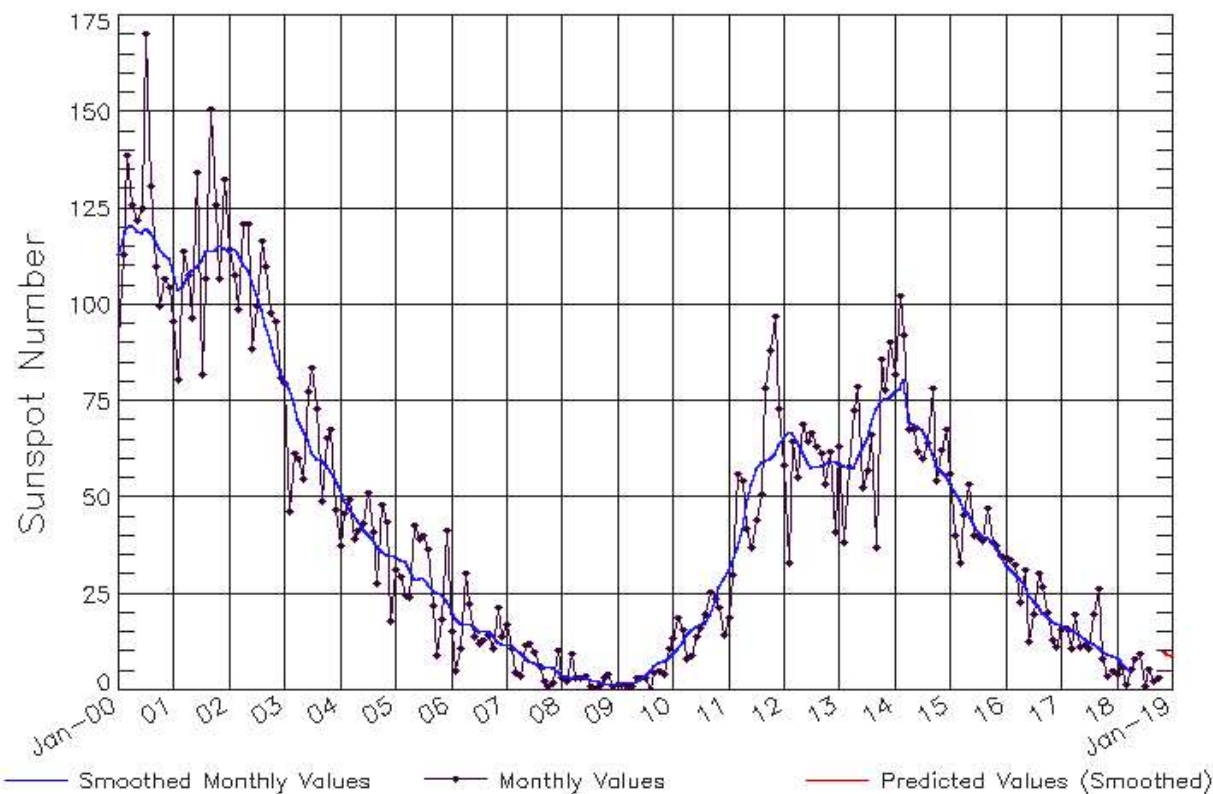


Figure 6 — Total combined participation over the years

HF Contesting Participation Sharply Increased ...

Even as Sunspot Activity Sharply Decreased!

