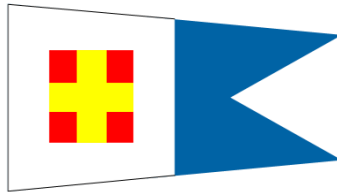


# A: WELCOME



## **Waterway Radio & Cruising Club**

### **Net Guide**

Welcome to the Waterway Radio & Cruising Club Net Guide. This guide contains suggested procedures that experience has shown make Net operation more efficient. It also contains a variety of information that should be of use to our members. Please realize that it is often necessary for Net Control to vary procedures to meet circumstances and that the information about various resources is subject to change. When in doubt verify that the information is still correct. We will try to keep you up to date by giving changes in our newsletter, Scuttlebutt.

The Net Guide was the brainchild of John Stuffbeem, N3DKZ. The first edition was compiled and edited by Ed Dixon, K4YDO and this edition by Sam Ulbing, N4UAU with extensive help from club members as noted in acknowledgements. Please refer to the Club Roster for current information concerning addresses of the Secretary/Treasurer and other Club officers.

**First Edition: April 1997**

**Updated: October 2009 N4UMS**

**Second Edition: February 2001**

**Updated: October 2011 K3PKC, N4UMS & WD0ETL**

# **B: Table of Contents**

<b><u>Page</u></b>	<b><u>Subject</u></b>	
A	Welcome	1
B	Table of Contents	2
C	Introduction	3
	C-1 History	3
	C-2 How to Join	4
	C-3 WRCC Application Form	5
	C-4 By Laws	6
D	Waterway Net Basic Procedures	
	D-1 Net Format	8
	D-2 Procedures as a Net Participant	10
	D-3 Reporting your Position to the Net	11
E	Procedures for Net Operators	
	E-1 Net Controller	14
	E-2 Designated Relay	16
	E-3 Weather Reporter	17
	E-4 Fleet Captain	18
F	Operating MM or in Foreign Waters	
	F-1 General Considerations	19
	F-2 Obtaining Foreign Permits	19
G	Weather Sources Available to the boater	
	G-1 General Information	22
	G-2 Sources of Weather Information	23
H	Digital Connections	
	H-1 <i>WinLink 2000</i>	30
	H-2 APRS - Automatic Packet Reporting System	31
I	Other Resources Available to Net Members	
	I-1 WRCC Web Site	32
	I-2 Scuttlebutt- The Club Newsletter	33
	I-3 Nets Associated with the WRCC	34
	I-4 Some Other Maritime Nets	34
	I-5 Emergency Medical Help	34
	I-6 Emergency Veterinarian Service	35
	I-7 WRCC Luncheons	35
J	More Useful Information	
	J-1 Frequency Privileges	37
	J-2 FCC Rules for Station Identification	37
	J-3 Popular 2-Meter Frequencies	38
	J-4 Important Phone Numbers	39
	J-5 Some Common Q Signs Used on the Net	39
	J-6 The Standard ITU Phonetic Alphabet	40
	J-7 Miscellaneous Information	40
	J-8 Acknowledgements	41

## **C: Introduction**

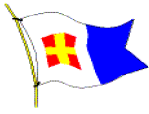
The Waterway Radio and Cruising Club is an informal, non-profit association of individuals who share dual interests in Amateur Radio and recreational boating. It sponsors and operates the Waterway Net, a daily amateur radio net, whose main purpose is to aid fellow amateurs in small boats with communications, weather information, and other services related to their safety, well-being, and general boating enjoyment.

### **C-1 History**

The antecedents of the Club and the Net can be found in scheduled QSO's in the early 1960s between two amateurs with a mutual interest in boating, Charles Burgoyne, W1LHZ, from New England, and Jake Hornor, K4YBL, a Floridian. Other cruising amateurs began to join them, and by 1962, according to a list compiled by Kenneth Read, W4PLH, there were 25 participants in what had become a small informal net. A year later, in 1963, the group was formalized and entered in Lloyd's Register of Yachts as the Waterway Amateur Radio Net Club (later changed to the Waterway Radio and Cruising Club). Jake Hornor was the first Commodore and designed the Club's burgee. Later Commodores, in the 1970s, included Ed Williams, K4NJD, and Dr. Bill Dixon, W1AOL, who served until the end of 1979. Throughout these years, Chet Kucyn, W2BTP, managed the Waterway Net and served as its seven-day-a-week Net Control station, until he retired in late 1979. Since that time the Net has experienced large growth and has necessarily become more structured.

The following members have served as Commodore and Net Manager since 1980:

1980 John Patton, KD4OB sk	2000 Conrad Darby, WA3SSB*
1981 Burke Edwards, W4BKZ sk	2000 Paul Van Meurs, KM4MA**
1982 Mitch Mitchell, W4AIE sk	2001 Paul Van Meurs, KM4MA
1983 John Patton, KD4OB	2002 Lawry Bennetts, KB3KR sk
1984 Carol Bond, KA4CXG*	2003 Ed Summersett, WA3FKC sk
1984 Dottie Miller, N4AAT**	2004 Naoma Lowe, N4QIW
1985 Dottie Miller, N4AAT sk	2005 Bob Ball, C6ALD
1986 Bob Rader, NU4P sk	2006-07 Ron Knaggs, N1GYX
1987 Jim Johnston, WB4GQK sk	2008 Tom Rader, K4WJC
1988 John Stufflebeem, N3DKZ	2009 Bill Boyle, N4UMS
1989 Cal Phillips, W1MDM	2010 Dave Harris N4NVI***
1990 Tom Taylor, N4LDX sk	2010 Peter Colket K3PKC****
1991 Bud Crampton, KK4MV	2011 Peter Colket K3PKC
1992 Lona Bell, KN4RB	
1993 Howard Kendall, N4OCC sk	* served (Jan-Aug)
1994 Genie Lazowska, KC4YB sk	** served (Aug-Dec)
1995 Sonny Gager, KJ4EM sk	
1996 Ed Dixon, K4YDO	*** served (Jan-Mar)
1997 Kathy Gaudreau, KA4IJB	**** served (Apr-Dec)
1998 Jeanie (Dunn) Schreiber, N4WFM	
1999 Bob Durocher, KN4IG	



# Waterway Radio & Cruising Club

## C-2 How to Join the WRCC

**Membership** in the Club is open to anyone holding a valid amateur radio license. The annual membership dues are used to cover the costs of printing and mailing the Roster, the *Scuttlebutt* and this Handbook. To join the Club and be included in the Roster, dues and application must be received by January first of the year of the Roster. Persons whose applications are received after January first will become members, will receive *Scuttlebutt* and the current membership roster, and will be included in the subsequent year's Roster. Send an application form with first year's dues to the Secretary/Treasurer. An application may be obtained by asking on the Net, via email, at the club web page or copying the form on the next page. Make checks payable to Waterway Radio and Cruising Club, and please write your call sign on the check.

Mail all address or information changes to the Secretary/Treasurer (or email at secretary@waterwayradio.net). **Do not send them to the *Scuttlebutt* Editor.**

Any amateur with a valid general or higher class license and an interest in boating is invited to check into the Net. One need not be a member of the Club to participate in the Net. The Net meets every day at 0745 Eastern Time on 7.268 Mhz lower sideband for about an hour. Members can often be contacted on this frequency before the Net and throughout the day, particularly on the even hours. Since 7.268 Mhz is used as a calling frequency, particularly in the early morning and around the even hours during the day, it is **strongly** suggested that members planning more than a short message, move to other frequencies after making their contacts.

In addition, the WRCC has its own web site, **www.waterwayradio.net**, which has a **Discussion Board** and much useful information available. WRCC also publishes a **Roster** of its members annually and a quarterly newsletter called *Scuttlebutt*, containing items of interest to the membership. **Club Burgees** are available at a small cost through the Club Secretary/Treasurer. See the current roster or newsletter for costs and how to order.

## C-3 WRCC Application Form

### WRCC Membership Application

Mail To: WATERWAY RADIO AND CRUISING CLUB  
27 Cheyenne Court  
Palm Coast, FL 32137-8966

Amateur Call Sign \_\_\_\_\_ Class \_\_\_\_\_ Nickname \_\_\_\_\_

Mate's Call Sign \_\_\_\_\_ Class \_\_\_\_\_ Nickname \_\_\_\_\_

First Name(s) \_\_\_\_\_

Last Name(s) \_\_\_\_\_

Mailing Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code+4 \_\_\_\_\_ - \_\_\_\_\_

Primary Phone Number (\_\_\_\_) \_\_\_\_\_ Is this a Cell phone? \_\_\_\_\_

May we publish your home phone number in the Roster? Yes \_\_\_ No \_\_\_

2nd Phone Number (\_\_\_\_) \_\_\_\_\_ Is this a Cell phone? \_\_\_\_\_

Do you want us to publish the 2nd phone number in the Roster? Yes \_\_\_ No \_\_\_

E-mail Address \_\_\_\_\_

E-mail Address #2 \_\_\_\_\_

Boat Name \_\_\_\_\_

Boat Description \_\_\_\_\_

Make, Model, Length, Rig if sail, Type if power

Examples: Morgan Out-Island 41' Ketch; Grand Banks 42' Trawler

Are you a Volunteer Examiner with **ARRL** \_\_\_\_\_ (and/or) **W5YI** \_\_\_\_\_

Send Scuttlebutt via (select all that apply) \_\_\_\_\_ mail; \_\_\_\_\_ email 1 \_\_\_\_\_ email 2

#### **Seasonal Address:**

(For alternate mailing of Newsletter or Roster. Not published in Roster)

\_\_\_\_\_  
\_\_\_\_\_

Time frame: \_\_\_\_\_

Seasonal Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

Other skills (Doctor, vet, computers, antennas, radio repair, delivery skipper, etc)

\_\_\_\_\_

Make check or money order payable in U.S. funds — to **WRCC**

Membership dues for 2011 are \$16 for US and Canada, and \$21 for other countries.

Plus, there is a \$4 surcharge for having a printed copy of the newsletter mailed out.

**C-4 By Laws**

**Waterway Radio & Cruising Club**

**\*\*\* BY-LAWS \*\*\***

**as amended 2009**

**ARTICLE I**

**Name**

The name of the organization is the Waterway Radio and Cruising Club.

