



# RMS Express – Winlink 2000 Global Radio E-mail System

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# What is Winlink 2000

- Worldwide system for sending e-mail via radio
- Provides e-mail from almost anywhere in the world.
- Provides vital support for 10,000+ sailors
- Adopted for contingency communication by many government agencies
- Used by infrastructure-critical NGOs such as International & American Red Cross, Southern Baptist Disaster Relief, DHS Tiered AT&T Disaster Response & Recovery, FedEx, Bridgestone Emergency Response Team, etc.

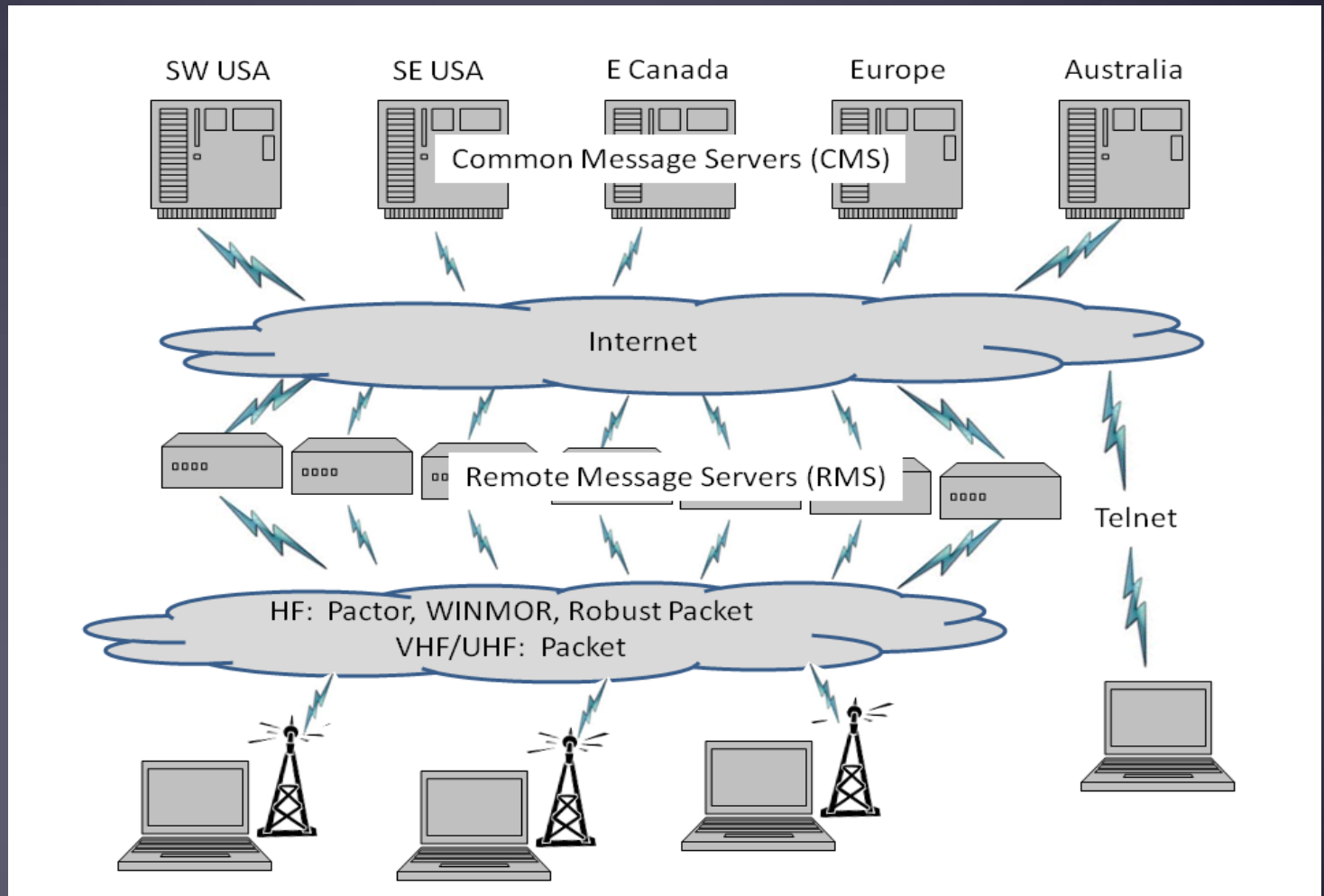
# Winlink 2000 System Architecture

Hierarchical levels of the Winlink 2000 system:

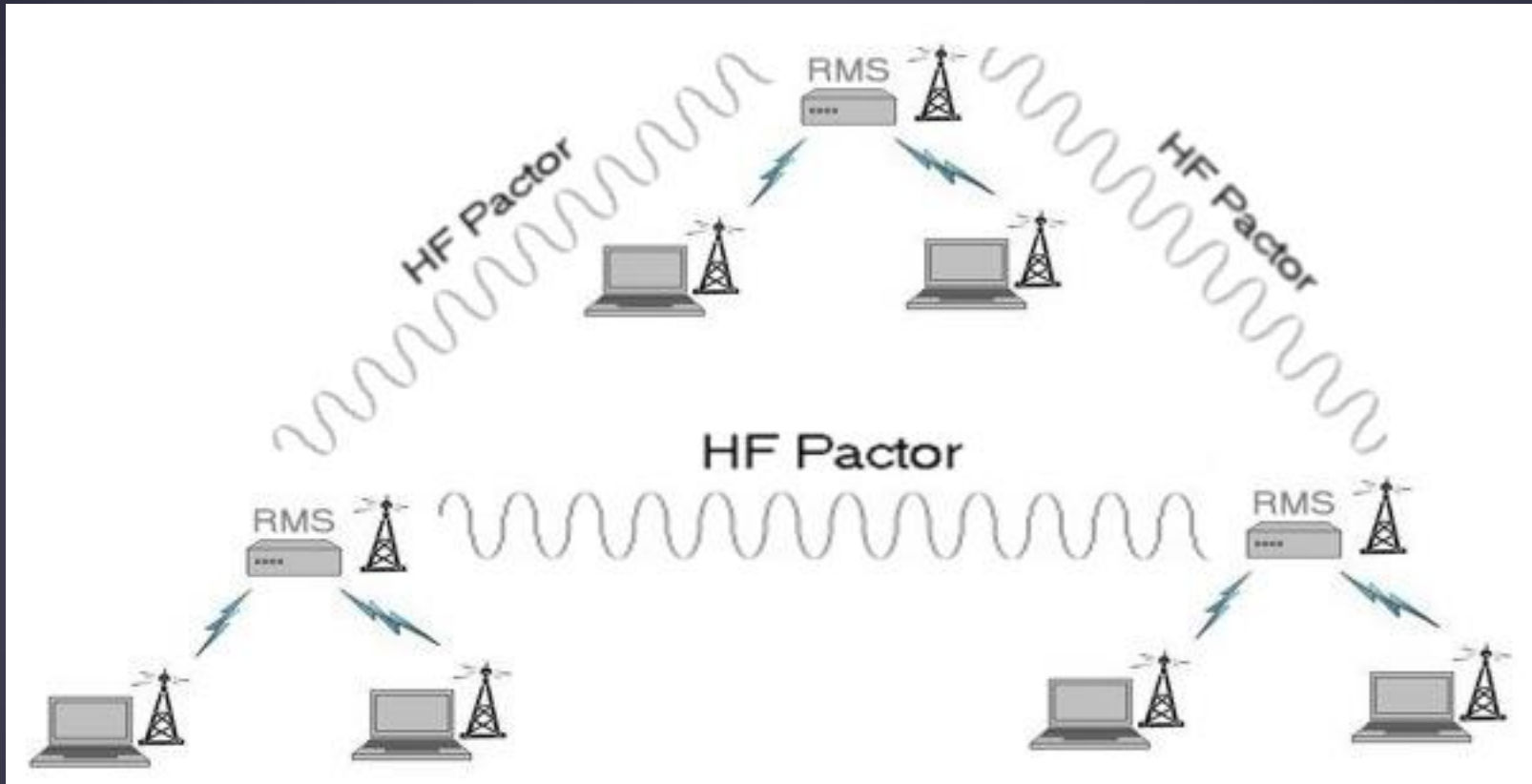
- 1. *Client system*** – Radio, computer with Winlink software, TNC (or sound card) and you, the end-user!
- 2. *Radio Message Server (RMS)*** – Radio gateway between the client (end-user) and the Winlink system backbone.
- 3. *Common Message Servers (CMS)*** – Winlink backbone.
  - 5 CMS locations,
  - redundant, fault-tolerant,
  - located on 3 continents.
  - One CMS sufficient for operation.