ISES Solar Cycle Sunspot Number Progression
Observed data through Oct 2018



Updated 2018 Nov 5

NOAA/SWPC Boulder, CO USA

And That Trend Continues

■ North American QSO Party: 2001 - 2007

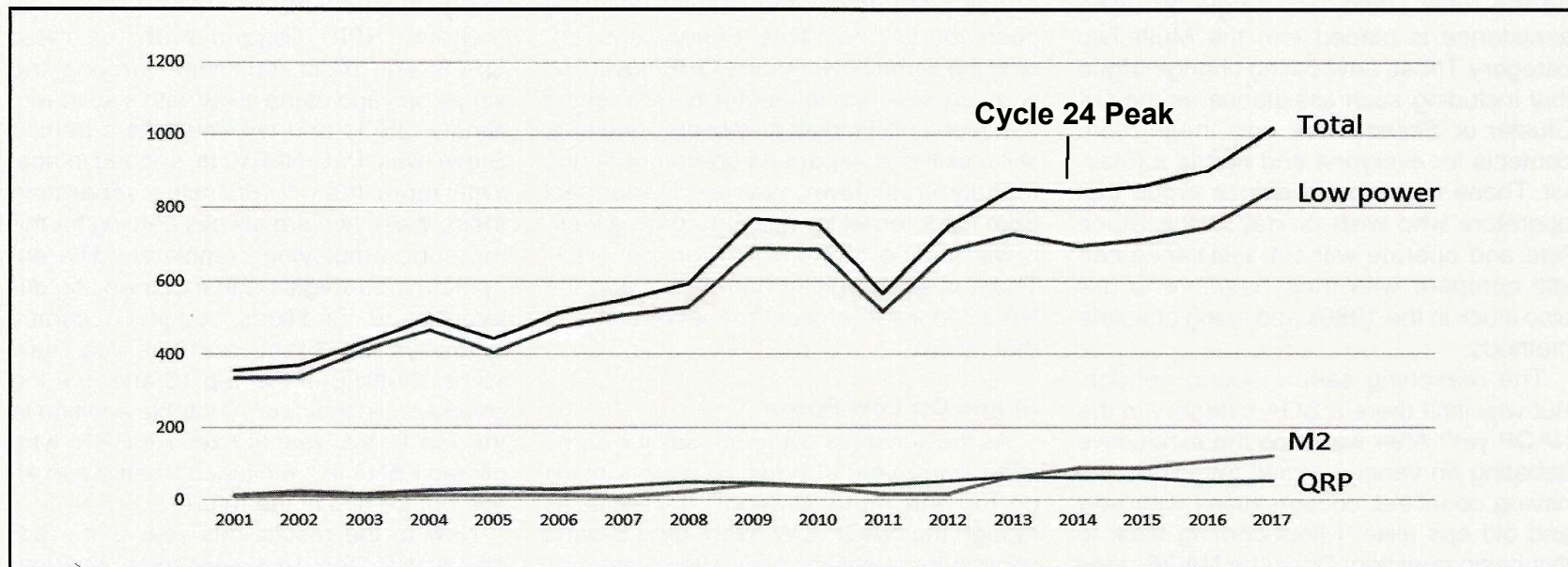


Figure 1 — Logs submitted for the January NAQP, 2001 through 2017.

What Class License Do I Need to Contest?