**ARTICLE II**

**Purpose**

The purpose of the Club is to operate a controlled Amateur Radio net under the guidelines of the American Radio Relay League, and to encourage amateur radio communications to and from boats with emphasis on safety and weather information.

**ARTICLE III**

**Net Participation**

Any radio amateur who is properly licensed to operate on the net frequency and mode may participate in the Net. Membership in the Club is not a prerequisite for participation.

**ARTICLE IV**

**Membership in the Club**

Any licensed amateur may be a member of the Club. Applications for membership shall contain such relevant information as the officers shall require, and shall be submitted together with payment of an annual charge to cover the cost of furnishing a membership roster, newsletters and such other services to the members as may be deemed by the officers to be necessary or desired.

**ARTICLE V**

**Officers**

The officers shall be a Commodore, a Vice Commodore, and a Rear Commodore. Each officer shall be elected as provided in Article VII, for a term of one calendar year.

**ARTICLE VI**

**Officers' Duties**

(a). The Commodore shall serve as the Net Manager and shall supervise the operation of the net. The Commodore shall appoint a Secretary, a Treasurer (or a combined Secretary/Treasurer), a Fleet Captain, a Fleet Surgeon, Net Controllers, and such other positions, as the Commodore may require from time to time. They shall serve at the pleasure of the Commodore.

(b). The Vice Commodore shall assist the Commodore as requested, and shall perform all the duties of Commodore in the absence of the Commodore.

(c). The Rear Commodore shall assist the Commodore and Vice Commodore as requested, and shall perform all the duties of Commodore in the absence of both the Commodore and Vice Commodore.

## **ARTICLE VII**

### **Nominations, Voting and Election of Officers**

(a). The officers shall be elected annually, their terms to begin on January 1st following election. Any member in good standing as of September 30th is eligible to hold office, to make nominations, and to vote.

(b). Nominations shall be made in the month of October by any means available, directed to and received by the Commodore or such member(s) as may be appointed by the Commodore to receive nominations. The nominator must first obtain the nominee's agreement to serve if elected. Nominations may be announced on the net at intervals during the month of October.

(c). On or about November 1st, the Commodore or such member as may be appointed by the Commodore shall announce, on the net, the names and amateur radio call signs of the nominees, and shall solicit ballots from eligible members. Votes shall be addressed and delivered to the Secretary, either by, (1) written and signed ballot transmitted in person, by mail, or by facsimile transmission, or (2) electronic mail which identifies the person voting.

(d). The Secretary shall count all votes received before December 16th and shall inform the Commodore of the results, which shall be determined by a plurality of the votes. The Commodore or such member as may be appointed by the Commodore shall promptly announce, on the net, the person elected to each office.

## **ARTICLE VIII**

### **Vacancies**

Any office, whether elective or appointive, that shall become vacant due to death, resignation, refusal to serve or any other reason, shall be filled by appointment by the Commodore. If all elective offices shall become vacant, a special election shall be held and ARTICLE VII shall be followed as nearly as practicable.

## **ARTICLE IX**

### **Burgee**

The official club burgee shall consist of the International Code flag "Alpha" with a reduced International Code flag "Romeo" superimposed on the white field, and may be flown by any member.

## **ARTICLE X**

### **Amendment**

These By-Laws may be amended by a majority vote of the officers then in office. Advisory opinions on such amendments shall be solicited from the membership.

## **ARTICLE XI**

### **Effective Date**

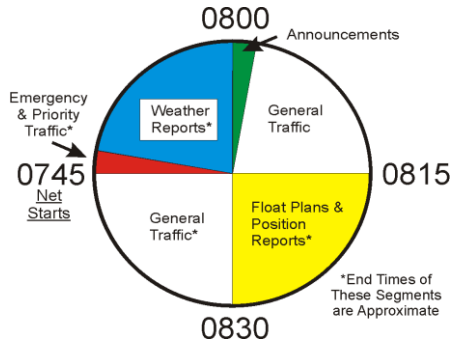
These By-Laws, as amended and re-stated as set forth above, having been duly published for consideration by the members and adopted by a vote of the officers, shall be effective as of the day of 1 January 2009.

# D: Waterway Net Basic Procedures

## D-1 Net Format

The Waterway Net is divided into seven segments that combine to make the format. The format changes from time to time, but generally the segments remain the same. The segments are as follows:

1. Preamble
2. Emergency/Priority Traffic
3. Weather Information
4. Announcements
5. General Traffic (early)
6. Float Plans and Position Reports
7. General Traffic (late)



**Before the Net.** Stations begin gathering on 7.268 Mhz (LSB) around 0700 Eastern Time. Many have schedules with others and many just show up to "read the mail" (monitor the frequency). Stations using the informal period before the Net have to squeeze in a call since there is no Net Control. This segment can be used for any legal purpose such as general traffic. This period also helps to reserve the frequency for the Formal Net.

1. **Preamble.** The formal Net begins with the preamble: a statement of purpose and an introduction of those running the Net on that day.

2. **Emergency & Priority Traffic.** Emergency communications are those related to the immediate safety of life and/or the immediate protection of property. Priority traffic is interpreted to mean messages or requests for information not involving emergencies, but still having some urgency. Examples include Coast Guard requests for assistance in locating overdue boats and notifying persons about sick or injured family members. Non-emergency boat watches, used to find a friend, should be held until the traffic segments of the Net.

3. **Weather Information.** It is recommended that stations needing weather information from the Waterway Net use a recording device. It is often difficult to copy it all down and get it right. At present we offer some or all of the following weather information:

- A. Bahamas
- B. Tropical (in season)
- C. Caribbean -Synopsis and Outlook
- D. Southwest North Atlantic
- E. Gulf of Mexico – Synopsis and Outlook
- F. Florida Coastal

If you need something that isn't covered, you should respond during the request for weather fills following the weather reports. If you let the weather reporter know before the Net that you need a special area, it will enable him or her to obtain it in



advance. This is also the time to report unusual or unexpected weather conditions that you are experiencing that may be of interest to those on the Net.

It is presumed that those in the States have access to NOAA Weather Stations via VHF radio and they should not use net time if the information is readily available in this way. There are exceptions and we have always encouraged the practice of being lenient.

**4. Announcements.** This is the time to give and receive information of **general** interest to net members such as luncheons, bridge closings, lost dinghies, etc. This is NOT the time for boat watches; please give them during general traffic.

**5. General Traffic (early).** The first part of this segment is reserved for boats that are actually moving (underway). This is often abused by land stations who rationalize that a boat *may* be underway or *could* be underway. Unless the boat is known to be underway, this is not the proper time to call. After the underway traffic, general traffic is handled. Any legal traffic may be passed at this time. This or the late traffic segment is the time to issue non-emergency boat watches. There is one big exception. We ask stations not to use the early traffic segment for a float plan or position report. If we allowed this, there would be no time left for traffic on some days.

The proper method for checking into traffic segments is to respond to Net Control's request for traffic with your call sign **suffix** only, using Standard ITU phonetics (see section J-6). Net Control will put you on the list and call you in turn. You then should give your full call sign and call your station. If you have a short message, you may give it on the Net frequency. If your message is not short, you, **the calling station, should have another frequency in mind** and be ready to give it and move (QSY). Listening to this procedure on the Net will help you learn quickly.

If your station is not heard, you may request to be placed on the list. This means you would like Net Control to continue calling your station. You should be available should the station answer later in the Net. It is up to you to say, "Please list," or "Don't list," without being asked. If you ask to be listed, it is your responsibility to ask to be taken off the list if you have to leave the rig or shut down the station before the end of the Net.

If you are the station being called, respond with your full call sign (**not** "contact" see section D-2 for when to use "contact") so that the calling station, the Net Control station and/or the Net Relays know you are there.

Often, Net Control will turn the Net over to a relay station to help people get into the Net who cannot reach Net Control. If you can reach Net Control, please do that and leave the Relay free to listen for weak stations.

**6. Float Plans and Position Reports.** During this segment of the Net, the Fleet Captain will accept two types of reports on boaters' locations, **POSITION REPORTS** and **FLOAT PLANS**. Please do not ask us to handle traffic during this segment of the Net unless that station has been listed during the early traffic segment. In this circumstance, we will ask your station to stand by for you until after Position

Reports. More detail on **POSITION REPORTS** and **FLOAT PLANS** is given in Section D-3

**7. General Traffic (late).** The late traffic segment is generally used for anything not covered elsewhere during the Net. It could include late position reports, late weather requests, boat watches, repeat of announcements and of course, any kind of legal amateur radio traffic.

## **D-2 Procedures As A Net Participant**

**1. License Requirements.** You must hold at least a General Class License to operate on the Waterway Net. If you travel to another country you must obtain a reciprocal amateur license from that country prior to transmitting in their territory or waters. Exceptions exist in the case of automatic reciprocal operating agreements between countries, such as Canada and the United States. See Section F of this guide for additional information about foreign operation.

**2. Identify Legally.** All participants should be aware of the FCC rules about identification and follow them, see Section J-2.

**3. Follow The Net Format.** The efficiency of the Net depends on its participants being familiar with the Net format and following it. There is a time for traffic and a time for position reports. Trying to do one during the time of the other slows down the Net.

**4. Use Proper Phonetics and Procedural Words.** It helps the Net operators if you use proper phonetics rather than your own phonetics since they are expecting to hear certain words. If you are unfamiliar with these phonetics see Section J-6. In addition there are a number of key words that have grown to have special meaning for the Net. It will facilitate operation if you use them accordingly.

**“Break”** – Break is used by a station to interrupt a QSO so he can gain temporary control. Since the Net is under the control of the Net Controller, is not appropriate to use this term. The correct way to enter the Net is to give your call sign suffix when NCS asks for more check-ins or use ‘contact’ or ‘recheck’ as described below. Sometimes a station reading a long report, such as a weather reporter, might need to stop transmitting for a short period of time. In this case it might be appropriate to say ‘break, more to follow’; however, if the break is short, this term is not necessary and its use is not encouraged on the Net.

**“Break-Break”** - Is referred to as a double break and is reserved for emergencies. The international code word **“Mayday”** is preferred when indicating an immediate life-threatening emergency.