# Winlink 2000 Normal Network Operation

- CMS
- RMS (gateway)
- Client (you)

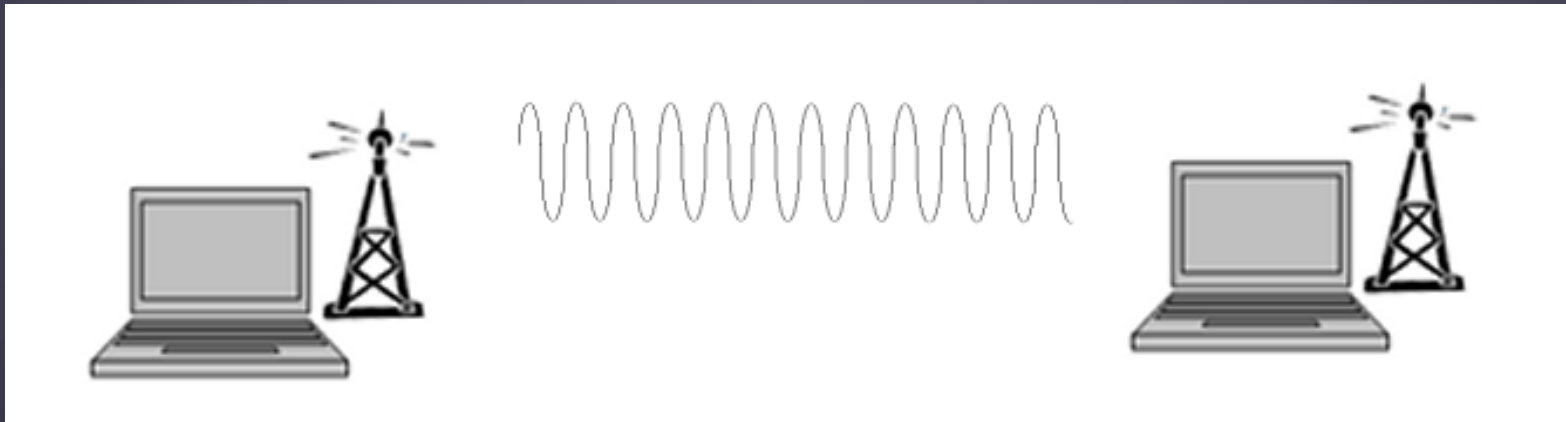


# Winlink Radio-Only Network



# Winlink Peer-To-Peer Radio-Only Operation

- Peer-to-peer: direct radio connection between end-users
- The Internet is not used, all communication by radio.
- Only the two client stations are involved.
- 100% error-free transmission and file attachments.



# Winlink Connection Modes

- **HF Pactor 1, 2, 3 and 4** – Fast and reliable but requires an expensive modem (\$1500+).
- **HF WINMOR** – “Poor man’s Pactor”. Not as good as Pactor, but operates with inexpensive sound card device (\$100). Speed between Pactor 2 and 3.
- **VHF/UHF Packet**
  - **9600 baud** – Fast, reliable, range limited and requires \$400 modem (Kantronics or SCS Tracker).
  - **1200 baud** – Slower, but can use inexpensive Byonics TinyTrak-4 modem.
- **Telnet** – Non-radio connection through the Internet. Good for training and use if radio is down or network is busy.

# Levels of Message Validation & Correction

- **No validation or correction** – RTTY, BPSK-31.
- **Forward Error Correction (FEC)** – Redundant information transmitted so minor errors can be corrected: MT63, Olivia, QPSK-31.
- **Automatic Repeat Request (ARQ)** – Positive or negative packet acknowledgements from receiving station: Pactor, Winmor, Packet, TCP/IP.
- Pactor and Winmor use both FEC and ARQ.
- Only ARQ provides 100% accurate message delivery.
- Accuracy is essential for EmComm.



# Resources Needed for RMS Express

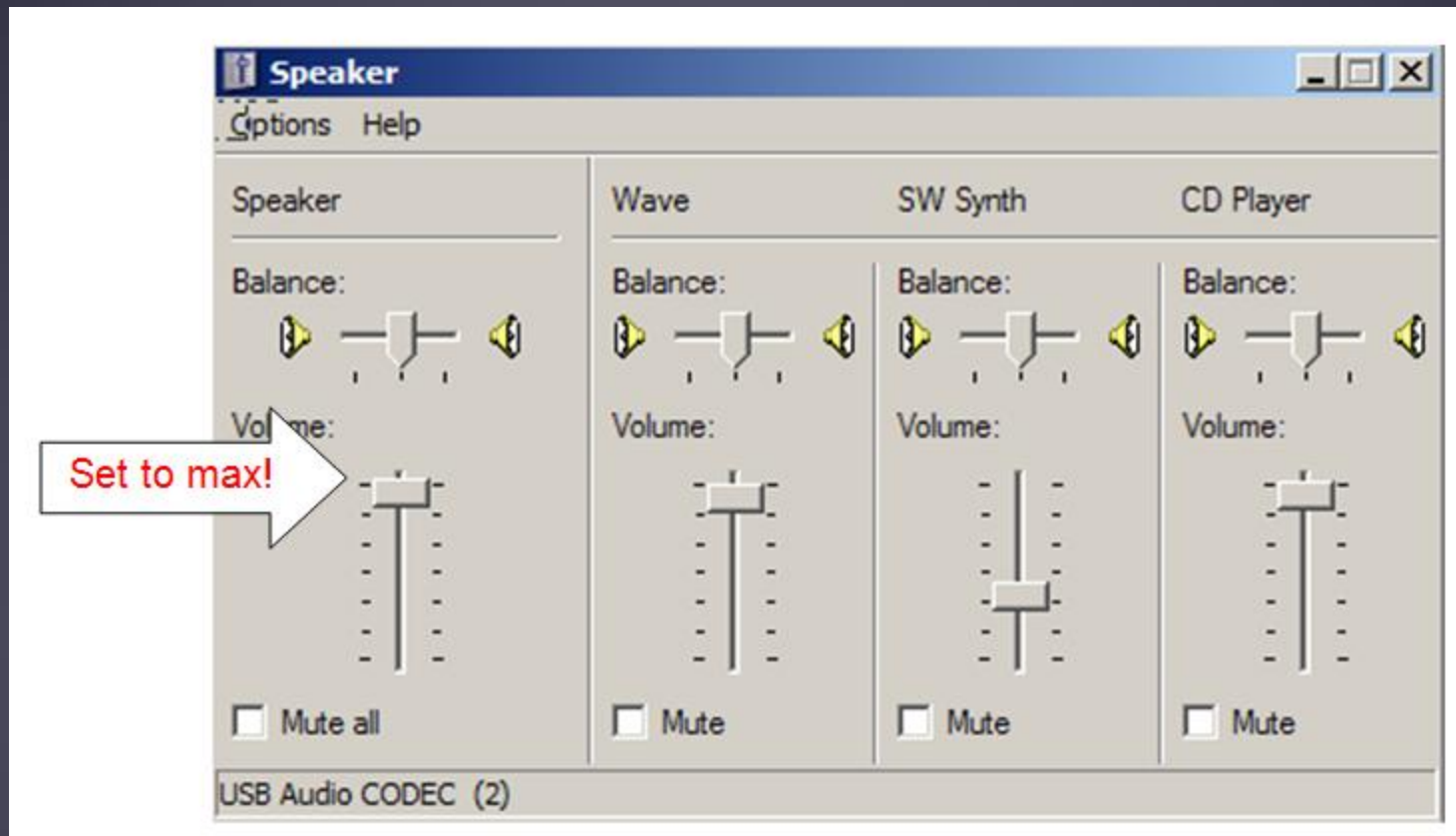
- Computer running Windows XP through Windows 8
- .NET 3.5 framework
- RMS Express program
- ITSHF propagation prediction program
- HF radio with data (sound) port and computer control
- Signalink USB soundcard interface (\$100):  
<http://www.tigertronics.com/>
- Note: Some new radios have built-in soundcards
- Software downloads:  
<ftp://autoupdate.winlink.org/User%20Programs/>
- All software is free

# Signalink Soundcard Interface

- Simple device powered by USB connection
- Cost is about \$100 including radio-specific cable
- Radio needs to have a data (sound) port
- Radio frequency needs to be computer controlled




# Configuring Sound Levels



# Installing RMS Express

- Download zip file:  
<ftp://autoupdate.winlink.org/User%20Programs/>
- Extract the .msi installer from the zip file and run it
- Browse C:\RMS Express\, right click on RMS Express.exe and select option to create a shortcut.
- Note: Winmor will be installed automatically
- Download propagation prediction program zip file, Extract .exe installer file from zip file and run it

# RMS Express Initial Setup

 RMS Express Properties ✕

**Call Signs**

My Callsign:       Optional auxiliary callsigns

My shortened callsign:

Aux Call 1:

Add callsign suffix if required (optional):       Aux Call 2:

My Grid Square:      

My Password (optional):       Use Secure Login

NOTE: A password is required only if you use secure login.