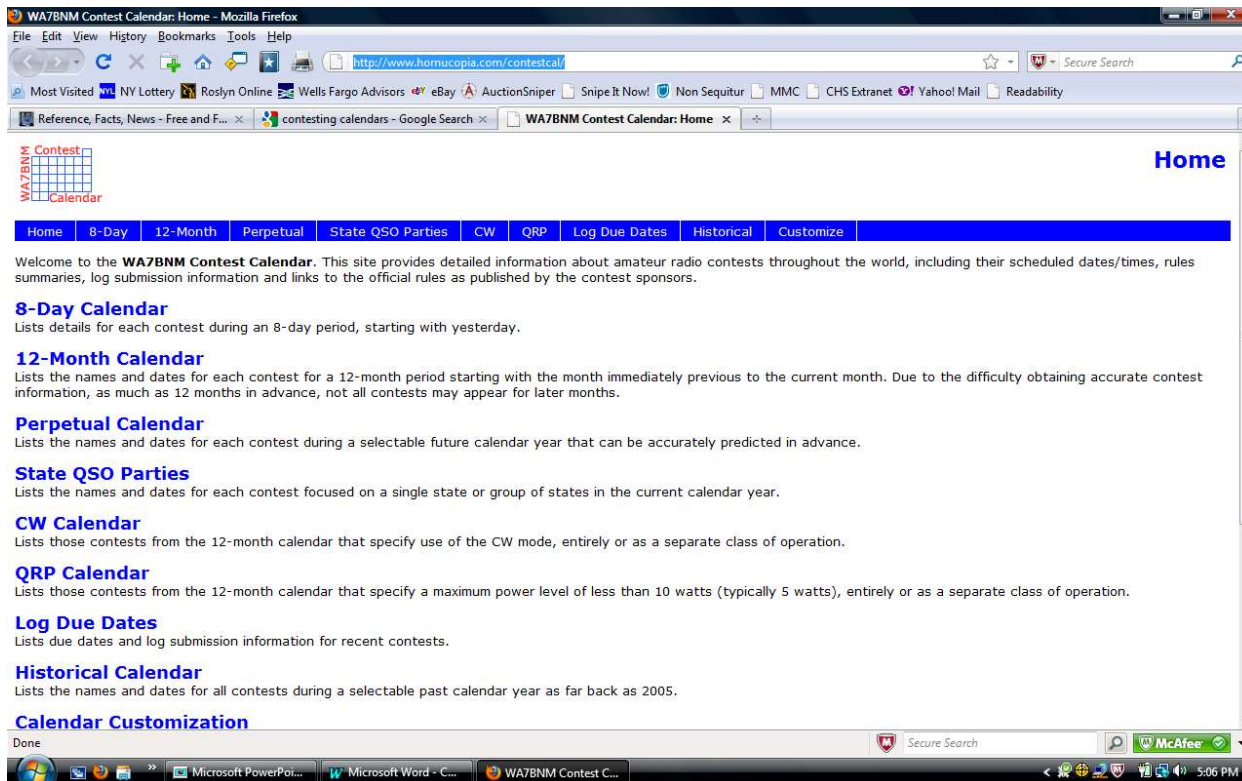


- All Amateur Radio licensees can participate in contests.
 - | Novices and Technicians can operate
 - In VHF/UHF Contests
 - HF Phone on 10-meters (28.3 - 28.5 MHz)
 - HF RTTY/Data on 10-meters (28.0 - 28.3 MHz)
 - HF CW on
 - 80-meters (3.525 - 3.600 MHz)
 - 40-meters (7.025 - 7.125 MHz)
 - 15-meters (21.025 - 21.200 MHz)

How Do I Find Out When The Contests Are On?

■ WA7BMN Contesting Calendar

■ <http://www.contestcalendar.com>



What Do I Do First?



- Decide ***which*** contest(s) to operate:
 - HF or VHF/UHF?
 - Small (short) or Large (long)?
 - Domestic or DX?
 - CW, Phone, RTTY/Digital?

I See Dozens of Contests. How Do I Find Out How They All Work?



■ Each Contest's Rules Explain:

Dates/Times

Bands/Modes

Objectives

**** Contest Exchange**

Entry classes

Scoring

Log submission (How to “enter” the contest)

What Do I Send & Receive In A Contest QSO?



What are all those numbers?

- Each contest QSO consists of an exchange of information:
 - The “exchange” is defined in the contest rules
 - | Name and State
 - | Signal Report and QSO Number
 - | Signal Report and IARU or CQ Zone
 - | Signal Report and Grid Square
- You must receive and accurately log the exchange for QSO to be valid.

No matter what the actual signal, everyone gives and seems to expect in return a 59 or 599 signal report. Why?



- Contest signal reports are NOT intended to convey information about the quality of the signal. They're just part of the the Exchange.
- Contest rules usually state that the Exchange is comprised of "A signal report and..."
 - Not an "actual" or "accurate" signal report
- Using only 59 means one less piece of information to actually copy. Speeds-up QSO's.
- In cw 599 can be shortened to 5NN
 - ----. ----. Shortens to -. -. .

What's all that information that has to be exchanged in the ARRL Sweepstakes?


- The Sweepstakes exchange is longest of any contest and corresponds to the heading on an NTS Radiogram:

Number Power Call-sign Yr Lic Section

| | | | |

THE AMERICAN RADIO RELAY LEAGUE RADIOGRAM VIA AMATEUR RADIO							
NUMBER <u>001</u>	PRECEDENCE <u>R</u>	HX <u>A150</u>	STATION OF ORIGIN <u>wa8llm</u>	CHECK	PLACE OF ORIGIN <u>Parkersburg, WV</u>	TIME FILED	DATE <u>Dec 12</u>

So, what band(s) should I work, and which stations, and how much time should I spend, and should I call CQ, or answer CQs, and...??



*"If you don't know where you're goin'
any road will take you there."*

--- George Harrison

Random Operating Can Be Fun, But Better To Have Goals, Strategies & Tactics



- **Goal** - The *objective* of your contest operation
- **Strategy** - The *plan* for accomplishing your goal
- **Tactics** - The procedures or maneuvers used to *implement* your plan

Goals / Strategies



■ What's your objective?

- Highest Score
- Number of QSO's
- Multipliers
- Countries
- States
- Prefixes
- Grid Squares
- **Just Have Fun!!**

■ What's your plan?

- Entry Category
 - Single/Multi-Op
 - Single/All Band
 - Single/All Mode
 - Assisted? (Spotting Networks)
 - Power Level
- Hours of Operation
 - How Many
 - Time(s) of Day

