Introduction to Amateur Radio Contesting

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Who am I?

- Software engineer for Wall St by day, father 24x7 and ham as time permits!
- First licensed in 1993 (yes, I had to learn "the code") in Maine
- Amateur Extra today
- DXCC on 5 bands and 2 modes, WAS Triple Play (#2267), WAC on 5 Bands
- Active in several amateur radio contests throughout the year
- 2nd place, 2019 SCQP Single-operator, low-power, phone
- Elected Member at Large of Trident Amateur Radio Club
- Member of the Low Country Contest Club

What is Amateur Radio Contesting?

- An Amateur Radio contest is an operating event, held over a predefined time period where the goal is to enjoy yourself. The ARRL Operating Manual
- Individual or team stations make as many valid contacts as possible during the contest period.
- Points are awarded for valid contacts upon completing an "exchange".
- The station with the most points in their category, wins that category.
- Contests provide an opportunity for hams to hone their skills at message handling and weak signal operations.
- Each contest is managed and scored by the individual or group that created that contest; there is no central amateur radio contest body.

Terms

- **DXCC:** Typically a country, sometimes a separate territory or even a geographically isolated piece of a country, i.e. Alaska is a seperate DXCC than the U.S.
- **Zone or CQ Zone**: CQ Magazine has divided the world into 40 zones. We are in zone 5. Google it if you operate elsewhere.
- **Band-slot**: refers to per-band breakdown of some contact category, i.e. I may have worked Alaska on 20m, so working the same or another Alaska station on 40m would be a new "band-slot". Most often used for DXCCs and states.
- **Cabrillo**: The "standard" in terms of contest logging on computers.
- **Section or ARRL Section:** Usually a state or province, like SC. However, some states have multiple: NFL, WCF, SFL (Download the section list if your contest needs it)
- **Grid or Maidenhead Grid Square:** World divided into "squares". Typically in the 4 character format EM93 (EM is the larger square, 93 is a sub-square inside EM). Be careful, 4 grid squares come together in Charleston!
- **DX Cluster:** Interconnected list of computers where hams publish "spots", i.e. who is on a certain frequency

Why Contest?

- To have *FUN!*
- Excitement of the chase
- Start fresh with new goals and a new deadline each contest
  - Once you get DXCC/WAS, where do you go?
- Each contest is unique, and a particular contest may vary from year to year
- Accomplishments
  - Beat your own score from last year!
  - Score better than others
  - Reaching a goal
  - New DXCCs, new band-slots, new states, counties, zones, etc.

- Use it or lose it!
- Making friends worldwide
- Contester gatherings at big conventions

Minimum Requirements:

- A Technician License
- VHF and/or UHF FM Handi-talkie
- Get on the air:
  - Make contacts
  - Send/receive proper exchange
- There have been hams that have **won** their state in the ARRL VHF/UHF contest, FM category with this setup. There have been many more with this setup that have had **fun.**

What's not required:

- A super station with stacked yagis for each band
- Log
  - Small number of exceptions
  - Good to send to help log checkers
  - Shows your activity to the sponsors
  - Gets you in the results, you might even win
- QSLing
  - Optionally, many contesters use LoTW
  - If you do paper cards, make use of the bureaus

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Types of Operators

- Competitors
  - Plan out a contest and strategize
  - Strive to improve scores
  - Factor contesting into their equipment choices
- Casual operators
  - May or may not log the contact
  - Award chasing (contests are great for this!)
  - Casual operators provide lots of contacts for the competitors, and thus the competitors are **very** appreciative of them.
- Contest haters
  - WARC Bands! 60, 30, 17 and 12 meters
  - Major contest usually do different modes on different weekends