Winmor registration key (optional):

Display list of pending incoming messages prior to download

Warn about connections to stations holding messages

Disable Peer-To-Peer Message Transfer

Path to propagation forecast program:

**Service Codes**

(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)  
If you change service codes, you must update the list of channels.

Recalculate HF path quality if SFI changes more than:

Keep logs for    weeks

# RMS Express Main Screen

Begin connection

Connection Mode

Multiple call signs

Standard Folders

Personal message folders

Contacts address book

RMS Express 1.2.11.0 - W4PHS

W4PHS Files Message Attachments Move To: Saved Items Delete Open Session: Winmor WL2K Logs Help

No active session...

System Folders	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox	2013/02/27 18:02	C2A8F3HV1TQN	227	NNS4UR	NNS4UR	W4PHS	//MARS R/Test read acknowledgment 2
Read Items	2013/02/26 19:15	3MCGCA5W0TWE	195	NNS4UR	NNS4UR	W4PHS	//MARS R/Test ack
Outbox	2013/02/25 16:06	986W7AC54O7K	171	W4PHS	W4PHS	W4PHS	//WL2K /Test Relay 2
Sent Items	2013/02/21 20:48	C4403DK5SX6B	392	SMTP	SMTP:k1ky@bell...	W4PHS	//WL2K/ Message Counter
Saved Items	2013/02/21 19:50	ODP33KNG3XI9	593	SMTP	SMTP:k4cjt@co...	W4PHS ...	Re: //WL2K /M700 parts
Deleted Items	2013/02/21 16:38	SDP4883MPBKA	426	W4LTX	W4LTX	W4PHS ...	//WL2K /M700 parts
Drafts							

Personal Folders

Contacts

tclubservice@hertz.com  
1momeldrum@gmail.com  
5carolyn@bellsouth.net  
6153476430@bt.att.net  
615-771-4181

Message ID: C2A8F3HV1TQN  
Date: 2013/02/27 18:02  
From: NNS4UR  
To: W4PHS  
Source: NNS4UR  
Subject: //MARS R/Test read acknowledgement 2

<No message body>

[Read receipt requested]

# Composing A Message

New Message Button

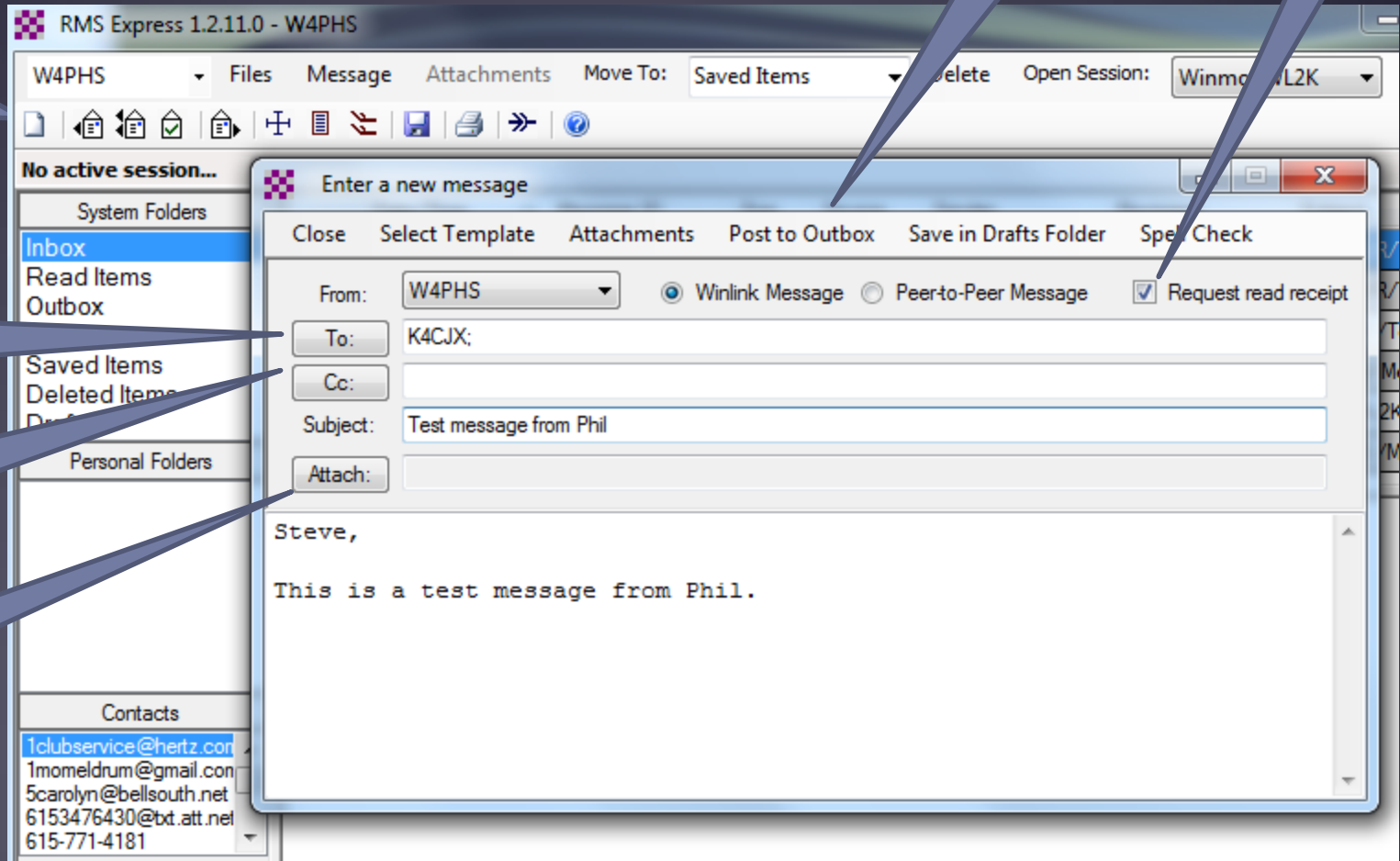
Click "To" or "CC" for contacts

Multiple recipients and CC

File attachments

Post to Outbox

Request read receipt



# Using Group Addresses

- Click “Files” followed by “Group Address...”
- Use a group name in the “To” or “CC” fields

Group Addresses

Group ID

Group Addresses (separate with space or ":") . . .

Contacts

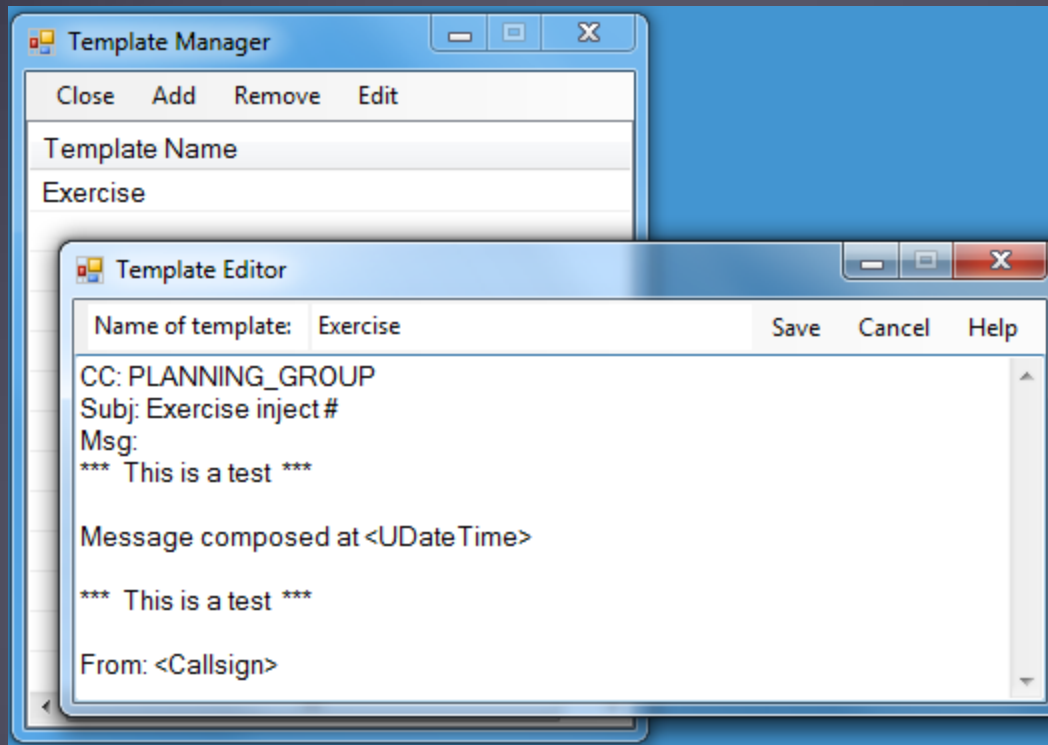
PLANNING\_GROUP = K4CJX wolfe4pak@bellsouth.net AAA4TN

Clear Edits Delete Selection Update Cancel



# Creating Message Templates

- Fills in “boilerplate” information for messages
- Click “Message” followed by “Templates...”