**“Contact”** - Say this only when you hear a station with whom you want to talk, but who is *not* calling you. Net Control will give you priority. Incorrect use of this term often confuses Net Control. **Do Not** say “contact” in response to someone calling you. In that case respond with your own call sign.

**“Over”** - Means you’ve finished your transmission and want the other station to respond. Use of this word at the end of each transmission, would stop a lot of doubling on our net.

**“Recheck”** - Is used if you need to get *back* into the Net on unfinished business. Examples might be if you’ve looked up some requested information for

someone and are ready to give it, or if you went off frequency and could not find your station. Net Control will give you priority.

**5. Third Party Traffic.** Third party traffic is defined as a message that is for or on behalf of someone other than a licensed amateur. It includes a non-amateur speaking over the mike with a licensed amateur present. While it is allowed within the United States and some other countries, many countries, including **the Bahamas, Turks and Caicos and Bermuda do not allow third party messages.** If you are in an area where third party traffic is not allowed, do not ask the Net to handle this illegal traffic. We cannot pass messages from your family to you. What we can do is tell you that they want to talk and pass a phone number.

**6. Tuning Up.** Please find a clear frequency and tune up at reduced power off of the Net frequency. It is futile to ask someone on the air to stop tuning up on frequency, since a radio cannot receive while it is transmitting. Furthermore, you may interfere with someone whom the signal does not bother. Many people seem to think that automatic antenna tuners do not create a signal that can interfere; this is not true.

**7. QSY unless your traffic is brief.** When you move to another frequency (QSY) please be thoughtful of our fellow amateurs. Listen on the new frequency. If it sounds clear, ask, "Is this frequency in use?" Do this twice with a pause to give listening stations time to respond. If it is clear, then call your station. You may hear a station say "go to 7200 and up one by one." That means listen on 7200, if it is not clear listen on 7201 and continue up until you find a clear frequency and your station if he/she has done the same.

**8. QRM – let the Net officers handle it.** QRM (interference from QSO's on nearby frequencies) has always been a problem on our net. It is usually best handled with courtesy, and if you are new to the Net, you probably should let someone else handle it. Some QRM just has to be tolerated; we are not guaranteed a clear frequency. Do not cause hard feelings by 'telling off' some one who is on a near by frequency. Experience has shown courtesy works best.

**9. Deliberate Interference.** We have found that people who intentionally interfere with our Net go away quickly if they are *completely ignored.*

## **D-3 Reporting Your Position To The Net**

The Net accepts two types of reports on boaters' locations, **POSITION REPORTS** and **FLOAT PLANS.** The details on why and how to file each is contained in the following two sections. Please be sure you understand the difference between the two.

### **D-3.1 Position Reports:**

Position Reports are by far the most common check-in for yachting hams and are filed during the Position Report segment of the Net. They are a casual way for members to let friends and family know their progress during their cruise, as opposed to the formal report of a Float Plan.

Use names of **well known** towns, harbors, islands, etc. It takes extra time if we have to keep asking you to repeat your location or destination. If possible, include the

State you are in so there is no mix-up like between Beaufort, NC and Beaufort, SC (yes, we know they're pronounced differently), or Jackson Creek... VA or MD or ?

When reporting positions in latitude and longitude **use degrees and whole minutes**. Do not add "dot", "point", "decimal", or "slash" between degrees and minutes. We want to avoid the confusion of "degrees and minutes" versus "decimal degrees" i.e. 29 50 north (read as 29 degrees and 50 minutes) is not the same as 29 "point" 50 which would equate to 29.5 degrees (29 degrees and 30 minutes). If the Fleet Captain needs to pass your position to the Coast Guard for a rescue attempt it is imperative that there be no confusion in the numbers. It also helps understanding if numbers are reported individually one at a time: i.e. two, nine, five, zero North instead of twenty nine, fifty ("Did she say fifty, or fifteen? Was it twenty-nine or thirty-nine?").

We do not want these suggestions to intimidate you or stop you from checking into the Waterway Net. It is meant to be fun and one of the best ways to meet other hams is to find out you are in the same area simply by checking in at Position Report time. You just never know who might call you and invite you to cocktails or a free overnight dock.

### **D-3.2 Float Plans (Updated 3-1-2014)**

Float plans are a formal way to report your position every day. Float plans are taken very seriously by the Net and are normally filed only for an open water passage, since while traveling within the Intracoastal Waterway or in coastal waters, you are normally within VHF range of the US Coast Guard should you need assistance. However, the choice as to whether to file a Float Plan is yours and yours alone.

If you do file a Float Plan your daily position report will receive priority on the Waterway Net. The daily Net Control, Relays and Fleet Captain will all be aware that you have an open Float Plan. You must be prepared to respond when the Fleet Captain calls you at the beginning of the Position Report segment of the daily Waterway Net if you have not reported earlier in the net or by other means. You will be called every day until you formally close your Float Plan. It is your responsibility to ensure that contact is made every day while your Float Plan is open and to close your Float Plan when you arrive at your destination.

For those contemplating an extended voyage where there is a high potential for losing contact with the Waterway Net at the scheduled Net time alternatives must be carefully considered such as timely reporting by Winlink/Sailmail or by arranging contact at another time or on a more suitable frequency with someone who will report your daily status to the Fleet Captain. It is your obligation to have a workable plan.

It is also your responsibility to ensure that you have notified your listed contact person that you have filed a float plan and that you have instructed them of your wishes should you not report on schedule. If you do not report in, a member of the Waterway Net will phone (collect) your contact person with the information that you have not reported in, and it then becomes your contact person's responsibility to decide what action, if any, shall be taken. If there is no answer to this call within

a reasonable period of time, normally a few hours, a Waterway Net representative will notify the US Coast Guard that you failed to check in and the Net organization shall have no other obligation or responsibility.

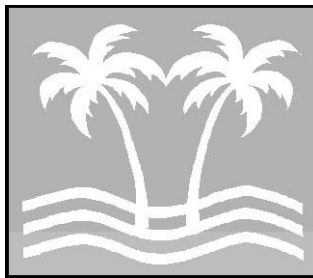
When you file a float plan, you need to provide the following information:

### **FLOAT PLAN INFORMATION**

1. Call Sign
2. Boat description. Including type (sloop, ketch, yawl, trawler, sports fish), size, and color of hull, deck, and superstructure.
3. Boat name and hailing port
4. Documentation or state numbers
5. Type of EPIRB and is it registered?
6. Marine SSB and VHF equipment on board.
7. Number of persons aboard
8. Departure point and time
9. Destination and estimated time of arrival and route.
10. Name and phone number of person to contact if you fail to check in daily while the float plan is in effect.

#### **D-3.3 Position Reports via a Third Party**

If you are unable to check into the Net but wish to give a **Position Report**, you may give your position to another person (licensed amateur) who may relay it to the fleet captain. However, **Float Plans** must be given directly to the fleet captain.



# **E: Procedures for Net Operators**

## **E-1 Net Controller**

It is the responsibility of a Net Control Station (NCS) to see: that the Net starts on time (as nearly as propagation will allow), that check-ins follow the Net format, and that the appropriate traffic is efficiently passed within each segment of the format. The key word here is "control", and there are times when it is necessary to strike a balance between firmness and friendliness in order to keep the Net "on track".

### **1. Opening the Net.**

It is important that NCS start the Net promptly on time. Most ham radios today have general coverage receivers, and you can get accurate time checks from WWV or CHU. Atomic clocks are also inexpensive and readily available.

NCS should ask, immediately prior to starting the Net, if the frequency is clear. One inquiry is sufficient. It is NOT necessary to ask if "someone needs to make a call before we start the Net". That is apt to delay the start of the Net, and is an invitation to people not familiar with our Net format to make a call instead of waiting their turn.

When opening the Net, have the Preamble written out in front of you. Keep it short, including only the necessary information to identify the Net, its purpose, time of operation, the Net manager, and your designated relays for the day. (See the roster and By-Laws for a short statement of the Net's purpose.)

### **2. Follow the Format.**

Ask **once** for emergency or priority traffic, and have each relay ask once. If nothing is heard, move on. If there is such traffic, it's important to take the time for NCS and the relays to get all the details. Highlight the entry on your log, and repeat it several times during the Net, asking each time for a response until the traffic is handled or the Net closes.

NCS and the relays should make only one call each for "traffic to or from boats under way". We want to give them priority, but also want to move into other general traffic in the early segment, to handle as much as possible.

It is important to start Position Reports at the proper time. If you or a relay has a list of traffic not yet completed, ask the stations on the list to stand by until after position reports. If you have not gone around to all relays by then, wait until after position reports.

When the Fleet Captain is finished, ask once if there is anyone who failed to get their position report in, and then go to general traffic. On a slow traffic day, NCS may wish to close the Net early if, after going around the relays, no other traffic is waiting to be passed. On a busy day, the Net may extend for more than an hour, but later than that is usually not productive, and the Net should be closed with stations left to make contact on their own. An exception to this is during or just after hurricanes or other emergencies, when traffic is being passed into and out of the affected area. At these times, run the Net as long as you feel it is productive. When you close the Net, ask the relays to announce the closing, leaving the frequency clear for calls.

### 3. Operating Hints.

**a. QSO'S on frequency.** Use your judgment when messages are passed on the Net frequency. Remember, everyone is listening and waiting their turn, and long QSO's should be handled off frequency. Don't hesitate to ask parties to QSY in order to leave the frequency clear for the Net. Above all, refrain from engaging in your own personal conversations and clever comments while directing Net traffic. Your job as NCS is to get traffic passed, in an efficient and friendly manner.

**b. Rules.** NCS must always be alert for violations of FCC Rules, and politely inform the offending station(s) of any infraction. Be especially aware of the rule prohibiting third party traffic, and simply tell the offending station that it is not possible for the Net to handle it. Remember that third party traffic from one ham to another ham who is qualified to be a "control station" as defined by the FCC is allowed. Also, if a station is in the territorial waters of a foreign country it must have a reciprocal license. It is helpful to review the rules from time to time to refresh your memory.