Types of contests

- Sponsored by magazines, organizations, clubs
  - ARRL, RAC, RSGB, DARC etc
  - CQ Magazine
  - Columbia Amateur Radio Club: SCQP
- Contests for just about every interest
  - Multi-band: HF, VHF, UHF
  - Single band: 160m, 10m, 10Ghz
  - Mode: CW, SSB, RTTY, PSK, SSTV
  - Propagation: EME
  - By location: County, State, Islands, Region, Country, Continent, World
  - Individual or group
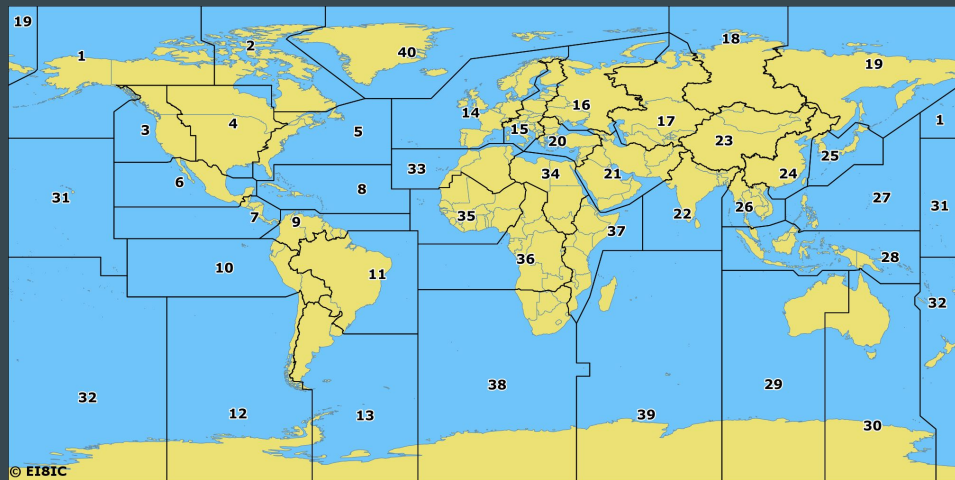- Field day?
  - No winners
  - Scoring

Rules

- Published by the sponsor in a magazine and/or website.
- Competitors must fully understand the details of the rules, casual operators only need to know the times/bands/exchanges.
- ARRL Members:
  - National Contest Journal
  - QST: List of contests coming up every month
  - ARRL Contest Update Email (See "Email Subscriptions" in your ARRL Profile)
    - Bi-weekly list of upcoming contests
    - Operatings tips
- CQ Magazine is also a good source of contest information

What's in the Rules?

- Times: Start and End
  - 0.5 - 48 hours
  - UTC
  - Operating time limits
- Operator and Radio Classifications:
  - Single operator
  - Multi-single
  - Multi-two
  - Multi-multi
  - Assisted vs unassisted
- Power:
  - High (up to legal limit)
  - Low (up 100-200W depending on contest)
  - QRP (up to 5W)

- Band classifications:
  - Single band vs multi
  - E.g. some multi-band HF contests will allow a 40M only single band category.
- Mode classifications:
  - Some contests have multiple modes and you may choose to only use one, for instance, CW only.
- Exchange
- Scoring
  - QSO Points
  - Multipliers (zone, country, state, county)
  - Bonuses
  - Score = QSO Points * Multipliers + Bonuses

Exchange

- Simple exchanges:
  - RST (Signal report) & Zone
  - RST & State/Section
  - Grid
  - Name & State
  - RST & Power
  - Serial numbers (increments by one for each contact)
- Hard exchanges:
  - Serial number, entry class, callsign, year licensed, section (ARRL Sweepstakes)

Sample QSO for CQWW DX (RST & CQ Zone)

SSB:

- CQ contest Papa Juliet Two Tango
- Kilo Bravo One Alpha Whiskey Mike
- Kilo Bravo One Alpha Whiskey Mike 59 8
- QSL 59 5, 73 KB1AWM
- 73, Papa Juliet Two Tango, QRZ?

CW:

- [CQ] TEST DE PJ2T
- KB1AWM
- KB1AWM 59 8
- RR 59 5, TU KB1AWM
- TU PJ2T

Sample QSO for SCQP (RST SC County/State)

SSB:

- CQ SCQP Kilo Bravo One Alpha Whiskey Mike
- Kilo Three Lima Romeo
- Kilo Three Lima Romeo, 59 Berkeley
- QSL 59 Pennsylvania, 73 K3LR
- Kilo Bravo One Alpha Whiskey Mike, QRZ?