# Using a Message Template

- Begin composing a message
- Click “Select Template” and select the template

Click to select a template

CC and subject filled in automatically

Body initialized from template

Enter a new message

Close Select Template Attachments Post to Outbox Save in Drafts Folder Spell Check

From: W4PHS Winlink Message Peerto-Peer Message Request read receipt

To:

Cc: PLANNING\_GROUP

Subject: Exercise inject #

Attach:

\*\*\* This is a test \*\*\*

Message composed at 2013-05-08 15:45:09Z

\*\*\* This is a test \*\*\*

From: W4PHS

# Pending Message In Outbox

Open Session

The screenshot shows the RMS Express 1.2.11.0 - W4PHS interface. The window title is "RMS Express 1.2.11.0 - W4PHS". The menu bar includes "W4PHS", "Files", "Message", "Attachments", "Move To: Saved Items", "Delete", "Open Session: Winmor WL2K", "Logs", and "Help". The toolbar contains various icons for file operations. The main window is titled "No active session...". On the left, there are "System Folders" (Inbox, Read Items, Outbox, Sent Items, Saved Items, Deleted Items, Drafts) and "Personal Folders". The "Outbox" folder is selected, and a message is listed in the main pane. The message details are shown below the list.

	Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
	2013/05/07 18:06	82IFY8051PI2	219	W4PHS	W4PHS	K4CJX	//WL2K Test message from Phil

Message ID: 82IFY8051PI2  
Date: 2013/05/07 18:06  
From: W4PHS  
To: K4CJX  
Source: W4PHS  
Subject: //WL2K Test message from Phil

Steve,

This is a test message from Phil.

[Read receipt requested]

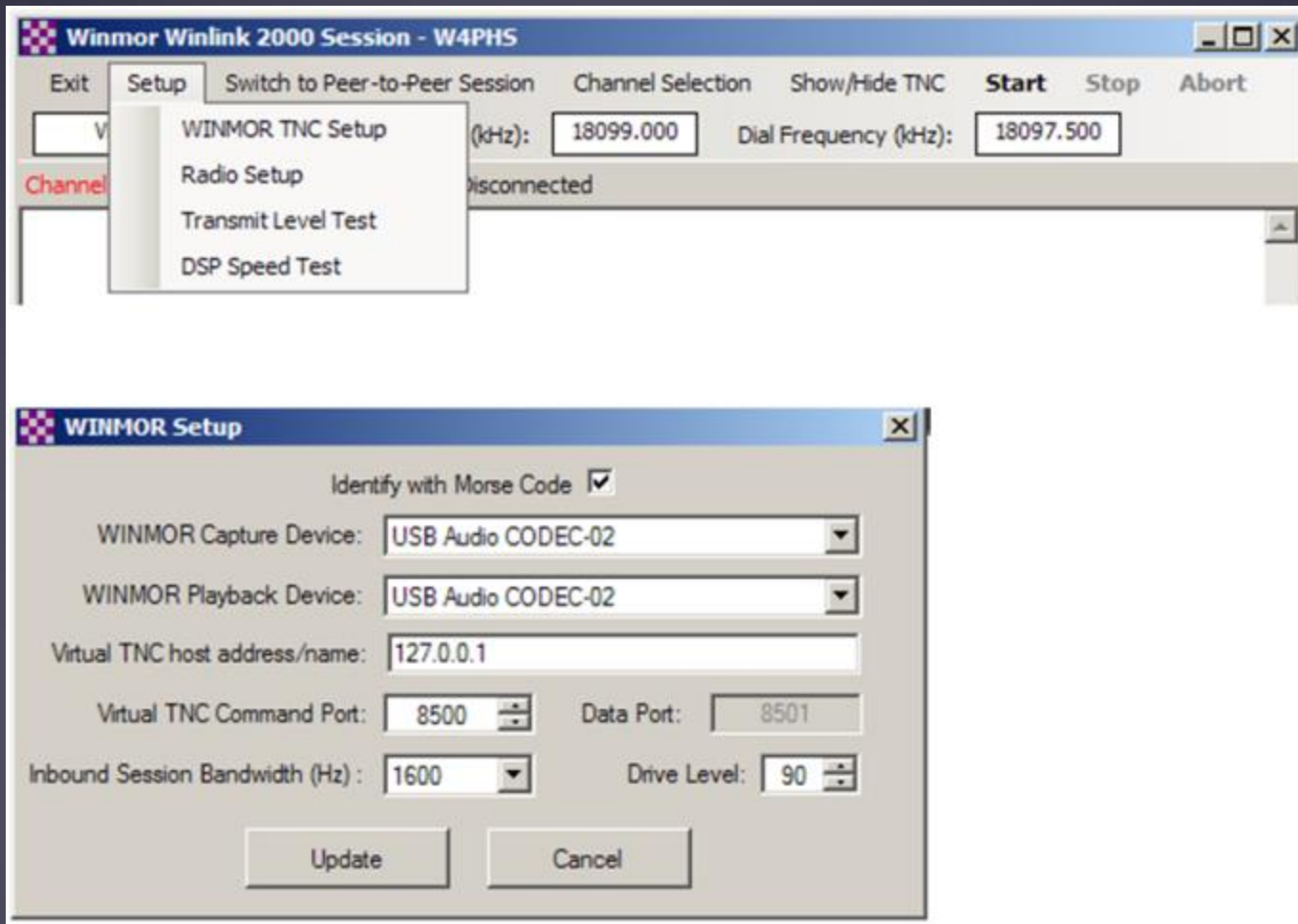
# Winmor Registration Screen

- Appears each time you start Winmor until you register and get a key.



The image shows a Windows-style dialog box titled "Registration Reminder!". The text inside reads: "WINMOR TNC is made possible through the Amateur Radio Safety Foundation Inc. Your registration of WINMOR TNC and support for the ARSF make programs like WINMOR TNC, the applications that use it, and the Winlink 2000 system possible." Below this text, there is a label "Registration Site URL:" followed by a text box containing the URL <http://www.arsfi.org/winmor.aspx>. Underneath, there is a label "Call Sign:" followed by a text box containing "W4PHS". Below that is a label "Registration Key:" followed by an empty text box. At the bottom of the dialog, there are two buttons: "Register and Save to ini" and "Remind Me Later".

# Initial Winmor Setup



# Winmor Radio Setup

**Winmor WL2K Settings**

Radio Selection

Select Radio Model: Icom Amateur Radios    Antenna Selection: Default

Icom Address: 00    USB     USB Digital     FM     Use Internal Tuner

Radio Control Port

Serial Port to Use: COM7    Baud: 19200    Enable RTS     Enable DTR     TTL

PTT Port (Optional)

Serial Port to Use: External    Baud: 38400    Enable RTS     Enable DTR

Update    Close

# HF Channel Selection Screen

All RMS or radio-only

Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (km)	Bearing (Degrees)	Path Reliability Estimate	Path Quality Estimate
KN6KB	3590.000	1600	EL98PF	00-23	PUBLIC	0	000	100	100
KN6KB	14066.500	500	EL98PF	00-23	PUBLIC	0	000	100	100
KN6KB	10131.500	500	EL98PF	00-23	PUBLIC	0	000	100	100
KN6KB	7083.000	500	EL98PF	00-23	PUBLIC	0	000	100	100
KN6KB	14110.500	1600	EL98PF	00-23	PUBLIC	0	000	100	100
N0IA	7063.900	500	EL98JV	00-23	PUBLIC	89	327	76	42
W5WSR	14077.500	500	EL29GA	00-23	PUBLIC	1440	277	68	41
KD4NUE-5	7081.000	500	EM91ED	00-23	PUBLIC	336	345	72	41
KB4SC	7065.900	500	EM92WX	00-23	PUBLIC	531	006	70	40
KB5OZE-5	10134.500	500	EL49WU	00-23	PUBLIC	932	283	69	40
N9ZZK	14096.500	1600	EN51VG	16-23	PUBLIC	1601	337	58	39
N9ZZK	14095.000	500	EN51VG	16-23	PUBLIC	1601	337	58	39
W0ECM-10	14093.500	500	EM26bh	00-23	PUBLIC	1681	306	58	38
AJ4GU	7089.500	500	EM83AK	00-23	PUBLIC	656	333	57	37
VE1YZ	18099.000	1600	FN84FS	00-23	PUBLIC	2383	035	54	37
VA3LKI	14112.000	1600	FN04CR	00-23	PUBLIC	1835	002	52	36
W1EO	14104.200	1600	FN42IM	00-23	PUBLIC	1799	026	53	36