**c. QRM.** Don't get upset by interference from adjacent frequencies. The 40 meter band is very crowded, and an adjacent signal bothering you may not bother others at all. This is the time to make frequent use of your relays. If you do ask someone to move away from the Net frequency, do so politely. If you aggravate them, you will be inviting even worse interference. With "tuner uppers", it is futile to ask them to stop. Some of it is deliberate. Even if accidental, the tuning station is on a different frequency, in a different mode such as CW or RTTY, and since it is transmitting at the time, it will not hear your request. It's best to ignore the nuisance and get on with traffic. If an "interferer" makes a smart comment hoping to draw you into a dialogue, don't go for the bait; just continue with the business of the Net.

**d. Relays.** Judicious use of your relays will alleviate many problems of poor propagation, QRM, and weak signals. NCS should take one or two lists at a time, then go to one relay for one list, back to NCS for one list, and then to the other relay for one list. Ask the relays to take only those stations not able to reach NCS. If you experience heavy QRM, ask one of your relays to run the Net until your conditions improve. Relays volunteered by stations other than your designated relays should normally be asked to stand by until the designated relays have been given an opportunity to make their calls for traffic, as too many uninvited relays add to QRM and doubling. If neither of the designated relays hears the station being relayed, it is appropriate to ask the volunteer relay to handle it. When propagation is especially poor, NCS may *occasionally* solicit "any other relays".

**e. Familiarity with call signs.** It is very helpful to listen to the Net on your off-days, and become familiar with the call signs of stations using the Net. In times of poor propagation and weak signals, that will help you recognize both the station checking in and the station being called. It also makes for a more personal atmosphere if the NCS knows the names of the check-ins.

**f. Calling for traffic.** When taking a list of calling stations, it is helpful to quickly acknowledge the call signs of the first two or three you've heard, or even singles, and then ask again. If you remain silent while taking a long list, stations already listed think they haven't been heard, and say their call signs again, creating interference and

confusion. Continue to compile your list in small increments until you hear no more stations and then call them in turn.

**g. Listed traffic.** If a station asks to be listed, highlight that line of traffic on your log, and remember to periodically call the station listed throughout the Net, but especially after position reports, and before closing the Net. Generally, it is not necessary to ask each station if they want to be listed, leaving it up to that station to specify a listing if they desire it.

**h. Weather backup.** It can be helpful for NCS to obtain the weather reports in advance of the Net, so that if a station is unable to copy the weather reporter, NCS can give the requested fill.

**i. Pause.** When a station calls its party, pause a moment before echoing the call. If the called party is not given a chance to respond, and the call is echoed immediately, NCS often covers up the party trying to answer, and unnecessary doubling occurs.

**j. Emergencies.** Occasionally, you will have an emergency occur on frequency. Immediate danger to life or property will always take precedence over all other traffic. When a "Mayday" is heard, you must try to identify the station calling, its exact location, and the nature of the emergency. Remember, one need not be a ham to use a ham frequency in an emergency. A call sign, boat name, or other ID, with a location (lat/long if offshore) and nature of the problem should be first established. Other details can then be obtained as required in the circumstances. At this point you have to decide whether to continue handling it on frequency or to QSY. At times, it may be necessary to ask the Net to QSY and keep the emergency on 7.268 Mhz. If another station has a better copy on the emergency than you, let that station be the primary traffic handler. These are all judgment calls that are your primary responsibility as NCS.

## **E-2 Designated Relay**

It is the responsibility of a designated relay to assist NCS when and as requested to do so. The purpose is to give stations with weak signals or those outside of NCS' propagation a chance to call their traffic. The comments applicable to Net Controls apply as well to the Relays.

**1. Track Net Control.** It's important that you closely track NCS and stay up with the progress of the Net, so you can call listed traffic, echo calls when asked to do so by NCS, and otherwise expedite the Net traffic without unnecessary repetition. You may also be in a position to remind NCS of listed traffic, to hear contacts, and otherwise assist NCS. If it's obvious that NCS is not hearing the other relay, a weather reporter, Fleet Captain, etc., do not wait for NCS to ask you to call them -- if they don't respond to NCS, you, as a designated relay, should call them.

**2. Limiting calls.** Limit your calls to "those unable to reach regular Net Control". If stations who are obviously copying NCS answer your relay call, just take them in turn and continue asking for those *not* copying NCS. Ask uninvited relays to stand by until you have determined that neither NCS nor the other designated relay hear the calling station; then, ask the volunteer relay to handle it.



**3. Listen.** When NCS calls for a list of traffic, listen for stations missed by NCS so when the frequency is turned over to you for a call, you can pick them up. State the call signs you heard that NCS missed before you take a list and put those stations first or work them before taking a new list. {i.e. "I heard X2XX and X4XXX. Who else needs my help not hearing Net Control"}

**4. Weather backup.** It's helpful for the relays to obtain weather reports in advance of the Net in order to help with weather fills, if appropriate.

**5. QRM.** If NCS is obviously bothered by QRM from adjacent frequencies, it may be appropriate for you (while NCS is taking traffic but only at the request of NCS) to request the QRM to move a bit. Please do it politely, and if they refuse, let it go at that. Be aware that your request may increase the QRM for NCS, so keep it brief and turn down your power while making your request, if possible. Generally let the Net manager or the other officers handle QRM problems.

**6. Tracking float plans & position reports.** Track the Fleet Captain carefully during Float Plans and Position Reports. There will be times when you will be able to fill requests for a station's QTH.

**7. Listed traffic.** Each time you complete a turn at calling for traffic, call the stations listed before turning the frequency back to NCS.

**8. Closing.** When NCS closes the Net, echo the closing so all stations will know the frequency is clear.

### **E-3 Weather Reporter**

Weather reporters supply a vital element in the Net's effort to provide communications, weather, information, and safety services to our fellow amateur radio operators on boats. The Weather Coordinator and Net Officers determine which reports are read. Generally speaking, we report the offshore waters forecast for the mid-Atlantic (synopsis and warnings), the Southwest North Atlantic (synopsis, daily, outlook), Gulf of Mexico (synopsis and warnings), Florida Coastal for the southeast coast (synopsis, daily and outlook), Tropical (in season). A list of recommended weather sources is available from the Weather Coordinator. You must be able to retrieve the desired reports from the Internet. Stations located in the Bahamas who have contact with the Nassau Met Office report the Bahamas weather.

**1. Propagation.** Weather Reporters must have a signal that can be heard by those members who need to hear it (especially those in the Bahamas). Turn on your radio a few minutes early and make a call to see how you are getting out. If you give the weather without being heard, someone will have to repeat it, taking up unnecessary Net time. It is advisable to periodically stop talking and briefly listen to make sure that you are being copied.

**2. Timeliness.** Always check the date of your report. Sometimes the date/time stamp is for the day before. If so, check another source or ask on the Net frequency before the Net. Someone may have the updated report. If not, just mention it before you give the report.

**3. Readability.** Forecast data can often be confusing and it is important that you understand the forecast so that you can communicate it coherently. Read it through before you have to report it. It might be useful to copy it to a word processor and reformat it for ease of presentation. Often the weather service leaves out words like ‘a, an, the, and’ that can make the report more understandable. If it is very complex, plotting it out can aid in understanding and allow you to answer questions that may arise. When reading numbers, say each one individually like "... a cold front from three, two north, six, five west to (pause briefly to separate this ‘to’ from the next ‘two’) two, five north..." or "wind northeast one, five to two, zero knots...". Also, speak clearly and s-l-o-w-l-y.

### **E-4 Fleet Captain**

The Fleet Captain is responsible for obtaining and recording Position Reports and Float Plans. Priority should be given to those sailing under a Float Plan, then to those actually underway and finally to anyone on a boat anywhere. Communications should be brief but sufficient to assure their accuracy. Other communications should not be allowed during the period of the Fleet Captain’s operation, except for emergencies.



This boat is NOT considered to be underway.

# **F: Operating as Maritime Mobile or in Foreign Waters**

## **F-1 General Considerations**

Many of our members sail in waters other than those under U.S. jurisdiction. It is important to be aware that where you are located determines how you identify and what operating privileges you have. You should contact the country to which you are going to determine the current rules governing Amateur Radio operation or check at this website: <http://www.arrl.org/FandES/field/regulations/io/>

Boats operating in the waters of foreign countries usually must have a reciprocal license. A US boat operating in the Bahamas, for instance, will be required to obtain a Bahamian reciprocal license and will identify as X4XXX/C6A to show it is in the Bahamas. Information on obtaining some common reciprocals is given in the next section and common frequency privileges are given in section J-1.

Remember that boats that are offshore are considered maritime mobile and are governed by the rules of the country in which the vessel is registered. This would occur, for instance when a boat is crossing the Gulf Stream.

**A foreign reciprocal is not always necessary.** If you are a non-US amateur wishing to operate in the US or a US amateur wishing to operate in another country you **may** be able to do so using your existing license. The ARRL web site has a list of these countries and how to operate there legally.

## **F-2 Obtaining Foreign Permits**

Obtaining a foreign government's permission to operate an amateur radio station in its territory or waters may be as simple as a 30 day courtesy reciprocal permit granted by some countries upon entry, or it may require formal, written application several months in advance. By special agreement between the U.S. and Canada, licensed amateurs of either country may operate in the other country without additional licenses or permits, but they must conform to the host country's rules.

Before leaving on a cruise to foreign countries, you should obtain pertinent information about the countries you will visit, including their licensing requirements, usable frequencies, and transmitter power limits. The ARRL web site shown above has extensive information about foreign operations. Another good source, for information on Caribbean countries, is the Caribbean Maritime Mobile Net (see Section I-4). For the most up-to-date information, contact the appropriate foreign agency directly.

## Obtaining a Bahamas reciprocal license:

Licenses are no longer renewable every year. Only when you plan to visit the Bahamas, do you need to fill out an application form. Thus you do not have to apply or renew for the years that you will not be using the license. Also, the license is only good for the “*Duration of Stay in the Bahamas*” that is specified on your application. This section is mandatory and has to be completed by all applicants. In addition, you cannot request your “Duration of Stay in the Bahamas” to be more than one year or pay fees for more than one year at a time.

To apply for a Reciprocal Amateur License go to the URCA Website – [www.urbahamas.bs](http://www.urbahamas.bs).

