

Introduction to NBEMS

Narrow Band Emergency Messaging System ----- Using Sound Card Technology -----

For Canejo Valley Amateur Radio Club
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Edited for GERC 4-21-2014
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Objectives

At the end of this presentation you should be able to answer the following questions:

- ✓ Why use Digital Emergency Communications?
- ✓ What is the **Narrow Band Emergency Messaging System** (NBEMS)?
- ✓ How does the Narrow Band Emergency Messaging System work?
- ✓ What equipment is needed for NBEMS?
- ✓ How do we interface NBEMS with a computer?

Why Narrow Band Emergency Messaging System?

- Emergency Communications requires radio operators to pass high volume or very detailed information. Voice is too slow and error-prone.
- The evolution and wide spread use of the Personal Computer that includes an audio card for Digital Signal Processing (DSP) has allowed radio amateurs to develop new modes of digital communications.
- Traffic may include:
 - ✓ Detailed Damage Assessment
 - ✓ Numbers and Types of Injuries
 - ✓ Requests for provisions/supplies/medication/personnel
 - ✓ Directions to field locations

The Narrow Band Emergency Messaging System can handle this traffic at 20 characters/second, much faster than voice for all but the simplest messages.

Narrow Band Emergency Messaging System **is**

- ✓ Simple
- ✓ Open Source  (free)
 - ✓ Infrastructure independent: Windows, Mac, Linux
- ✓ Compatible: any computer, any radio
- ✓ Accurate (uses 'check sum' technology)
- ✓ Efficient – takes advantage of the full bandwidth
- ✓ Effective on VHF/UHF FM and HF SSB
- ✓ Fun!
- ✓ Works on Simplex and Repeaters

- ✓ **Download: <http://w1hkj.com/download.html>**

How Narrow Band Emergency Messaging System works

- * PC's Sound card generates and decodes signals
- * Computer does all the work, no need for a Terminal Node Controller (TNC).
- * PC's sound goes into the radio's microphone
- * No need for a powerful new computer - older machines work just fine, even netbooks!
- * Radio's sound goes into PC's microphone
 - * **Or** use a sound interface, such as Easy Digi, Signalink, or Rigblaster (see next slide)

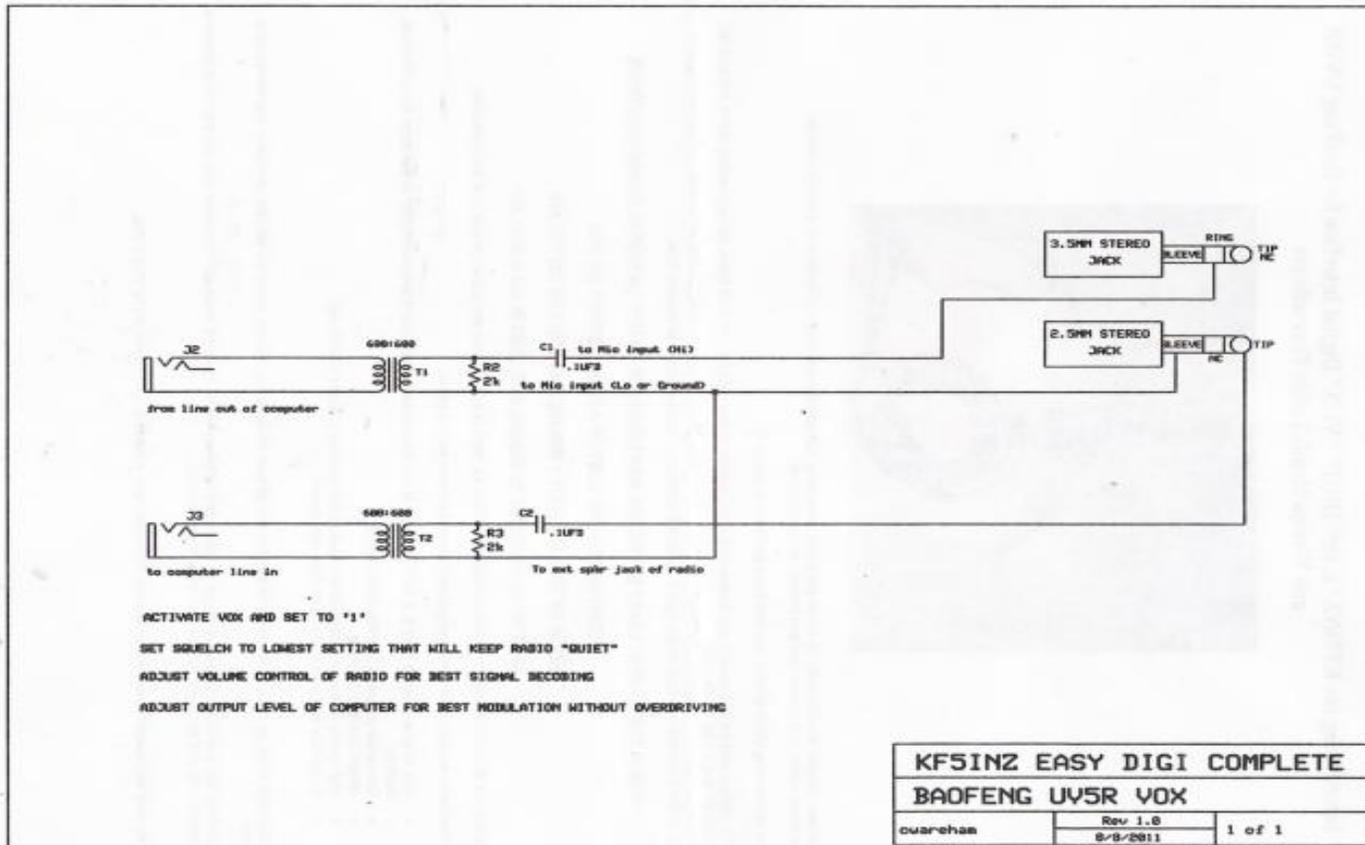
Sound Interfaces for NBEMS – Pick your price