Update channel list

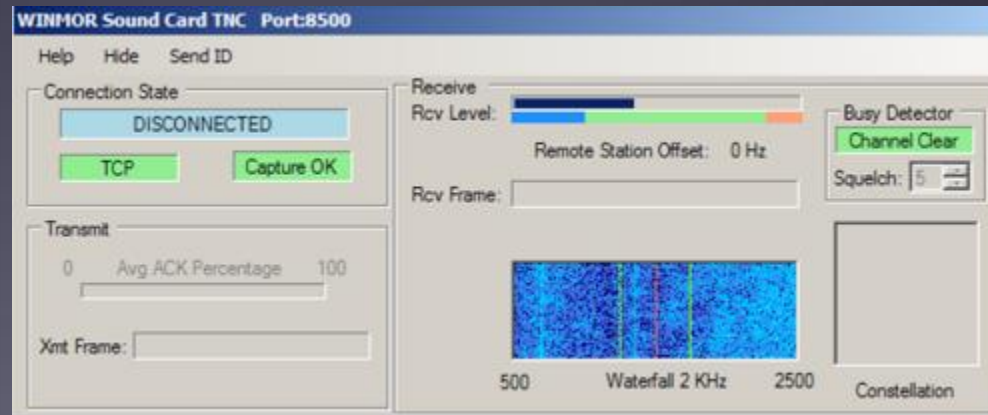
Double click to select

Click Header to Sort

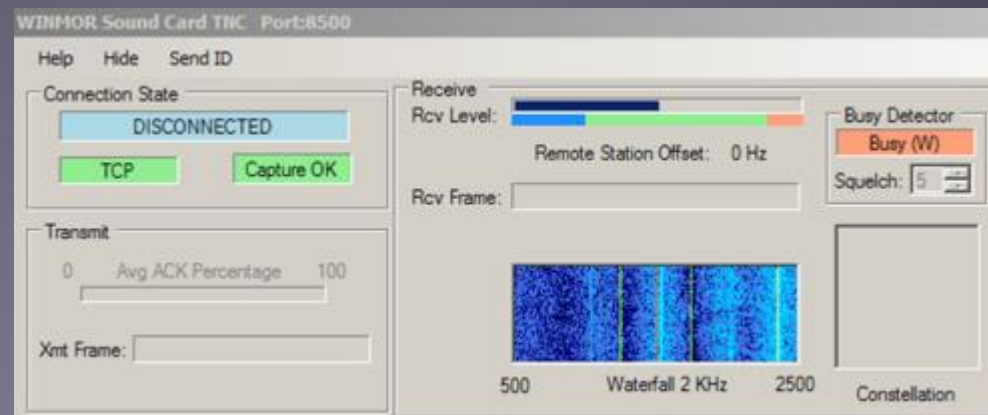
Green: good  
Yellow: fair  
Red: bad

# Check If Channel Is Free

- Free Channel:



- Busy Channel:





# Active Winmor Connection

WINMOR Sound Card TNC Ver:1.4.7.0 Port:8500 W4PHS / WB9FHP-5

Help Hide Send ID

Connection State

IRS

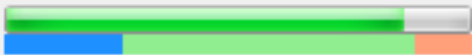
TCP Capture OK

Transmit

0 Avg ACK Percentage 100

Xmt Frame:

Receive

Rcv Level: 

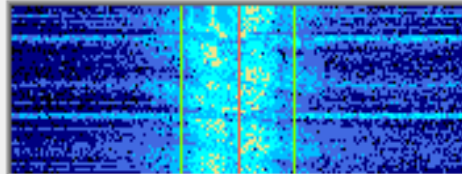
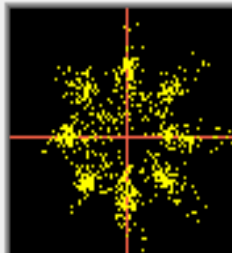
Remote Station Offset: -27.1 Hz

Rcv Frame: 2 Car V8PSK FEC Data

Busy Detector

Squelch: 5

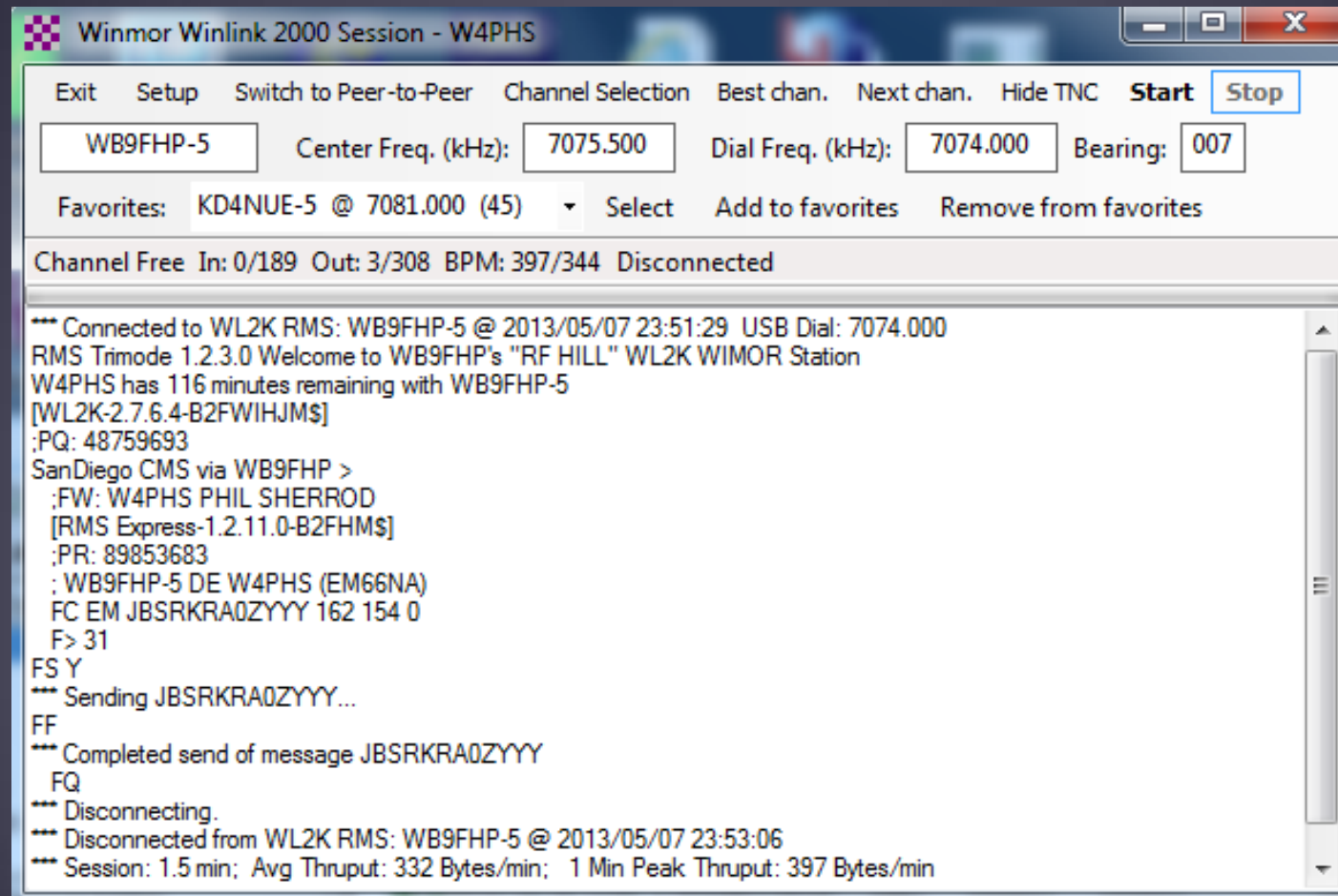
Waterfall  Spectrum  Disable

500 Waterfall 2KHz 2500 8PSK / 45

# Winmor Session Log

- Connect, login, send message, log off



Winmor Winlink 2000 Session - W4PHS

Exit Setup Switch to Peer-to-Peer Channel Selection Best chan. Next chan. Hide TNC **Start** **Stop**

WB9FHP-5 Center Freq. (kHz): 7075.500 Dial Freq. (kHz): 7074.000 Bearing: 007

Favorites: KD4NUE-5 @ 7081.000 (45) Select Add to favorites Remove from favorites