- Click on the tab ‘*I am an Operator*’ or Licensing
- Under the tab ‘*In this Section*’ click on ‘Application Forms’.
- Click on ‘*URCA has published NEW License Application Forms*’
- Click on ‘*Download ECS 3/2011 License Application for Amateur Radio Services*’.

Helpful hints for completing Section 5:

- For USA Amateurs licensed from the FCC, you may enter the following information as follows:
- *Place of Issue*: Washington, DC
- *Date of Issue*: date issued on your FCC License
- *Issuing Authority*: FCC
- *Address of Issuing Authority*: Washington, DC

Upon completion of the form, send it along with a copy of your Amateur Radio License, the identification page of your Passport or Birth Certificate, the credit card authorization form, or international money order, or US money order, or check for the application fee plus Spectrum fee (currently license application fee of \$10 and Spectrum fee of \$25 for a total of \$35; however check the fee schedule on URCA website for any changes) to:

Utilities Regulation & Competition Authority  
UBS Annex Building  
East Bay Street  
P. O. Box N -4860  
Nassau, Bahamas

If there should be questions or concerns regarding this form, kindly contact URCA’s office at (242) 393-0234, email address:

[info@urbahamas.bs](mailto:info@urbahamas.bs) or [cwhyms@urbahamas.bs](mailto:cwhyms@urbahamas.bs)

You should receive confirmation of your Reciprocal Amateur Radio license in 2 – 3 weeks.

## Obtaining a Turks & Caicos reciprocal license:

Contact any member of the Turks & Caicos Amateur Radio Society, if you are in the Turks and Caicos. Or mail to:

T.A.C.A.R.S.  
Box 218, Providenciales  
Turks & Caicos Islands, BWI

Telephone (809) 946-4436 (Jody Millspaugh - VP5JM, TACARS secretary)

**Fee:** \$25.00 U.S., by cashier's check or money order, payable to:  
Turks & Caicos Amateur Radio Society.

(Due to the \$3.00 bank clearing charge for foreign checks, and the six weeks delay in crediting an account here with funds for a personal check, they are not normally accepted.)

The permit runs from Jan 1 through Dec. 31.

**Documentation required:** Photocopy of your current valid amateur license.

**Time required:** One should apply two months in advance because of slow mail service. If you apply in person, the time is considerably less. Licenses are not mailed to you but must be picked up in person.

Ms. Jody Millspaugh (VP5JM) TACARS secretary, can authorize operation by telephone or e-mail once the application is approved.

## Obtaining a Bermuda reciprocal license:

Apply to:

Department of Telecommunications  
60 Reid Street  
Hamilton, Bermuda HM11

Telephone (441) 295-5151  
Fax (441) 295-1462

**Fee:** no fee for a 3-month permit; if your stay will exceed 3 months, you may obtain a *license*, valid until the following June 30th, for \$25.

**Documentation required:** same as for Bahamas. Your letter should include your approximate arrival date and length of stay, the local contact address where you can be reached while staying in Bermuda.

**Time required:** several weeks if by mail; same day if you apply in person.



Members N6HUA and N6QFH learning about foreign operations

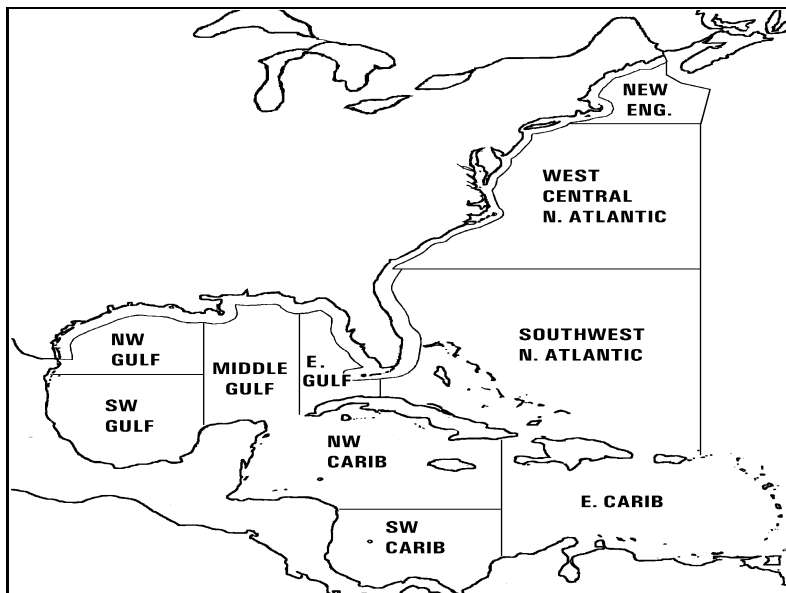
## **G: Weather Resources Available To The Boater**

### **G-1 General Information**

*Offshore Forecasts*, covering offshore waters seaward of the coastal forecast areas, are especially useful for mariners in our region of main interest. Forecasts are issued for four areas: (1) the Gulf of Mexico; (2) the Caribbean Sea and Southwest North Atlantic south of 31°N and west of 65°W; (3) the West Central North Atlantic between 31°N and 41°N west of 65°W, and (4) the New England offshore waters west of the “Hague Line” (a fishing treaty boundary between the U.S. & Canada) and the 1000 fathom line. (See map below.) The forecast includes a synopsis for the near term through 48 hours and an extended outlook through to 5 days. The synopsis and outlook has a brief description of significant weather features and forecast over the offshore waters through the forecast period. Emphasis is placed on the forecast movement of low pressure, high pressure, fronts, and tropical systems. It covers a smaller area and contains more detailed information than the High Seas Forecast.

*High Seas Forecasts*, The first part of the High Seas Forecast (HSF) describes warnings in affect for systems with sustained winds of 34 knots or greater. The second part of the HSF consists of the synopsis and forecast section, which describes weather systems that don't meet the warning criteria. Highlighted in this section are weather systems producing winds of at least 25 knots and seas of 8 feet. The message describes the initial and 36 hour forecast positions along with associated conditions if appropriate.

*Tropical Weather* reports, issued during hurricane season (June-November), include the *Tropical Weather Outlook*, a summary of existing and potential tropical weather situations, and *Forecast Advisories* giving the location, strength, and projected tracks of specific hurricanes, storms and depressions.



**NWS Offshore Forecast Areas**

## **G-2 Sources of Weather Information**

### **1. Via INTERNET**

With the rapidly increased use of wireless web and email, it is likely that boaters are able to access the Internet from their boats. Internet access is the best way to find weather sources and often might be used before the trip starts to locate the specific sources best suited to the trip. Here are a few National Weather Service sites of interest to boaters:

**<http://www.nws.noaa.gov>** - This is the National Weather Service (NWS) home page, it provides a number of useful links to NWS products.

**<http://www.nws.noaa.gov/om/marine/home.htm>** - The Marine product dissemination information center. This provides links to various items of interest to our boaters including all the forecasts (offshore, high seas and coastal) everywhere. It gives the schedules for USCG reports etc.

**<http://www.opc.ncep.noaa.gov/>** - A link to the ocean prediction center. It offers such information as links to HF-SSB fax schedules and many graphics products. Note: To print most of the charts available from the Ocean Prediction Center a TIFF Viewer is required and they give you a link to these viewers. Links to NWS forecast pages. All the coastal weather forecasts can be reached from this page such as:

**<http://www.nws.noaa.gov/om/marine/zone/wrdoffmz.htm>** - This site has all the marine forecasts for the east coast, offshore and high seas.

NOTE: The Internet is not part of the National Weather Service's operational data stream and should never be relied upon as a means to obtain the *latest* forecast and warning data. Linked data may not represent the *latest* forecast.

Here are a few additional sources:

[www.weatherunderground.com](http://www.weatherunderground.com)

[www.passageweather.com](http://www.passageweather.com)

[www.windfinder.com](http://www.windfinder.com)

[www.sailflow.com](http://www.sailflow.com)

[www.crownweather.com](http://www.crownweather.com)

## 2. Via EMAIL

This NWS FTPMAIL server provides weather information via email. The service is free and no signup is required. Using FTPMAIL, users can request files from NWS and have them automatically e-mailed back to them. Turnaround time is generally under one hour.

<http://weather.noaa.gov/pub/fax/ftpmail.txt> has detailed instructions on this process.

An example of how to receive the complete offshore for the SWNA is below.

Send email to: **ftpmail@weather.noaa.gov**

Leave the subject blank

Body of email contains these commands.

open

cd data

cd forecasts

cd marine

cd offshore

cd am

get amz088.txt        {editors comment: this gets the synopsis}

get amz080.txt        {editors comment: this gets the forecast}

get amz090.txt        {editors comment: this gets the outlook}

quit

## 3. Via VOICE - HF RADIO

The U.S. Coast Guard (USCG) broadcasts weather on the HF frequencies. These broadcasts use a synthesized voice known as "Perfect Paul" which is very distinctive and serves as an aid in identifying and copying these weather broadcasts. Almost any all-band HF receiver with single sideband can copy them. A recording device is a valuable aid in copying and utilizing such broadcasts, because accurate real-time copying of long reports by hand can be difficult. All broadcasts are upper single sideband (USB), and include weather forecasts and warnings. Frequencies are carrier (dial) frequencies. One of the popular stations is NMN whose schedule is listed below; it came from this web site.

<http://www.nws.noaa.gov/om/marine/hfvoice.htm> The U.S. Coast Guard HF voice broadcast from NMN in Chesapeake, VA is now simulcast from NMG in New Orleans, LA.



**HF VOICE BROADCAST SCHEDULE ALL FREQUENCIES ARE USB**

UTC Time	Fcst Type	4316 NMG	4426	6501	8502 NMG	8764	12788 NMG	13089	17314
0330	O	X	X	X	X	X	X		
0515	H	X	X	X	X	X	X		
0930	O	X	X	X	X	X	X		
1115	H	X		X	X	X	X	X	
1530	O	X		X	X	X	X	X	
1715	H	X		X		X	X	X	X
2130	O	X		X	X	X	X	X	
2315	H	X		X	X	X	X	X	

O=offshore, H=highseas

**4. Via VOICE -- VHF RADIO**

NOAA Radio stations continually broadcast coastal waters forecasts, currently out to 60 nautical miles from shore divided into many small segments. VHF frequencies used include: 162.550 Mhz, 162.400 Mhz, 162.475 Mhz, 162.425 Mhz, 162.450 Mhz, 162.500 Mhz, and 162.525 Mhz. Which one will work best depends on your location. Lists of all the NOAA Weather Radio transmitters and their coverage is available at <http://www.nws.noaa.gov/nwr/listcov.htm>.