CW:

- CQ SCQP DE KB1AWM
- K3LR
- K3LR 59 BERK
- RR 59 PA, TU K3LR
- TU KB1AWM

QSO: Key Points

- Only repeat when necessary. Notice when calling CQ, CQ and callsign only sent once.
- Keep it short, no extra chit-chat
- If the calling station correctly copies your callsign, don't send it again until the end of the QSO
- Don't use extraneous "please copy", etc

Logging

- Many contests require logs in Cabrillo format, some still accept paper logs.
- Contest logging software:
    - CAT (Computer Aided Tuning) control
        - Logger knows the frequency you are on and the mode you are operating
        - In an assisted category, a band map produced from the DX Cluster would be helpful.
    - Good software will not only keep score, but will make sure you enter valid data when possible (section vs state for instance)
    - Popular software:
        - N1MM+ (free, Windows) - The most used contest log software
        - N3FJP with contest expansion (commercial, Windows)
        - SkookumLogger (free, MacOSX)
        - TLF (free, Linux)
        - Many others

Some Contests

- CQ WW DX (RTTY: Sept, SSB: Oct, CW: Nov)
- CQ WPX (RTTY: Feb, SSB: Mar, CW: May)
- ARRL DX (CW: Feb, SSB: Mar)
- ARRL Sweepstakes (CW: Nov, Phone: Nov)
  - Long, difficult exchange
- ARRL VHF/UHF (Many categories, including FM only, 3 times a year: Jan, Jun, Sept)
- ARRL 10M (Dec)
- ARRL 160M (Dec)
- ARRL Field Day (Jun)
- IARU HF (July)

- ARRL School Club Roundup (Feb, Oct)
- ARRL Collegiate QSO Party
- All Asia (CW: Jun, SSB: Sept)
- Islands on the Air (Jul)
- Worked All Europe DX (CW: Aug, SSB: Sept, RTTY: Nov)
- State & Regional QSO Parties in 49 states
- Oceania DX (Oct)
- RAC Canada Day (Jul)
- Winter Field Day (Jan)
- All Africa International DX (Sept)
- Hundreds more…

Hardware

- Use what you have just to get on the air and have fun
- Phone:
  - Headset with boom-mic
  - PTT Foot Switch (I use a <$10 switch designed for a musical keyboard from Guitar Center)
  - Voice-keyer
    - Some rigs have this built-in
    - Computer software can do this if you are setup to send/recv audio between rig and computer
    - Record CQ, callsign and exchange in separate buttons. Saves your voice.

- CW:
  - Memory Keyer
    - Most software loggers can do this if you have either CAT control or a separate, inexpensive keying circuit between the computer and rig
    - Serves same purpose as voice keyer, but more automated
      - Type in callers callsign, hit tab and the logger automatically sends the callers callsign and exchange.
- Rigs:
  - Best contest radios have high dynamic range
    - See the Sherwood list
  - Lots of filters!

South Carolina QSO Party (scqso.com)

When: Feb 27 1500Z-0159Z (10am-9pm eastern)

Objective: For radio amateurs within the state of South Carolina to contact as many stations as possible. Contacts are once per band/mode

Bands: 160-6 meters non-WARC (60, 30, 17, 12)

Modes: Mixed, Phone, CW, Digital (no WSJT modes because they can't do the exchange)

Exchange:

- Send: RST & County
- Recv:
  - From SC Stations: RST & County
  - From other states or Canadian Provinces: RST & State/Province
  - From DX: RST & DX

Categories:

- Fixed: Single-op, Multi-op,Multi-single
- Mobile: Single-op, Multi-op

Power: High, Low (100W), QRP

Scoring:

- QSO Points: w/SC Stations: Phone=1, CW/Digital=2, w/Other Stations: Phone=2, CW/Digital=4
- Multipliers:
  - Each SC County (46)
  - Each State/Province/Washington DC (49 + 1+ 13 = 63)
  - DX only counts for QSO Points
- Bonuses (once per band/mode):
  - W4CAE - Columbia ARC: 250 points
  - WW4SF - Swamp Fox Contest Club: 250 points

Resources

- A Guide to Ham Radio Contesting:
  http://www.philsherrod.com/hamradio/A_Guide_to_Ham_Radio_Contests.pdf
- ARRL Contests Page: http://www.arrl.org/contests
- WA7BNM Contest Calendar: https://www.contestcalendar.com/
- SCQP: http://scqso.com/
- CQ Magazine Contests:
  https://cq-amateur-radio.com/cq_contests/index_cq_contests.html