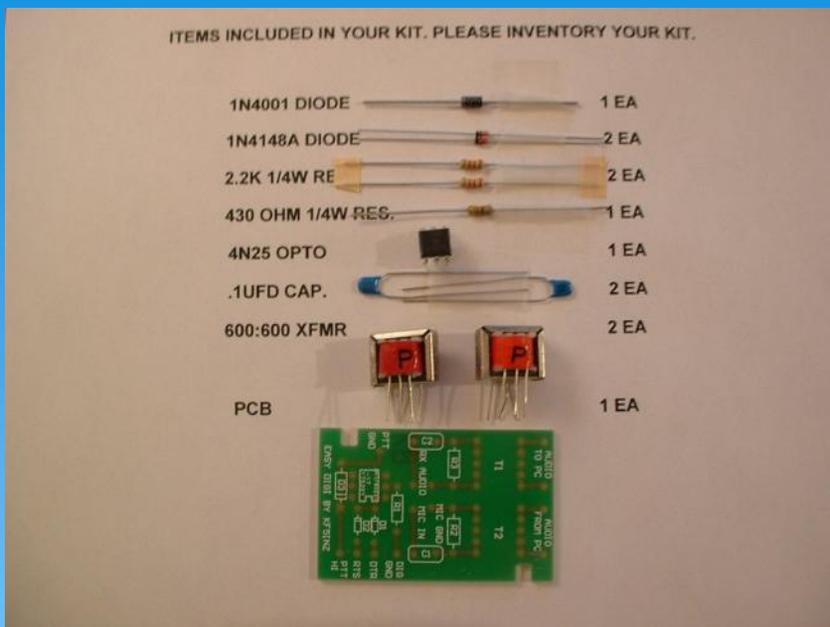


OR Build Your Own!

Recommended optional Digital VOX Sound Card Interface

KF5INZ Easy Digi Schematics for the Baofeng UV-5R





**Easy Digi Kit Components
are \$9.95 on E-Bay**



Built in 25 minutes!

**OR purchase a pre-built Easy Digi for your radio
- about \$35 on E-Bay**



All cables are included with the pre-built Easy Digi – be sure to email the seller your radio model number.

This one is built for the UV-5R



Equipment: UV-5R + Easy Digi Interface + Netbook





NBEMS Workshop - Norm K6YXH, and Naomi WB6OHW

9/10/2012

What's *REALLY* needed for NBEMS ?