**5. Via RADIO FACSIMILE**

Radiofax, also known as HF FAX, radiofacsimile or weatherfax, is a means of broadcasting graphic weather maps and other graphic images via HF radio. HF radiofax is also known as WEFAX, although this term is generally used to refer to the reception of weather charts and imagery via satellite. Maps are received using a dedicated radiofax receiver or a single sideband shortwave receiver connected to an external facsimile recorder or PC equipped with a radiofax interface and application software.

A Radio facsimile Charts User's Guide is available here

<http://www.opc.ncep.noaa.gov/UGbegin.shtml>

A complete schedule of the radio fax schedule is available in PDF here.

<http://www.nws.noaa.gov/om/marine/rfax.pdf>

or here on the web

<http://www.opc.ncep.noaa.gov/shtml/atlsch.shtml>

The schedules of some of the radiofax stations most likely to be used by WRCC members are listed below:

**Halifax, NS** Call Sign CFH broadcasts continuously on the following frequencies: 122.5 khz, 4271 khz, 6496.4 khz, 10536 khz, and 13510 khz.

**Boston, MA** Call Sign NMF broadcasts continuously on 6340.5 khz and 9110 khz, and on 4235khz from 0230Z to 1028Z and 12750 from 1400Z to 2228Z.

**New Orleans, LA** Call Sign NMG broadcasts continuously on 4317.9 khz, 8503.9 khz and 12789.9 khz

**6. Via WINLINK**

Weather is available via the WinLink system. Graphic and text-based weather downloads from an extensive list of weather products as well as many help files is accessed from a list provided within the AirMail software. This list is updated upon

request by the user via an AirMail feature. There are currently over 200 different Weather products available Worldwide via the WinLink 2000 system. For more information see the section on digital methods.

## 7. Via SITOR

<http://www.nws.noaa.gov/om/marine/hfsitor.htm>

The U.S. Coast Guard broadcasts NWS highseas forecasts and storm warnings from four high seas communication stations in the SITOR (SImplex Teletype Over Radio) mode. Transmission range is dependent upon operating frequency, time of day and atmospheric conditions and can vary from only short distances to several thousand miles. U.S. Coast Guard SITOR text broadcasts are performed in mode B, FEC. SITOR is also known as Narrow Band Direct Printing (NBDP). SITOR/NBDP is an automated direct printing service similar to NAVTEX, but does not offer all of the same functionality such as avoiding repeated messages.

The HF SITOR (NBDP) Broadcast for the Boston (NMF) station is on these frequencies 6314 khz (0140Z only), 8416.5 khz, 12579 khz, 16806.5 khz (1630Z only). Broadcast starts at 0140Z and 1630Z Assigned frequencies are shown; for carrier frequencies subtract 1.7 khz.

## 8. Via NAVTEX

<http://www.nws.noaa.gov/om/marine/navtex.htm>

NAVTEX is an international automated medium frequency (518 khz) direct-printing service for delivery of navigational and meteorological warnings and forecasts, as well as urgent marine safety information to ships. It was developed to provide a low-cost, simple, and automated means of receiving this information aboard ships at sea within approximately 200 nautical miles of shore. The U.S. Coast Guard operates NAVTEX stations in the U.S. There are no user fees associated with receiving NAVTEX broadcasts. [Within the U.S., there are no current plans to broadcast NAVTEX on the alternate designated frequency of 490 khz.] The U.S. Coast Guard is exploring the possibility of broadcasting NAVTEX on the alternate frequency of 4209.5khz from New Orleans or other station on an experimental basis beginning in the summer of 2000. For this test, the broadcast content will be identical to that of the New Orleans 518khz NAVTEX broadcast.

NAVTEX receivers must be programmed with proper NAVTEX station and subject identifiers in order to receive weather broadcasts. It is intended that all NAVTEX weather be broadcast with subject indicator "B", for Meteorological Warnings, which cannot be rejected by the NAVTEX receiver, or "E" for routine forecasts. However, this cannot be fully implemented at the present time within the U.S. due to technical problems. Therefore, all mariners in U.S. waters should program their NAVTEX receivers to include subject indicator "E" in order to receive both warnings and routine weather forecasts via NAVTEX.

### Time Schedule for Several NAVTEX Stations

Station	ID	WX Broadcast Schedule (UTC)
Bermuda	B	0010, 0410, 0810, 1210, 1610, 2010
Sydney, NS	Q	0240, 0640, 1040, 1440, 1840, 2240 *
Yarmouth, NS	U	0320, 0720, 1120, 1520, 1920, 2320 *

Boston	F	0045, 0445, 0845, 1245, 1645, 2045 Forecast, Eastport, ME to Sandy Hook, NJ
Portsmouth	N	0130, 0530, 0930, 1330, 1730, 2130 Forecast, Sandy Hook, NJ to Murrells Inlet, SC
Savannah	E	0040, 0440, 0840, 1240, 1640, 2040 Forecast, Murrel's Inlet, SC TO Flagler Beach, FL
Miami	A	0000, 0400, 0800, 1200, 1600, 2000 Forecast, SW N Atlantic S OF 31N AND W OF 65W
San Juan	R	0200, 0600, 1000, 1400, 1800, 2200 Forecast, Caribbean Sea and SW N Atlantic
New Orleans	G	0300, 0700, 1100, 1500, 1900, 2300 Forecast, Gulf of Mexico

\*All VCO and VAU broadcasts are repeated in French 15 minutes after the listed times identification S and V respectively.

**9. Via HAM WEATHER NETS** "Hams" operate several maritime "nets" where weather information is exchanged. The Waterway Net gives weather every day at a little after 0745 local time. See Section D for more information.

The **Bahamas Weather Net** meets daily at 0720 ET on 3696 or 7096khz LSB, depending on propagation. (This frequency is outside U.S. phone bands. U.S. hams with Bahamas reciprocal licenses may transmit voice on these frequencies only if in Bahamian territory or waters.) Net Control gives Florida Coastal and Bahamas forecasts. Cruisers report as many of the following parameters as are available: location, time, cloud cover & type, visibility, wind direction & speed, air and sea temperature, humidity, barometric pressure and tendency, rainfall last 24 hours, and number of boats present. Reports are forwarded to the Nassau weather office. (A similar non-Ham marine SSB net operates at 0700 ET on 4003 khz)

The **Hurricane Watch Net** (<http://www.hwn.org>) This weather net becomes activated whenever a system has achieved hurricane status and is within 300 miles of populated land mass. Net operations are conducted on 14.325 MHz, and when band conditions warrant, are moved to 3.950 MHz.

The purpose of the Net is two fold:

1. Disseminate the latest National Weather Service advisories on active hurricanes in both the Atlantic and Pacific side of the Americas. This includes transmissions to any maritime amateur radio operators that may be in the affected area.
2. Gather real-time ground level weather conditions from amateurs in the affected areas and to get these reports to the National Hurricane in a timely and accurate fashion.

The basic procedures on the Hurricane Net are: Do not transmit on 14.325 Mhz unless asked to do so by the Net Control. Any station located within 100 miles of the eye of the hurricane, or in a watch or warning area is encouraged to check in. Within this group, those who are already experiencing 30 kts or greater of wind or a falling barometer should definitely respond when the Net Control asks, "Are there any stations in the affected area needing a fill or wish to check in? ". As the hurricane

approaches landfall, the Net Control will narrow requests to a specific area or ask only for stations experiencing certain conditions such as winds at 50 knots or greater.

NOTE: WRCC may be asked to share 7.268 with the Hurricane Watch Net during our regular net time. We have honored this request in the past and should continue to do so. This is consistent with the emergency communication traditions of ham radio.

**APRS**-Real time weather data can be obtained with APRS. While this system does not provide forecasts, it does provide the boater with an actual weather conditions at the point of origin. Stations in Naples, FL, Jacksonville, FL and Daytona, FL can be found on 10.151khz LSB. The WINAPRS software can run in the background so it can be used while other programs like navigation programs run in the foreground. For more information an APRS see Section H-2.

## 10. Via OTHER SOURCES

Weather is available from sources such as **WLO** for account holders at a cost per minute basis. Contact the provider of interest for details.

**SOUTHBOUND II — “Herb’s Net”** Herb Hilgenberg, a Canadian amateur weather forecaster (said by many to be better than professionals) provides daily weather routing advice via marine SSB radio to vessels on Atlantic passages at 2000-2200 UTC on 12.359 Mhz USB. The schedule may change, so before your voyage you may want to contact Herb by telephone or fax at (905) 681-7114 or email at **Hehilgen@aol.com**. Dedicated to providing accurate weather information to seafarers, Herb finances his operation from his own resources. Contributions are welcome and may be sent to him at 5468 Hixon Ave., Burlington, Ontario, Canada L7L 3S2.

The **Caribbean Weather Center's Daily SSB Weather Net** for cruisers and other vessels in the Caribbean and the SW N Atlantic is a subscription service (however, anyone may listen) by Chris Parker.

Nets conducted 6 days/week, Monday through Saturday.

**Summer:** Effective during US Daylight Saving Time (March-October):

4045	USB	6:30am AST /EDT, 1030 UTC
8137	USB	7:00am AST / EDT, 1100 UTC
4045	USB	8:00am AST /EDT, 1200 UTC
8104	USB	8:30am AST/ EDT, 1230 UTC
12350	USB	9:15am AST / EDT, 1315 UTC
6221	USB	9:30am AST / EDT, 1330 UTC

When Tropical weather has the potential to threaten any interests I'm aware of (and occasionally during periods of Spring & Fall migration), we'll conduct an evening Net, usually on 8104 USB at 7:00pm AST / EDT, 2300 UTC, unless announced otherwise.