Channel Free In: 0/189 Out: 3/308 BPM: 397/344 Disconnected

```
*** Connected to WL2K RMS: WB9FHP-5 @ 2013/05/07 23:51:29 USB Dial: 7074.000
RMS Trimode 1.2.3.0 Welcome to WB9FHP's "RF HILL" WL2K WIMOR Station
W4PHS has 116 minutes remaining with WB9FHP-5
[WL2K-2.7.6.4-B2FWIHJMS]
:PQ: 48759693
SanDiego CMS via WB9FHP >
;FW: W4PHS PHIL SHERROD
[RMS Express-1.2.11.0-B2FHM$]
;PR: 89853683
; WB9FHP-5 DE W4PHS (EM66NA)
FC EM JBSRKRA0ZYYY 162 154 0
F> 31
FS Y
*** Sending JBSRKRA0ZYYY...
FF
*** Completed send of message JBSRKRA0ZYYY
FQ
*** Disconnecting.
*** Disconnected from WL2K RMS: WB9FHP-5 @ 2013/05/07 23:53:06
*** Session: 1.5 min; Avg Thruput: 332 Bytes/min; 1 Min Peak Thruput: 397 Bytes/min
```

# Reading Incoming Messages

The screenshot shows the RMS Express 1.2.11.0 - W4PHS interface. The window title is "RMS Express 1.2.11.0 - W4PHS". The menu bar includes "W4PHS", "Files", "Message", "Attachments", "Move To:", "Saved Items", "Delete", "Open Session:", "Winmor WL2K", "Logs", and "Help". The toolbar contains various icons for file operations. The main area displays a list of messages in the inbox, with the selected message's details shown below.

**No active session...**

System Folders		Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
Inbox		2013/02/21 16:38	SDP4883MPBKA	426	W4LTX	W4LTX	W4PHS ...	//WL2K /M700 parts
Read Items		2013/01/02 18:56	ON3NIDAARB4E	525	DK3CW	DK3CW	W4PHS	Re:Getting unhandled except
Outbox		2013/01/02 18:56	MZR80UF904YP	357	DK3CW	DK3CW	W4PHS	ACK: Re:Getting unhandled e
Sent Items		2012/09/19 14:43	F8Z8PW6YQHBS	7090	SMTP	SMTP:phil@phils...	W4PHS	RAR file from external
Saved Items		2012/08/28 16:17	PZSFVLG6DD6P	271	K4IDK	K4IDK	W4PHS	ACK: Net
Deleted Items		2012/08/17 20:01	6D1RK040UH42	251	AAR4MX	AAR4MX	W4PHS	Message sent with request fo
Drafts								

**Message ID: SDP4883MPBKA**  
Date: 2013/02/21 16:38  
From: W4LTX  
To: W4PHS; k4cjx@comcast.net  
Source: W4LTX  
Subject: //WL2K /M700 parts

Steve or Phil,  
Can you find out if Icom still has parts for a M700 serial 05457. A board smoked when power was applied although it did not draw much power from the supply.  
The store here in Rus Rus wants to use this on a local HF in country net.

# Notification of Read Acknowledgement

The screenshot shows the RMS Express 1.2.11.0 - W4PHS interface. A dialog box titled "Read acknowledgement requested" is overlaid on the message list. The dialog contains a question mark icon and the text: "Sender requested acknowledgement that message has been read. Would you like to post an acknowledgement now?". Below the text are "OK" and "Cancel" buttons.

The background interface shows a message list with the following columns: Date/Time, Message ID, Size, Source, Sender, Recipient, and Subject. The selected message is from NNS4UR to W4PHS, dated 2013/05/08 15:14, with Message ID 98IOBHO7FRPT and Size 270. The subject is "//MARS R/Test message with read acknowledgement request".

Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
2013/05/08 15:14	98IOBHO7FRPT	270	NNS4UR	NNS4UR	W4PHS	//MARS R/Test message with read acknowledgement request
2013/02/21 16:38	SDP4883MPBKA	426	W4LTX	W4LTX	W4PHS ...	//WL2K /M700 parts
					W4PHS	ACK: Re:Getting unhandl...
					W4PHS	Re:Getting unhandled exc...
					W4PHS	RAR file from external
					W4PHS	ACK: Net

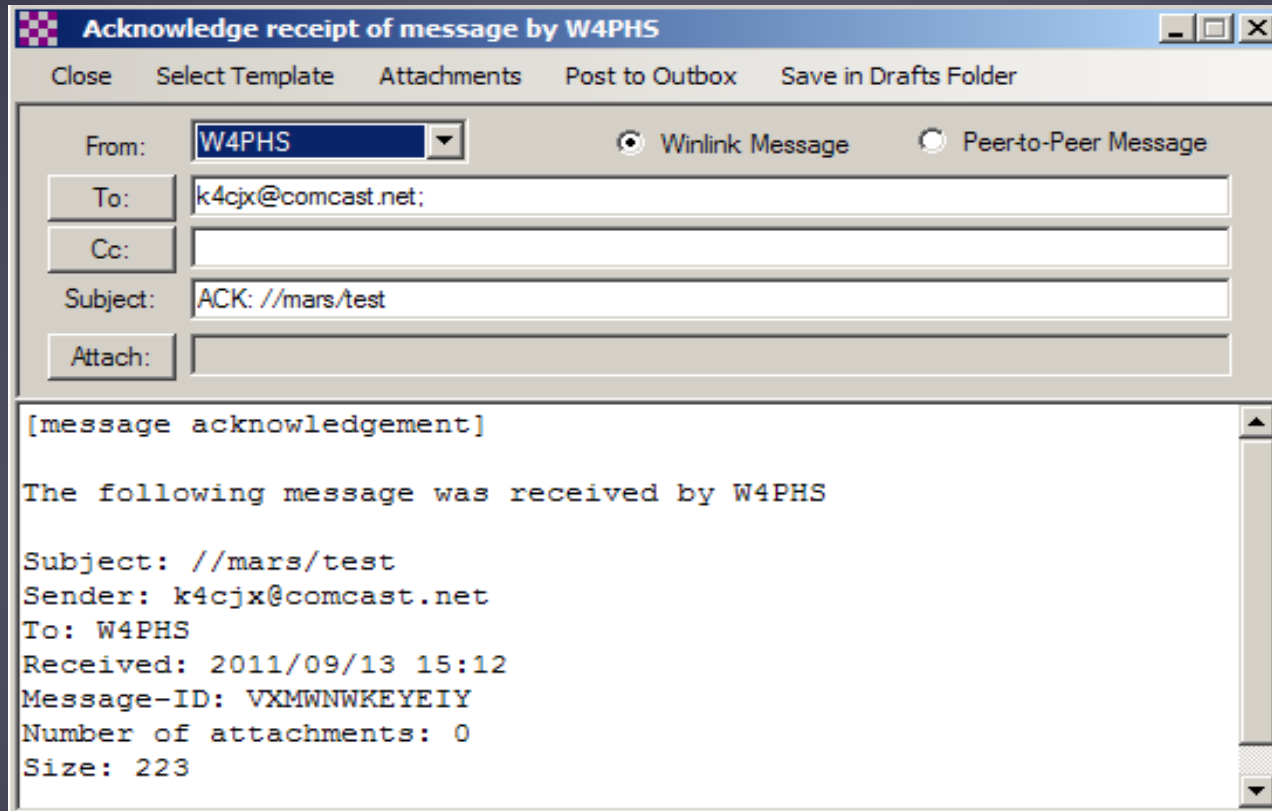
Source: NNS4UR  
Subject: //MARS R/Test message with read acknowledgement request

This message was sent with a request for a read acknowledgement.

[Read receipt requested]

# Message Receipt Acknowledgements

- Positive acknowledgment that message was received
- Information about message filled in automatically



The screenshot shows a window titled "Acknowledge receipt of message by W4PHS" with a menu bar containing "Close", "Select Template", "Attachments", "Post to Outbox", and "Save in Drafts Folder". The form includes the following fields:

- From:** W4PHS (dropdown menu)
- To:** k4cjsx@comcast.net
- Cc:** (empty)
- Subject:** ACK: //mars/test
- Attach:** (empty)

Radio buttons are present for "Winlink Message" (selected) and "Peerto-Peer Message".