Tactics



- **Run**

- Call CQ

- **Search & Pounce**

- Tune the Bands

- **Band/Mode Switches**

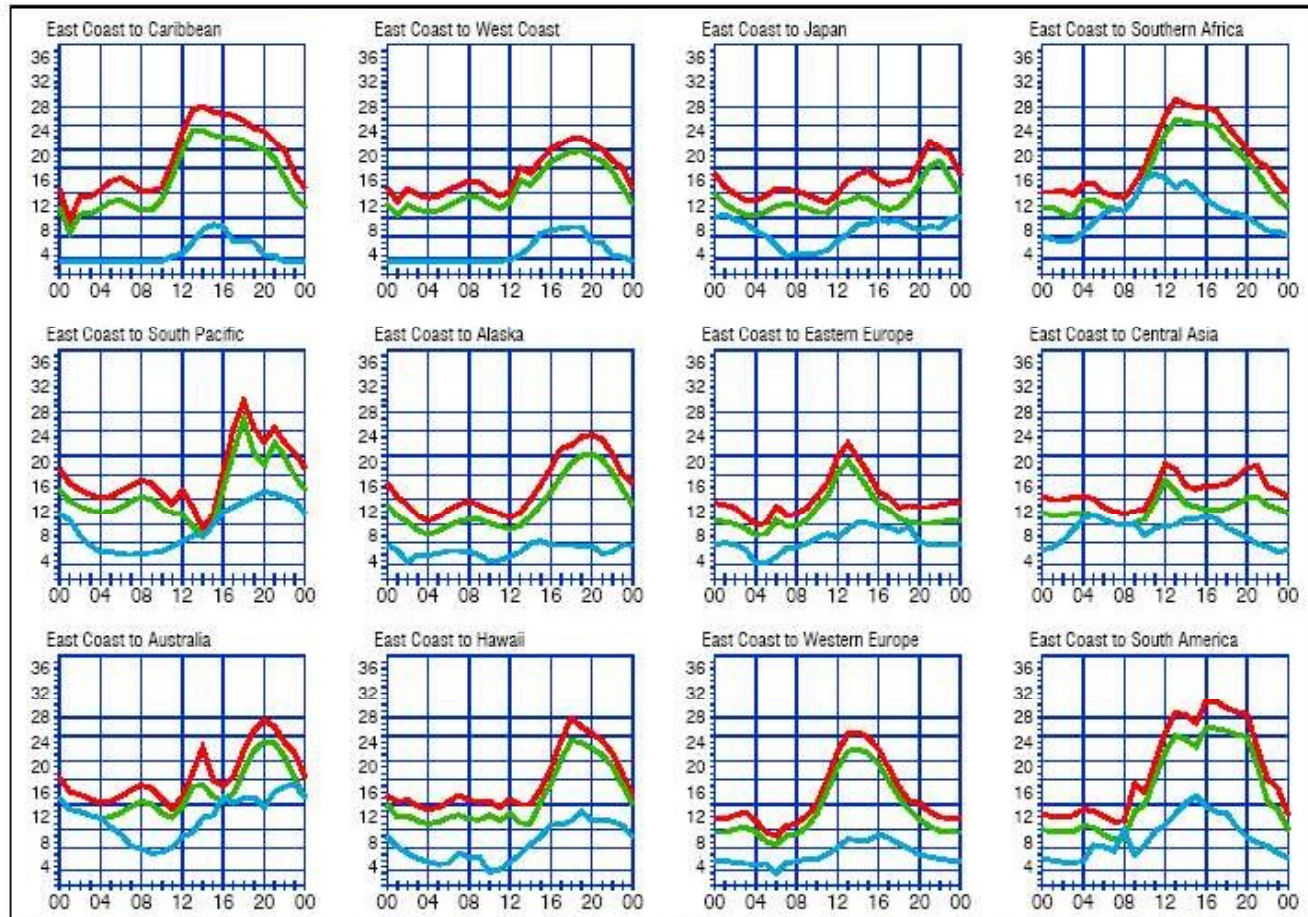
- QSO Rates
 - QSO "Value" of Multipliers