**Winter:** Effective during US Standard Time (November into March):

8137 USB 7:00am AST /6:00am EST, 1100 UTC

4045 USB 7:30am AST /6:30am EST, 1130 UTC

8104 USB 8:30am AST /7:30am EST, 1230 UTC

12350 USB 9:30am AST /8:30am EST, 1330 UTC

6221 USB 10:00am AST /9am EST, 1400 UTC

More information can be found at <http://www.caribwx.com>

**Bahamas weather** is available Mon through Sat on the commercial station ZNS 1540 AM at 0615 and 0645 local time. It can be heard throughout the Bahamas.



# **H: DIGITAL CONNECTIONS**

## **H-1 WINLINK 2000 A Digital Potpourri**

WinLink 2000 is an Amateur Radio digital service that provides the automatic transfer of messages between Mobile Amateur Radio Operators World-wide and the Internet email System. The Central Server for Internet email access and a growing number of Participating Mail Box BBS shore stations; PMBO's (presently 26 of them) provide worldwide access for Maritime, RV, or other remotely located Amateur Radio users, enabling them to maintain contact with family and friends, regardless of location. Each station has a mirror image of the entire message database; therefore, WinLink 2000 provides the mobile user the ability to pickup or deliver email to or from any of them. The PMBO's continuously scan frequencies in the H.F. Amateur bands in anticipation of a connection with a mobile user.

Features of WinLink 2000 include:

- ❖ Text -based email with binary attachments such as DOC, RTF, XLS, JPG, TIF, GIF, BMP, etc.
- ❖ Position inquiry accessible from the Internet either graphically via APRS, or in text format via E-mail or radio to track the mobile user.
- ❖ Graphic and text-based weather downloads from a list of over 200 worldwide weather products.
- ❖ Pickup and delivery of email regardless of the participating station accessed.
- ❖ End-user control of which services and file sizes attachments are transmitted from the participating stations.
- ❖ The ability for each user to re-direct incoming email messages to an alternate email address.
- ❖ The ability to use a WEB browser to send and receive WinLink 2000 messages over the Internet.

To use Winlink 2000 one must have a proper Amateur Radio operator's license, a TNC that works with Pactor I or II and Airmail software, which may be downloaded free of charge from the AirMail Home Page (<http://www.airmail2000.com>). With the proper combination of equipment, automatic radio control of the users radio is available from the AirMail desktop. The "Pactor Primer" found on this site provides invaluable information regarding the installation of AirMail with many different radio and TNC (radio modem) combinations. It is highly recommended that the "Pactor Primer" be downloaded and read thoroughly. The K4CJX Home page: <http://winlink.org/k4cjsx> has detailed information about the WinLink 2000 network, including their locations and scan frequencies. The WinLink 2000 home page is located at: <http://winlink.org/wl2k>.

WinLink was originally created by Victor D. Poor, W5SMM, specifically for the mobile ham. Vic, who is a major force behind the World's largest Wireless Common Carrier, Globe Wireless, continues to enhance WinLink in order to take advantage of new and enabling technologies. Accompanying Vic on the WinLink 2000 Development Team are Hans Kessler, N8PGR; Rick Muething, KN6KB and Steve Waterman, K4CJX.

Questions regarding the operation of WinLink 2000 and the AirMail Client may be addressed to:

Steve, K4CJX: k4cjx@home.com (WinLink/AirMail)

Rick, KN6KB: rmuething@cfl.rr.com (WinLink/ AirMail)

Jim, KE6RK: ke6rk@winlink.org (AirMail)

Editor's Note 2/01: Control operators of Winlink 200 report an alarming increase in abuse of the system by improperly licensed operators. If records do not indicate you are licensed to operate in the HF Ham bands, you must provide proof to the Winlink 2000 control operator that you have a special authority to do so. Failure to do so will result in you being locked out of the system. Remember it is against the law to operate on frequencies for which you are not licensed whether using SSB or digital modes. Contact one of the above for details.

## **H-2 APRS - Automatic Packet Reporting System**

Imagine for a moment a color map on a computer screen that graphically displays your position and all others using the system. Imagine there being weather stations gathering data for you at their locations. Add to that the National Hurricane Center putting hurricane movement on that map. That is APRS in a nutshell.

APRS was developed by Bob Bruninga, WB4APR, at the U.S. Naval Academy in Annapolis, Maryland. It is a shareware, software package available from the Waterway Net Library. APRS has all of the above plus the ability to communicate short (one line) messages.

To get started you need a computer, the APRS software, a TNC that works with GPS and your HF radio. A color screen is not required for the system to work. The software package comes with complete instructions and "tons" of readme files on how to best use the system. Most boats are using 10.151 Mhz LSB. Upon request to WB4GQK, or any Waterway Netter on the system, you can have your position reported to the Net during *Position Reports*.

Once set up, your position updates can be entered manually or beamed automatically from your GPS or Loran navigation equipment.

More information on APRS can be found at:

<http://www.qrz.com/features/APRS/index.htm>,

<http://aprs.rutgers.edu/>

<http://www.aprs.net>

Some suggested WRCC uses of APRS can be found at <http://www.aprs.net/vm/DOS/BOATS.HTM> (caps important)

See also the read me files of APRS and the Scuttlebutt, April 1994

# **I: OTHER WRCC RESOURCES**

## **I-1 WRCC Web Site**

The WRCC Web Site (<http://www.waterwayradio.net>) has supplemental information of interest to Club members and potential club members including:

- General news and information.
- Net format and procedure.
- Membership Application form.
- Bahamas reciprocal licensing information.
- Technical information.
- Excerpts from recent Scuttlebutts.
- Links include:

- Ship tracking sites.
- Navigation & boating links.
- Web pages of other ham radio nets and organizations.
- Weather forecasts, observations, and charts.
- Notices to Mariners.
- Coast Guard navigational information.
- Pages with regional guides and information for cruisers.

In order to maintain member's privacy we specifically do not maintain a roster of names, addresses, e-mail addresses or other membership information on the web site. Our annual Roster contains most of this information.

The web page is a completely volunteer effort and does not use any funding from the WRCC treasury. Its design is deliberately kept simple to accommodate those using low speed connections.

You can do your part to help us by reporting any broken links and suggesting new or alternative links on the web page forms. However, keep in mind that we do not as a rule provide direct links to commercial sites.

We welcome member's contributions to the web site, esp., the new Discussion Board and forum.

Your comments can be sent to the commodore and the Webmaster using the form on the web site.





# **SCUTTLEBUTT**

Waterway Radio & Cruising Club  
*Serving Amateurs Afloat Since 1963*

## Purpose

Scuttlebutt is published quarterly to inform members about Waterway Net news, activities and items of interest. Email your material to the Editor for possible submission.

## What to Send

Your Editor is always looking for articles and photos:

- News from gatherings and luncheons.
- Human interest stories, humorous, hair-raising and “Don’t worry, honey . . .”
- Bahamas and Island news
- CW and Land Cruiser’s news
- Technical topics
- Safety & navigation notices
- Letters to the editor
- Poetry
- Boating/Ham events
- Sea Chest: items wanted or for sale
- Use your imagination and send it in.

Send Silent Key and obituary notices to our Sunshine Lady. Address changes should be sent to our Club’s secretary.

Check on the Net for closing dates for submitted material for the quarterly issues.

### **I-3 Nets Associated With The WRCC**

The **Bahamas Weather Net** meets on either 7096 or 3696 at 0720 ET. See the Section G-2 item 9 for more information.

The **Computer Net** covers subjects related to the use of computers and their various applications and meets most Fridays following the regular Net

The **CW Net** currently meets from 0700 to about 0745 ET on 7.050Mhz. Fast code days are Tuesday, Thursday, Saturday and Sunday, over 15 wpm. Slow code days on Monday, Wednesday and Friday, about 15 wpm. Straight keys are encouraged on Fridays, and QRQ on Sundays. Net rosters and information are available from the Net Manager whose name can be obtained by asking any Club officer.

The **RV or Land Cruiser's Net** caters to WRCC members who also travel in Recreational vehicles. Its purpose is to allow members to keep up with their friends when land cruising, to exchange information regarding campgrounds and equipment and to arrange for social gatherings. The net meets each Wednesday following the regular net.

The **Winlink/Airmail** net usually meets each Thursday, following the Waterway Net.

### **I-4 Some Other Maritime Nets**

Here are some other maritime nets that are not associated with the WRCC but may be of use to its members.

The **Intercontinental Net** starts at 1100Z and is immediately followed by the **Maritime Mobile Net**. This net carries on until propagation is lost with the US West Coast or about 0200Z. These nets on 20 meters are usually found between 14.300 and 14.316Mhz and work around the world and around the clock.

The **Caribbean Net** is known to switch frequencies, but is often heard near 7.240Mhz in 1997. Operation time is from 1100Z until 1200Z.

The **Atlantic Net** operates on 21.400Mhz starting at 1300Z and is a relay for the UK Net, which covers the Mediterranean.

The **BARS** (Bahamas Amateur Radio Society) Net operates on 7.145Mhz at 0900 local. Anyone located in the Bahamas with Bahamian privileges is welcome to join in.

### **I-5 Emergency Medical Help**

The Waterway Net can be a source of help for EMERGENCY medical advice when local help is not immediately available. The Net has a Fleet Surgeon, "Dr. Jim" who generally monitors each morning to listen for any "emergency, medical or priority traffic".

If you have a medical emergency that needs assistance at times other than the Net time, ask any of our stations to contact "Dr. Jim". Dr. Jim Hirschman, K4TCV, who is located in Miami, Fl, is experienced in general medicine, internal medicine, cardiology and emergency care. When Dr. Jim is unavailable ask a shore station to make your request known to a shore based Emergency Room.

Dr. Jim offers this help only for medical suggestions and advice, based on the questions you pose over the radio and only as a stopgap measure until proper medical diagnosis can be made at a medical facility. This service is not to be considered a means of establishing a precise diagnosis or fee-for- service practice of medicine.

Dr. Jim has a "First Aid for Boaters" paper on his web site, which covers many of the bothersome illnesses boaters encounter. You can find it at <http://www.gate.net/~hirschj>. Click the First Aid "hot link".