To review:

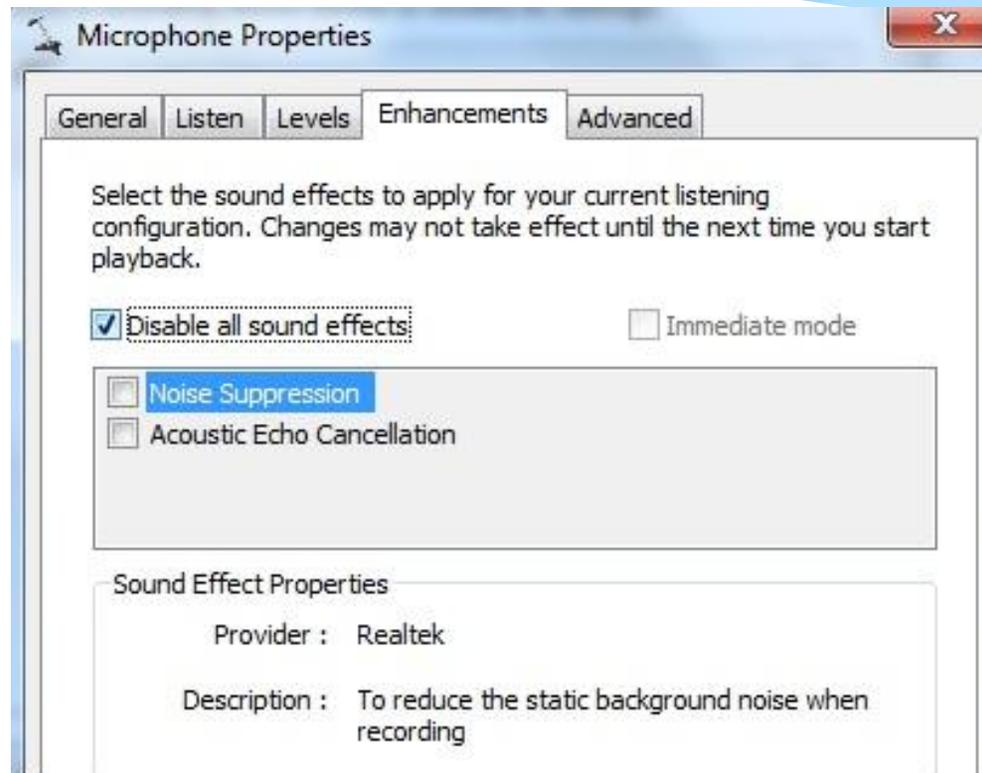
- * Any Computer – laptops and netbooks work just fine
 - * Some sound cards are known to distort input
 - * Turn off Windows 7 Enhancements, like Noise Reduction
- * Any radio with a microphone and speaker

AND

- * Free Open Source Software
 - * FLDIGI (**F**ast **L**ight **D**igital Modem application)
 - * FLMSG (**F**ast **L**ight **M**sg – Forms Manager)
 - * FLWRAP (**F**ast **L**ight **W**rapper – File encapsulation)

Turn off Windows 7 Microphone Enhancements

Disable all sound effects



Interfacing NBEMS with Computer

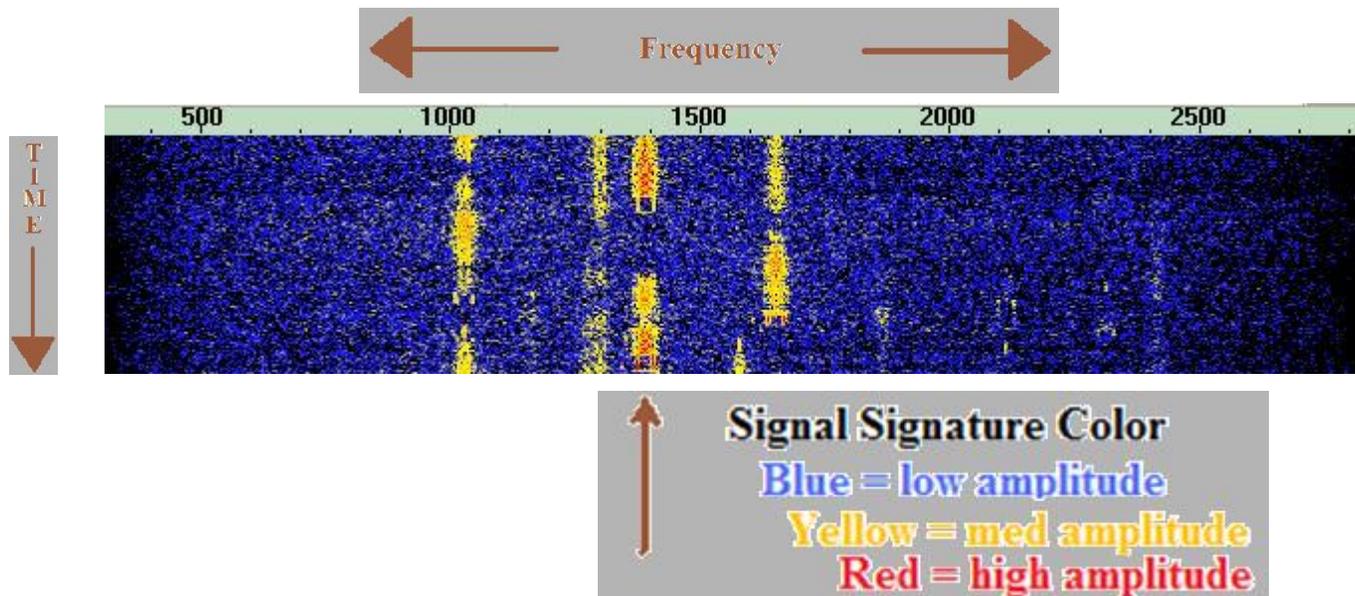
**You don't have an Interface?
No worries!**