- **On/Off Times**

- Gray Line

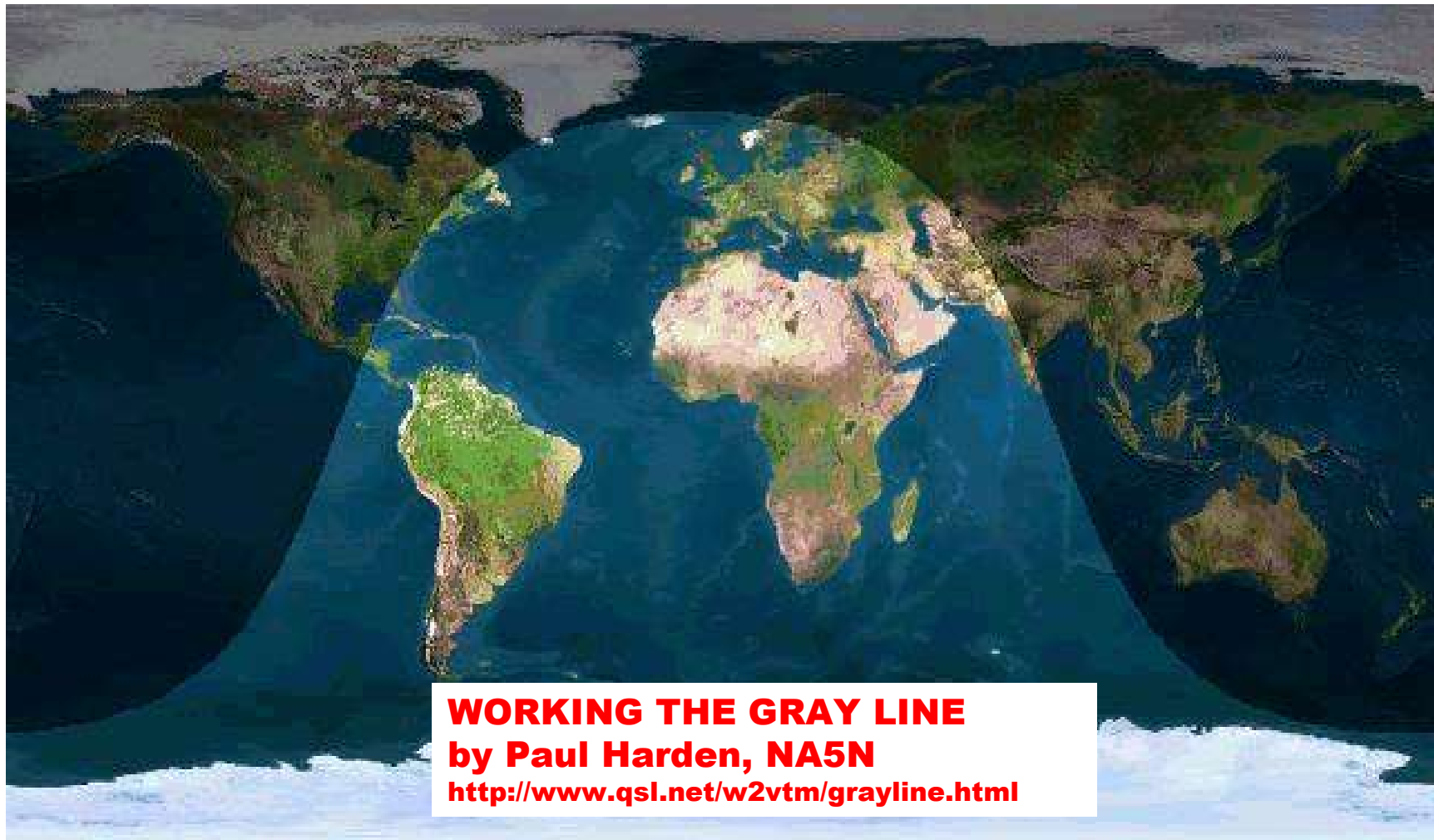
How Do I Know Which Band To Use?

<http://www.arrl.org/qst/propcharts/>



When are the bands open? These charts, generated using CAPman, show probabilities for average HF propagation in the month of January 2007 for the paths indicated. The horizontal axes show Coordinated Universal Time (UTC), and the vertical axes frequency in MHz. On 10% of the days of this period, the highest frequencies propagated will be at least as high as the upper red curves (HFF, highest possible frequency) and on 50% of the days they will be at least as high as the green curves (MUF, classical maximum usable frequency). The blue curves show the lowest usable frequency (LUF) for a 1500-W CW transmitter. For SSB or a lower transmitter power, the LUF will be somewhat higher than the blue curves indicate. See Oct 1994 QST, pp 27-30, and Feb 1995 QST, pp 34-36, for more details. The predictions assume an observed 2800-MHz solar flux value of 73. This is a Very Low level of solar activity. See the detailed propagation tables on The ARRL Antenna Book CD-ROM.

Work the “Gray Line”



WORKING THE GRAY LINE
by Paul Harden, NA5N
<http://www.qsl.net/w2vtm/grayline.html>

What are Multipliers?



- As set forth in the contest rules...
 - Each QSO is worth a certain number of points
 - The total number of points is then multiplied by the number of QSOs that meet certain criteria:
 - States/Provinces/Counties
 - ARRL Sections
 - DXCC Entities
 - CQ or IARU Zones
 - Grid Squares

Why Are Multipliers Important?



Multipliers are what make contests interesting and create the need for strategy:

- **Without multipliers**, every contest would be simply a competition to see who can make the most contacts.
- **With multipliers**, it's possible for Station "A" to have fewer QSO's but out-score Station "B".

How do multipliers work?