The main text area contains the following text:

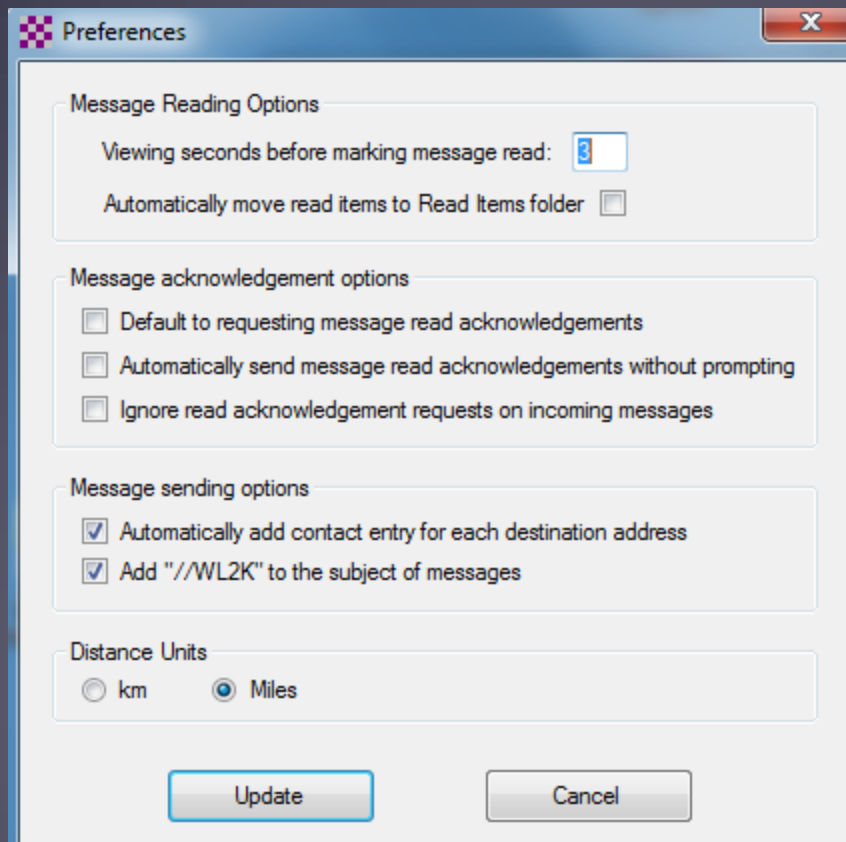
```
[message acknowledgement]

The following message was received by W4PHS

Subject: //mars/test
Sender: k4cjsx@comcast.net
To: W4PHS
Received: 2011/09/13 15:12
Message-ID: VXMWNWKEYEYIY
Number of attachments: 0
Size: 223
```

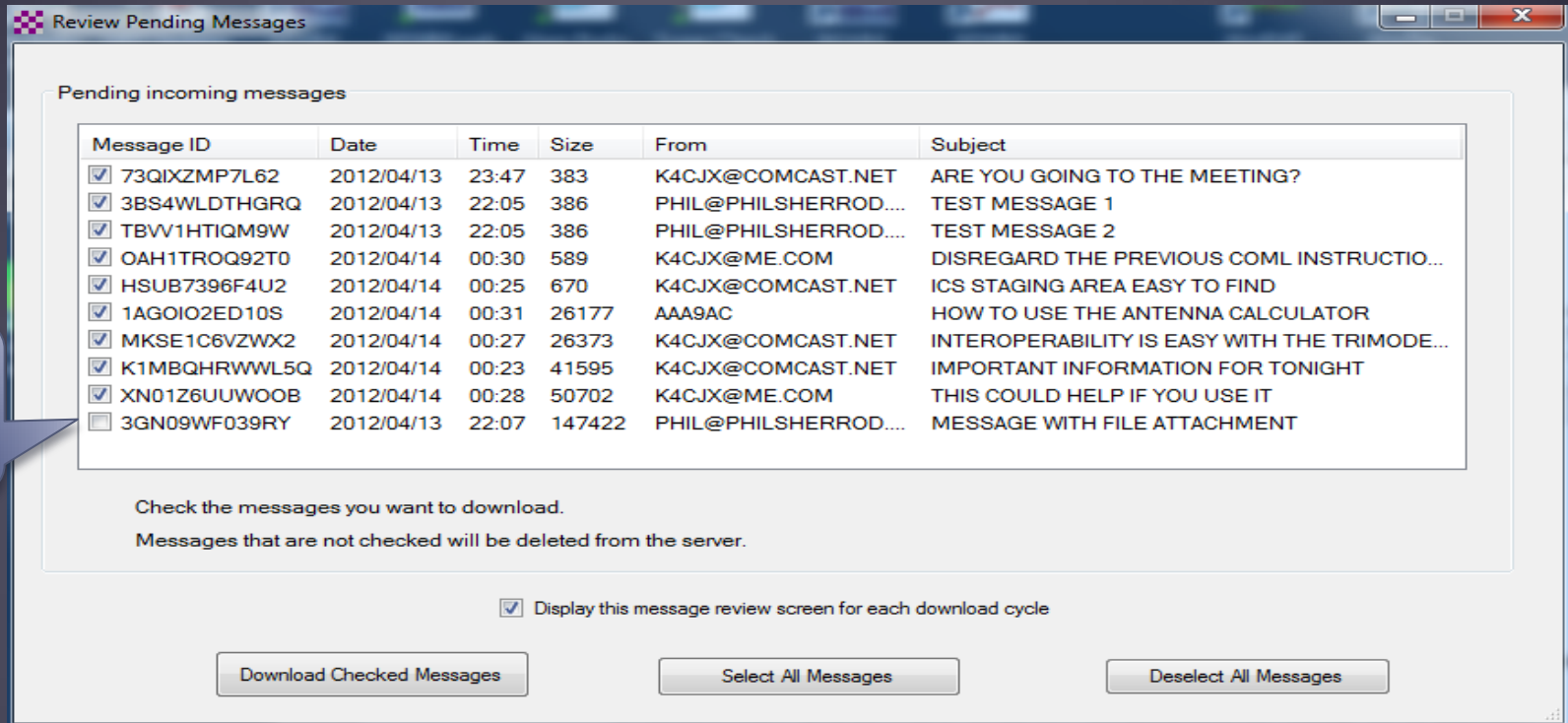
# User Preferences

- Click “Files” followed by “Preferences...”



# RMS Express Message Review

- Review pending messages before downloading.
- Select which messages to download.



Message  
too large  
& not  
wanted

# Catalog Information Requests

- Use the “Winlink Catalog Request” feature in RMS Express to request:
  - Weather maps for most areas of the world
  - Weather forecasts
  - Maritime HF nets and frequencies
  - Satellite images
  - Location of closest 30 stations
  - ARRL Newsletter, e-letter, etc.
  - Misc. bulletins



# RMS Express Query Catalog

Winlink Query Catalog

Categories

- ARCTIC\_ICE
- ARRL
- AUT\_HAM
- GERMAN\_BCST
- GMD\_METFR
- GULF\_CURRENT
- HF\_NETS
- HONDURAS
- INDIAN\_OCEAN
- LIGHTNING
- MEL\_EXPLORE
- METAR
- METAREA
- METAREA\_I
- METAREA\_II
- METAREA\_III
- METAREA\_IV
- METAREA\_IX
- METAREA\_V
- METAREA\_VI
- METAREA\_VII
- METAREA\_VIII
- METAREA\_X
- METAREA\_XI
- METAREA\_XII
- METAREA\_XIV
- METAREA\_XVI
- NAVIMAIL
- PROPAGATION
- S/PACIFIC\_WX
- SAT\_KEPS
- SAT\_PIX
- UK\_CADET

Inquiry ID	Description	Size	Originated
ARES_E_LTR	Current ARRL ARES E-Letter	35537	2009-45-06
LETTER	Current ARRL Letter	23103	2010-17-04

Selections

ARES\_E\_LTR

Double click to add or delete query selections...