- * **No interface required** – in case of an emergency:
 - * Hold the radio's speaker up to the computer's microphone and the message is automatically decoded.
 - * Hold the radio microphone up to the computer speaker press PTT and play the message from the PC!
 - * Interface options for computer:
 - * Rigblaster, SignaLink, Easy Digi, home brew.
 - * Interfaces make things more reliable and *quieter*.

Is this is a Waterfall?

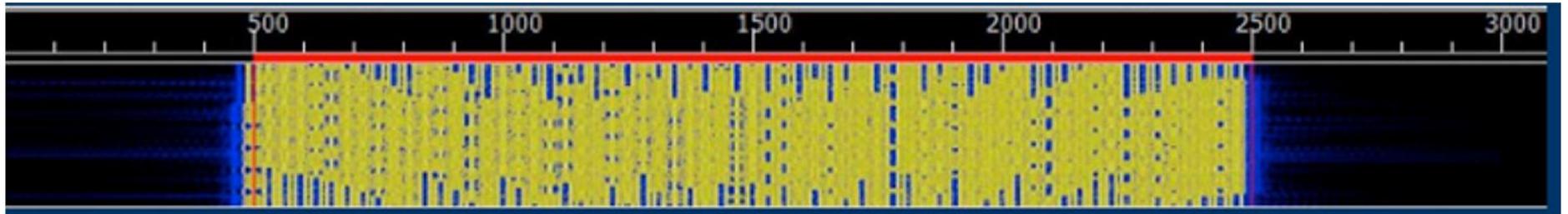


Here is a REAL waterfall...



The digital waterfall is a visual representation of time, frequency and amplitude.