- ARRL 10 Meter Contest -- SSB
- QSO's count 2 points each
- Multipliers are U.S. and Mexican States, Canadian Provinces, and DXCC Entities
- So...
- $\text{QSO's} \times 2 = (\text{QSO Points}) \times (\text{mults}) = \text{Total Score}$

Multipliers Can Make The Difference

Station "A"

- Works 200 QSO's of which 100 are unique States/Provinces and DXCC Entities
- $200 \times 2 = 400$ QSO Points
- $400 \text{ QSO Points} \times 100 \text{ Mults} = \mathbf{40,000}$

Station "B"

- Works 175 QSO's of which 125 are unique States/Provinces and DXCC Entities
- $175 \times 2 = 350$ QSO Points
- $350 \text{ QSO Points} \times 125 \text{ Mults} = \mathbf{\underline{43,750}}$

Multipliers Can Make a BIG Difference

■ 2001 ARRL 10-Meter Contest

SO/LP/SSB Claimed Scores:

	<u>Q's</u>	<u>Mults</u>	<u>Score</u>
■ #10) W8DD	1,122	139	311,916
■ #11) KS2G	1,122	124	278,256
■ #12) KB7XL	1,143	120	274,320
■ #13) KE5OG	1,189	108	256,824

W8DD vs KS2G: 15 Mults = 33,660 Points (136 QSOs!)

Does your regular everyday Good Ol' Boy ham have a chance to be a top scoring contester?



- To finish in the Top Ten in a big contest, you don't need:
 - Big antennas up really high
 - A kilowatt linear amplifier
 - A late-model top-of-the-line transceiver with DSP, memories, dual watch receive, etc.
- **Smarts and Tenacity Count More Than Hardware!**

Using a 100w transceiver into a 3-element Yagi up 35 feet:

THE AMERICAN RADIO RELAY LEAGUE
INTERNATIONAL CONTEST AWARD

This Certifies That Station
KS2G

United States and Canada

DIVISION LEADER

OST

World Wide WPX Contest

for the **Single Operator - 28 MHz** division for
United States - 2nd District (USA 2nd High)

A Total score of **554,280** points was computed on the basis of
the number of stations worked and call sign prefixes contacted. In witness of
this achievement, we hereby affix our signatures on this day.

Steve Bolia, N8BTQ
WPX Contest Director

D.S. Wooten, W2VU
Editor, CQ

With the right strategy...
Putting *in* more hours yields higher returns
than putting *out* more watts!

What Information Should I Put In A Contest Log?



■ Date & Time

■ Always log in UTC

- Check Computer Clock Against WWV
- Set or Confirm Offset From Local Time

■ Band

■ Contest Exchange

■ Points

■ Multipliers

■ Score

Do I Have To Use A Computer?

■ By Hand - Lots To Keep Track Of:

- Log
- Dupe Sheet
- Multiplier List
- Prefix List
- Zone or Grid Map
- Scratch Pad
- Calculator
- Summary



A Better Way



■ By Computer:

■ Specialized Contesting Software

- | N1MM+ Logger (Windows - FREE!)
- | WriteLog (Windows)
- | Win-Test (Windows)
- | RUMPed (Mac)
- | Skookum (Mac - FREE!)
- | YFKTest (Linux - FREE!)

What Does Contesting Software Do?

- Logs contacts
- Checks for dupes
- Tallies multipliers
- Calculates running score
- Tracks rates
- Monitors Spotting Network
- Voice/CW Memory Keyer
- RTTY/Digital Interface
- Controls radios/antennas
- Summarizes & analyzes results
- Generates Cabrillo File For Log Submission
- Prints QSL's (but not N1MM)



Besides Logging, How Can Contest Software Help Me?

- Show which band to work when
- Find Stations/Mults to work
- Increase QSO rate
- Increase QSO total
- Increase Mult total
- Decrease/Eliminate dupes



To set up a new station for contesting what would be the items that I would need?



- Any station can be used for contesting:
 - Transceiver
 - Antenna
 - Linear Amplifier - NOT!!
 - Microphone
 - CW Key(er)
 - Digital Interface