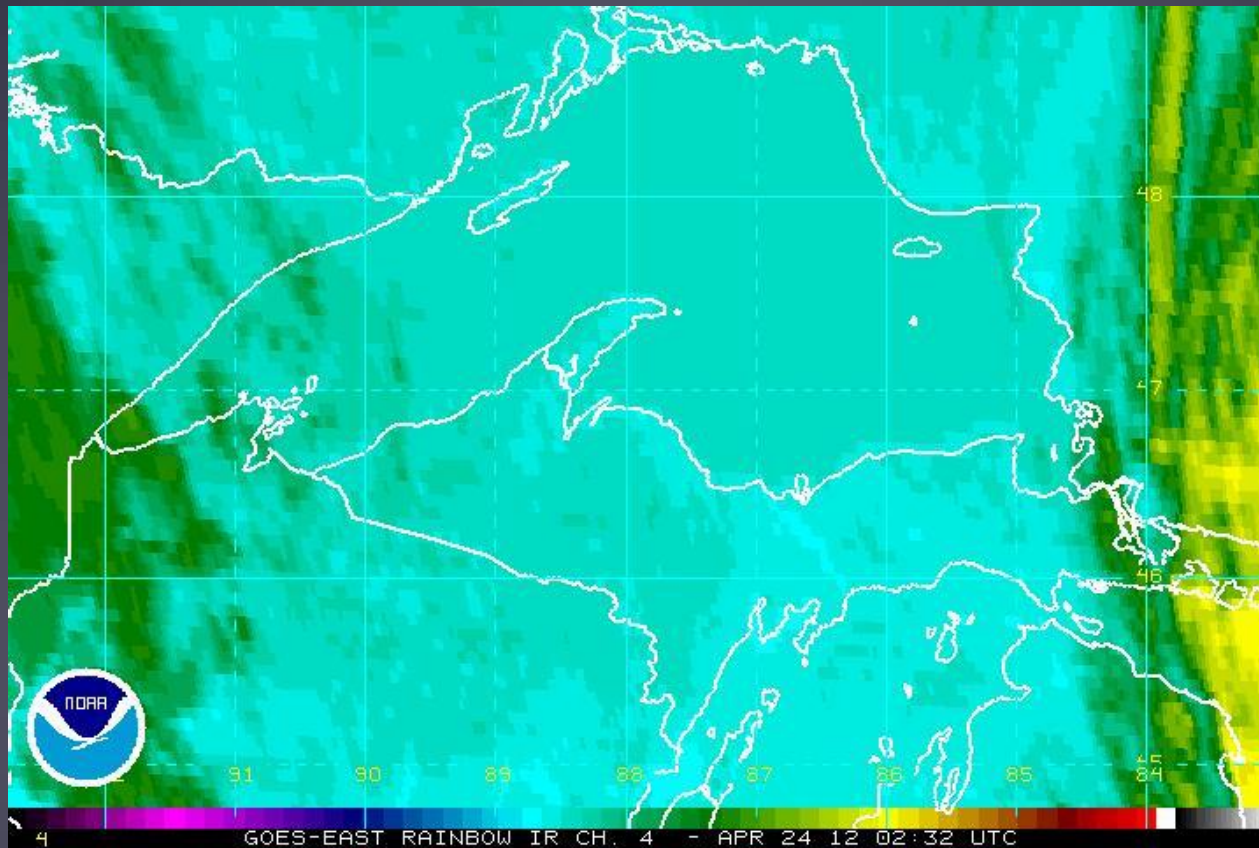
Post Request

Last Update  
2012/04/20 11:00

Request Catalog Update

Cancel

# Weather Map Image Returned for Request



# Winlink Position Reports

- You can send position reports to the Winlink system.
  - Coordinates sent via connected GPS.
  - Otherwise, your position may be entered manually.
- Position Reports are sent to:
  - Winlink system map
  - ShipTrak maps
  - APRS maps
  - YotReps maps
- Extremely valuable for pinpointing locations, especially for maritime operation.

# Posting a Position Report

**GPS / Position Report**

GPS Serial Port

GPS Serial Port:     GPS Baud Rate:

`$GPRMC,104855.000,A,3604.2206,N,08649.4427,W,0.05,53.91,200412,...A*4E`

Reporting - Last good GPS fix at 2012/04/20 10:48:55 UTC

GPS Latitude:     GPS Longitude:

GPS Speed:     Knots    GPS Course:     True

Position Report

Your last position report was posted at 0000/00/00 00:00 UTC

Report Date/Time:     UTC

Latitude:     Longitude:

Speed:     Knots    Course:     True

Comment - 148 Characters Maximum:

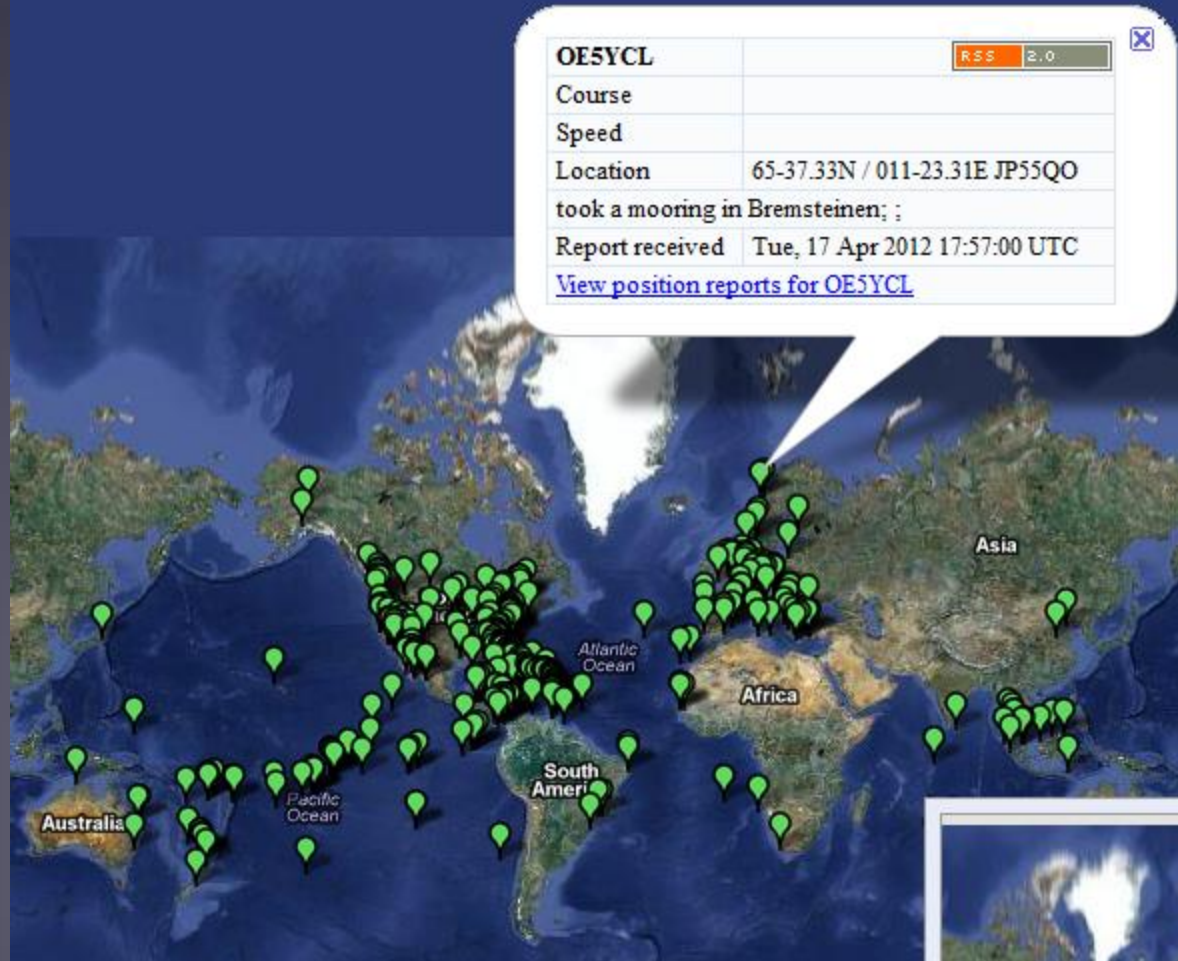
      

Data from a connected GPS unit.

WX assistance to the NWS Voluntary Marine Observation Program.

Useful in tracking with e-mailed disaster assessments.

# Winlink.org Real-time Position Report Page



# RMSMessageLog ICS-309 Generator

RMS Express Message Log

Call sign of station: WC4EOC-2

Log	Time	From	To	Subject
Sent	5-Nov-2011 02:31	WC4EOC-2	KA40TB	//WL2K Test message from exchange 28
Read	5-Nov-2011 02:31	KA40TB	WC4EOC-1;C4EOC-2;K...	CP-3 Message5
Read	5-Nov-2011 02:31	KA40TB	AK4GD-5;I4PSR;C4EO...	CP-2
Read	5-Nov-2011 02:31	KA40TB	WC4EOC-1;C4EOC-2;K...	CP-1
Sent	5-Nov-2011 02:44	WC4EOC-2	KI4PSR	//WL2K Hi from exchange 28
Read	5-Nov-2011 02:46	KA40TB	WC4EOC-2	Re: Test message from exchange 28
Sent	5-Nov-2011 03:06	WC4EOC-2	jon@aristoworks.com	//WL2K Test
Read	5-Nov-2011 03:19	jon@aristoworks.com	WC4EOC-2	Re: Test
Sent	5-Nov-2011 03:54	WC4EOC-2	WC4EOC-3	//WL2K Orion

Refresh message list

Logs to include

Inbox  Read Items  Outbox  Sent Items  Saved items  Drafts  Deleted items

Date-time range for log entries

Limit start date/time: 5-Nov-2011 00:00   Limit end date/time:

Generate message log reports

Program settings and information

Messages during period

Select folders

Starting & ending report period

Generate ICS-309 pdf file



# Winlink Drop Kits for Field Operation