### **I-6 Emergency Veterinarian Services**

The Waterway Net occasionally gets requests from offshore pleasure craft for aid to their animals that have become ill or hurt. Dr. Hal Ott, Ruskin Animal Clinic, Ruskin, Florida, a non-ham, has offered to provide emergency advice for such cases.

The procedures involved in requesting pet aid are as follows. Call Dr. Ott's on:

- Hot Line (813-649-1171) during business hours. (Mo, Th, Fr 0700 - 1730 Eastern; Tu 0700 - 1900; We 0700 - 1200, 1400 - 1730; Sa 0730 - 1300)
- Beeper (800-986-4451) 24 hours.

This assistance is meant ONLY for people who are cruising and cannot reach a local vet. Any questions - contact Terry Palmer, K1LCH.

### **I-7 WRCC Luncheons**

A number of locations have regular lunches to permit WRCC members boating through the area to have an "eye-ball" with local members. The list below is subject to change and when in doubt, check the Scuttlebutt or listen to the luncheon announcements during the Announcement segment of the Net.

Bahamas, Nassau – Lunch

Thanksgiving-June, every Thu, 1230

Crocodile's, just west of BASRA

Contact-C6AGG

FL, Marathon-Lunch@

Winter months, every Wed 1145

Summer months, 1st Wed 1145

Contact- ND7K

FL, Melbourne-Lunch

2nd Wednesday 1130

Pineda Inn, US I north of Melbourne

Anchoring and dinghy dock available

Contact-KN4RB

FL, St. Petersburg -Lunch@

2nd Sat, 1300

Midtown Sundries at 200 1<sup>st</sup> Ave. S.

Contact- Ken, KC4OSZ  
NC, Oriental / New Bern  
Eastern North Carolina Luncheon  
October & May  
Contact-K4IMK, K8TF

® Reservation required

In addition, the Net has an annual picnic in Melbourne, FL in mid November. Listen to the Net for details.

## **J: - MORE USEFUL INFORMATION**

**J-1 Frequency Privileges** for SSB operation depend upon the class of your license and the country in which you are located. The legal frequencies for the three most common bands used by net members are listed below. Boats who are in international waters use the frequencies of their flag country

<b>40 meters</b>	USA	BAHAMAS	CANADA*
General	7175-7300	7040-7300	7050-7100 7150-7300
Advanced	7125-7300	SAME	SAME
Extra	7125-7300	SAME	SAME
<b>20 meters</b>			
General	14225-14350	14050-14350	14101-14350
Advanced	14175-14350	SAME	SAME
Extra	14150-14350	SAME	SAME
<b>80 meters</b>			
General	3800-4000	3600-4000	3725-4000
Advanced	3700-4000	SAME	SAME
Extra	3600-4000	SAME	SAME

\* RAC Band Plan frequencies

### **J-2 FCC Rules for Station Identification**

Excerpted from: "Code of Federal Regulations Title 47 part 97 (Amateur Radio Service). Section 97.119.

(a) Each amateur station, except a space station or telecommand station, must transmit its assigned call sign on its transmitting channel at the end of each communication, and at least every 10 minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions. No station may transmit unidentified communications or signals or transmit as the station call sign, any call sign not authorized to the station.

(f) When the station is transmitting under the authority of a reciprocal permit for alien amateur licensee, an indicator consisting of the appropriate letter-numeral designating the station location must be included before the call sign issued to the station by the licensing country. When the station is transmitting under the authority of a amateur service license issued by the Government of Canada, a station location indicator must be included after the call sign. At least once during each intercommunication, the identification announcement must include the geographical location as nearly as possible by city and state, commonwealth or possession.

### **J-3 Popular 2-Meter Repeaters**

+ indicates up 600 khz, - indicates down 600 khz.

#### **EAST COAST NORTH OF FL**

Annapolis, MD	147.105+	Wide coverage
Lexington Park, VA	146.640-	
Deltaville, VA	145.450-	
Kent Island	146.940+	107.2hz tone
Albemarle/Pamlico Area	145.210-	
Beaufort, SC	145.310-	
Oriental, NC	147.210+	151.4 tone
Trenton, NC	145.210-	Wide coverage, Skywarn
Charleston, SC	147.300+	

#### **FL - MIAMI TO JACKSONVILLE**

Jacksonville	146.760-	
St. Augustine	145.210-	
Flagler Beach	147.075+	
Titusville	146.910-	
Kennedy Space Center	146.940-	
Cocoa Beach	145.370-	Skywarn
Cocoa	146.880-	
Melbourne	146.850-	
Ft. Pierce	147.210+	
Port St. Lucie	147.060+	
Stuart	147.060+	
Riviera Beach	147.165+	
W. Palm Beach	147.160+	
Boca Raton	146.820-	
Pompano/ Ft. Lauderdale	146.610-	
Ft. Lauderdale/ Hallandale	146.850-	
Miami/ Biscayne	145.390-	
Miami/ Homestead	147.000-	Wide coverage

#### **FLORIDA KEYS**

Key Largo	147.165+	
Plantation Key	146.715-	
Marathon	147.255+	110.0hz tone
Key West	146.940-	KWARC repeater

#### **FL WEST COAST**

Cape Coral	147.225+	
Fort Myers	146.880-	
Punta Gorda	146.745-	
Englewood	146.700-	
St. Petersburg	147.060+	
Holiday (West Coast)	147.150+	
New Port Richey	146.640-	Wide coverage
Sarasota area	145.430-	100hz tone, Skywarn, Wide coverage

## **NORTH GULF COAST**

Destin, Fl	147.000+	
Crestview, Fl	147.360+	100hz tone
Panama City, Fl	147.075+	
Port St. Joe, Fl	147.300+	
Mobile Bay Area	146.820-	(203.5hz tone)

## **BAHAMAS AREA**

Nassau, Bahamas	146.640-
Treasure Cay, Abacos	145.210-

## **J-4 Important Phone Numbers**

Scuba Diving Emergency    Duke University (24 hours)    (919) 684-8111

United States Coast Guard    Fort Lauderdale/HW    (954) 927 1611  
Miami (toll free)    (800) 874-7561

### Bahamas Rescue:

Nassau	BASRA    (9 to 5)	(242) 325-8864, VHF/ SSB
	(Police, 24hr svc for BASRA )	(242) 322-3877
Freeport	BASRA (work hours)	(242) 352-9246, VHF
	(home)	(242)-352-6222, #6383
Abacos	BASRA	(242) 366-0280, VHF
	Or	(242) 366-0282

### Turks and Caicos Rescue:

Grand Turk: (Police, initial contact);    (649)-946-2146, VHF  
Providenciales: (Police, initial contact);    (649)-946-4259, VHF

## **J-5 Some Common Q Signs Used on the Waterway Net**

QRM	interference caused by radio signals
QRN	interference caused by static
QRT	closing down station
QSB	signals are fading in and out
QSL	message understood, does not imply agreement
QSO	radio contact, conversation
QSY	change frequency or location
QTH	location of radio station

## J-6 The Standard ITU Phonetic Alphabet.

The Net encourages the use of this alphabet.

A	Alpha	AL fa	N	November	no VEM ber
B	Bravo	BRA vo	O	Oscar	OS car
C	Charlie	CHAR lee	P	Papa	pa PA
D	Delta	DEL ta	Q	Quebec	key BECK
E	Echo	EK o	R	Romeo	RO me o
F	Foxtrot	FOX trot	S	Sierra	see AIR ah
G	Golf	Golf	T	Tango	TAN go
H	Hotel	ho TEL	U	Uniform	U nee form
I	India	IN dee ah	V	Victor	VIC tah
J	Juliett	ju lee ett	W	Whiskey	WIS kee
K	Kilo	KEY lo	X	X ray	X ray
L	Lima	LEE ma	Y	Yankee	YAN key
M	Mike	Mike	Z	Zulu	ZU lu

## J-7 Miscellaneous Information.

WRCC members are eligible for a 50% reduction in **Boat/US dues** through a Boat/US CO-OP Group arrangement. When joining or renewing membership, simply enclose half of the regular dues amount and note that you are a member of the WRCC, Group #GA84618B.

**Okeechobee Waterway information** (depth, lock information) is available via a link on our club's opening web page.

**Erie (Barge) Canal** information at <http://www.canals.state.ny.us/news/index.html>.

Extensive information on **foreign operations, third party traffic, reciprocals** can be found at: <http://www.arrl.org/FandES/field/regulations/io/>

The most common cause of **audio distortion** in SSB transceivers is low voltage at the transmitter. A primary caused of this is loss through an electrical panel circuit breaker. The internal resistance of circuit breakers can cause large voltage drops at high currents. Wire your rig directly to the battery with 20-30 amp fuses inline on both the positive and negative legs. Use heavy wire 6 ga or larger for long runs, often the factory supplied 12V cable is too light as it is designed to be used with batteries at 13.5 to 14 volts not the 12.5 volts found on boats at anchor.

Find information on **Bahamas holidays** and more at: <http://www.bahamas.com/>

Information will be available about **T&C rescue** at: <http://www.tcsr.org>



## **J-8 Acknowledgments**

Updating a booklet as wide ranging as this one requires a broad base of knowledge. The knowledge of a number of members was used to compile the book. The editor wishes to thank each of them for their inputs and comments and apologizes to anyone he has accidentally omitted.

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Steve Crow, K4CPX  
Chuck Grey, ND7K  
Dr. Jim Hirschman, K4TCV  
Don Hughes, N4EOW  
Jim Johnston, WB4GQK  
Rick Jones, WB6LNH  
John Knauth, KF4IOP  
Ken Kroth, WB2VJB  
Roger Land, KC4HCH  
Beryl Nelson, VP5DB

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Earl Quick, WD0ETL  
Bob Rader, NU4P  
George Salley, KA4FVB  
Jeanie Schreiber, N4WFM  
Jay Stormer, AE4MZ  
John Stufflebeam, N3DKZ  
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Jack Tyler, N3FYP  
Lee Ulbing, KD4DZX  
Paul Van Meurs, KM4MA  
Carolyn Wardle, C6AGG  
Steve Waterman, K4CJX  
Jan Wheeler, N0LTA  
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## NOTES