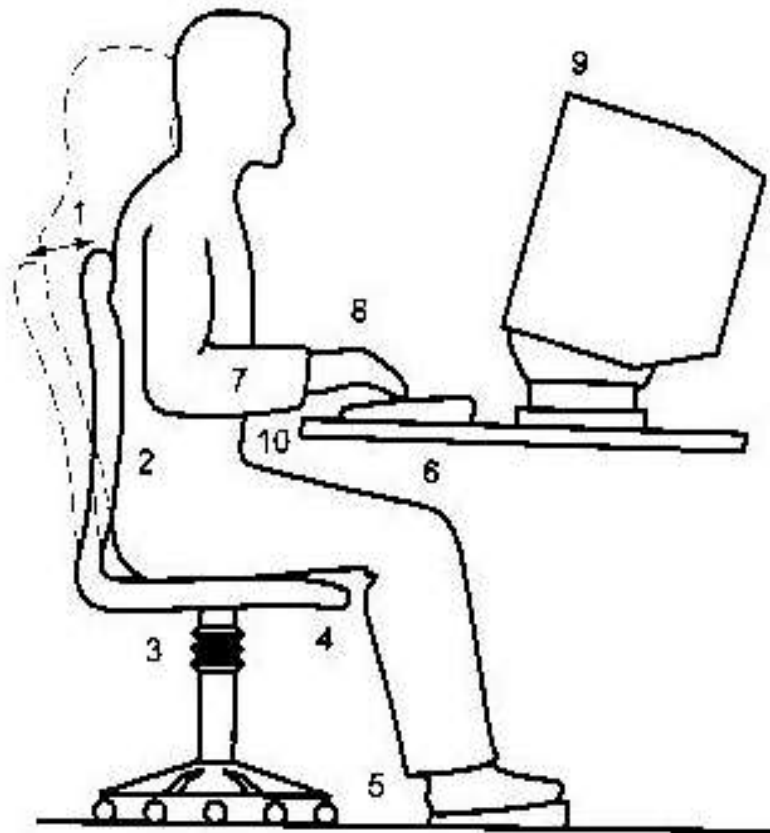
But To Optimize For Long Hours of Contest Operating...



- The most important pieces of equipment in a contest shack are...

Operator's Chair and Desk

Desk & chair should “work together”...



- (1) Seat Back Adjustability
- (2) Good Lumbar Support
- (3) Seat Height Adjustability
- (4) No Excess Pressure on Underside of Thighs and Backs of Knees
- (5) Foot Support if Needed
- (6) Space for Postural Change, No Obstacles Under Desk
- (7) Forearms Approximately Horizontal
- (8) Minimal Extension, Flexion or Deviation of Wrists
- (9) Screen Height and Angle Should Allow Comfortable Head Position
- (10) Space in Front of Keyboard to Support Hands/Wrists During Pauses in Keying

Check your posture to make sure it is right.

And the most important consideration in station layout is...



Ease of Use

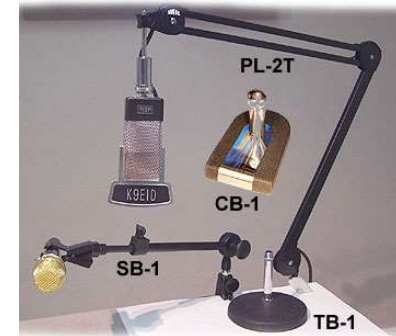
- See and reach all of the devices, displays and controls you'll need most often, and perform required functions, with a **minimum of movement.**

Useful Accessories

- CW Memory Keyer



- Boom microphone or boom-mic headset



- Footswitch



- Audio Voice Keyer

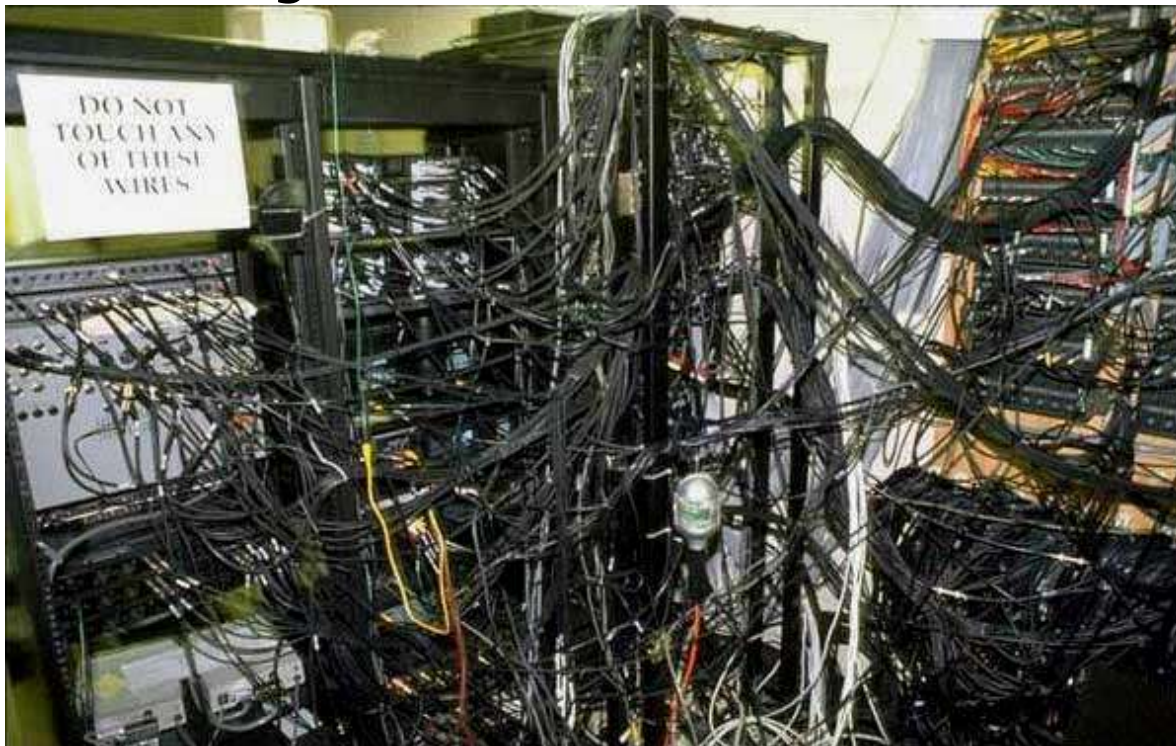


And These Days, The Piece of Equipment at the Center of a Well-Designed Contest Station Is...



Not an operating consideration, but...

- A "*walk behind the desk*" set-up is optimum for station maintenance, modification, and dealing with the occasional tangled cable.



Some questions posted in ham radio on-line forums:



- Is it acceptable for a non-contest station to respond to the various CQ contest calls?
 - Absolutely! Contest stations are trying for as many contacts as possible and EVERY QSO counts.
- Am I wasting their time because my QSO is not verifiable?
 - Absolutely not! You don't have to be "in the contest" (submit a log) to provide valid QSOs.

About State QSO Parties...



- I hear QSO Parties announcing a particular state. Are they looking for replies only from their state?
 - No. They're looking for contacts from BOTH within their state and stations elsewhere.
 - Out-of-state stations also can "enter the contest" (submit a log) and receive awards. (See rules)
- If a foreign station asks for a contact during a state QSO Party will the U.S. station reply or would that be rude on my part?
 - Yes they'll reply. No, it's not rude or improper. See above.

Multiple Contests & Bands



- If two contests are going on at the same time, can I operate in both of them?
 - Sure! Just ask for and provide the exchange information for both events -- and keep separate logs.
- If I enter an HF contest that is on all bands, do I go back to serial number 1 when I change to a different band?
 - No. The serial number continues across all bands. However, you may, or may not, be able to work the same station or multiplier on more than one band -- depending on the rules.

Duplicate Contacts



- Should I work “Dupe” stations?
 - That’s a matter of opinion
 - Some think working dupes wastes too much time
 - Some think it’s quicker to work `em rather than tell `em
 - No penalty for dupes in your log -- so why not?
 - Helps the other station, who may have “busted” your call earlier
- Should I remove “Dupe” contacts from my contest log?
 - No. Once they’re logged, leave them in; there’s no penalty.
 - Log should reflect what you actually worked during the contest.
 - Helps the other station, who may have “busted” your call.

QSL's



- Is it proper/good idea/worth it to send QSL cards for contest contacts?
 - For sure!
 - Contesting is one of the best ways to get the contacts needed for various awards.
 - Make it easy for contest stations to QSL
 - Send stateside cards with SASE / DX cards with "green stamps"
 - Use LoTW and/or ClubLog
 - (eQSL & QRZ.com not popular among testers)
 - Use QSL Bureaus -- if you don't mind waiting.

Where Can I Get Information About Contesting?



■ On Paper:

■ ***QST* Magazine**

■ <http://www.arrl.org/contest>

■ ***National Contest Journal* (NCJ)**

■ <http://www.ncjweb.com/>

■ ***CQ* Magazine**

■ <http://www.cq-amateur-radio.com/>

Where Can I Get Information About Contesting?

■ On Line:

■ **WA7BNM Contest Calendar**

■ <http://www.contestcalendar.com>

■ **Amateur Radio Contesting FAQ**

■ http://www.qsl.net/zs1an/contesting_faq.html

■ **KA9FOX Contest Library**

■ <http://www.qth.com/ka9fox/links.shtml>

■ **Contesting.com**

■ <http://www.contesting.com>

■ **K9JY's Contesting Tips**

■ <http://k9jy.com/blog/2007/10/10/30-days-30-ham-radio-contesting-tips/>

What Contests Are Coming Up?



- **January 11**

- North American QSO Party - CW

- **January 18**

- North American QSO Party - SSB

- **February 8**

- CQWW WPX Contest - RTTY

- **February 15-16**

- ARRL DX Contest - CW

- **February 22**

- North American QSO Party - RTTY

- **March 7-8**

- ARRL DX Contest - SSB

- **March 28-29**

- CQWW WPX Contest - SSB

73, CU In The 'Tests!



Any Questions?