MT63-2000 Waterfall

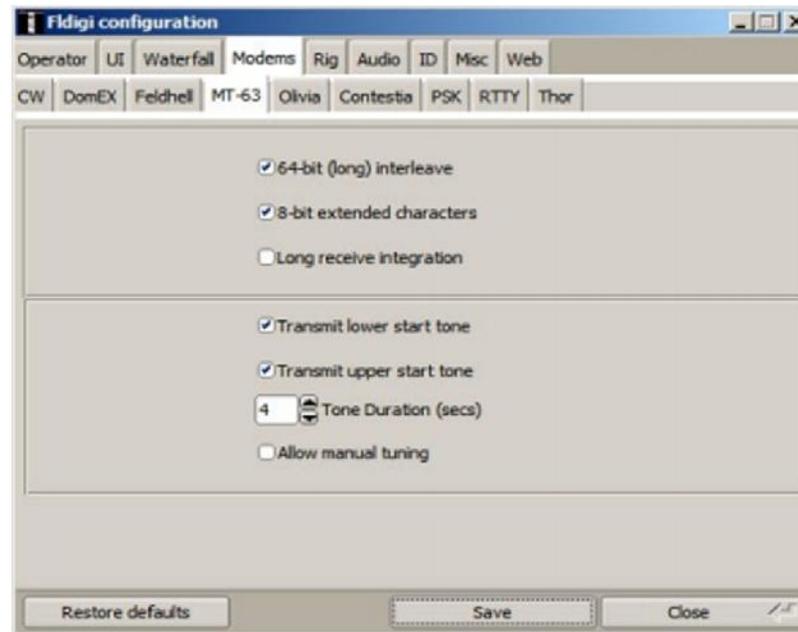


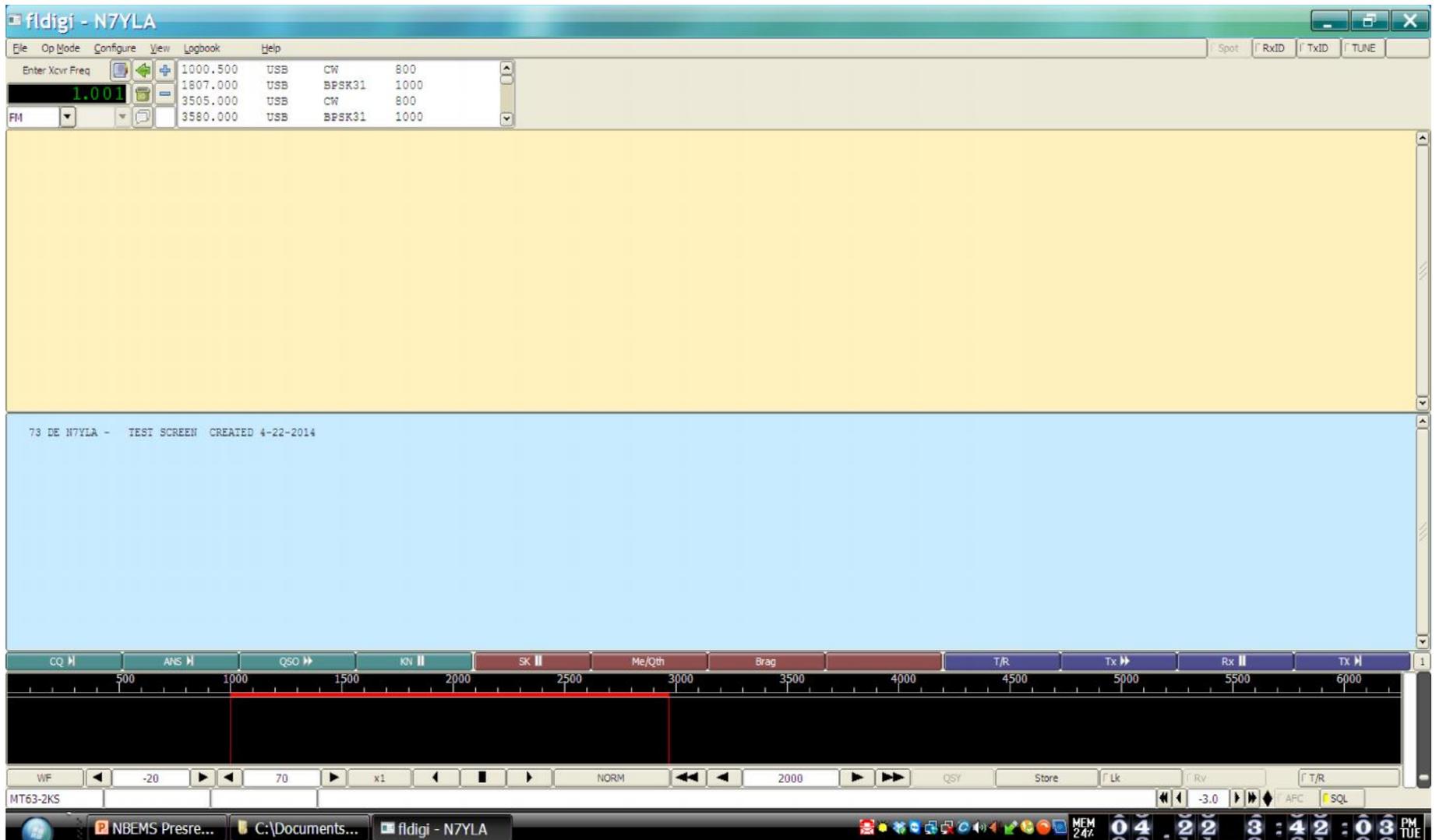
- * 64 tones sent at same time
- * Signal width is 2000 Hz
- * Offset frequency is always fixed at 1500 Hz
- * Fixed low frequency eliminates tuning errors
- * Sounds like a buzz saw



Fldigi Configuration

- * **Tabs: Modems/MT-63**
- * **64 bit (long) interleave, 8-bit char extended characters (UTF-8)**
 - * Provides extra data redundancy, both stations must have same interleave setting.
- * **Uncheck “Allow manual tuning” for VHF/UHF**





FLDIGI SCREEN

Verification with Checksums

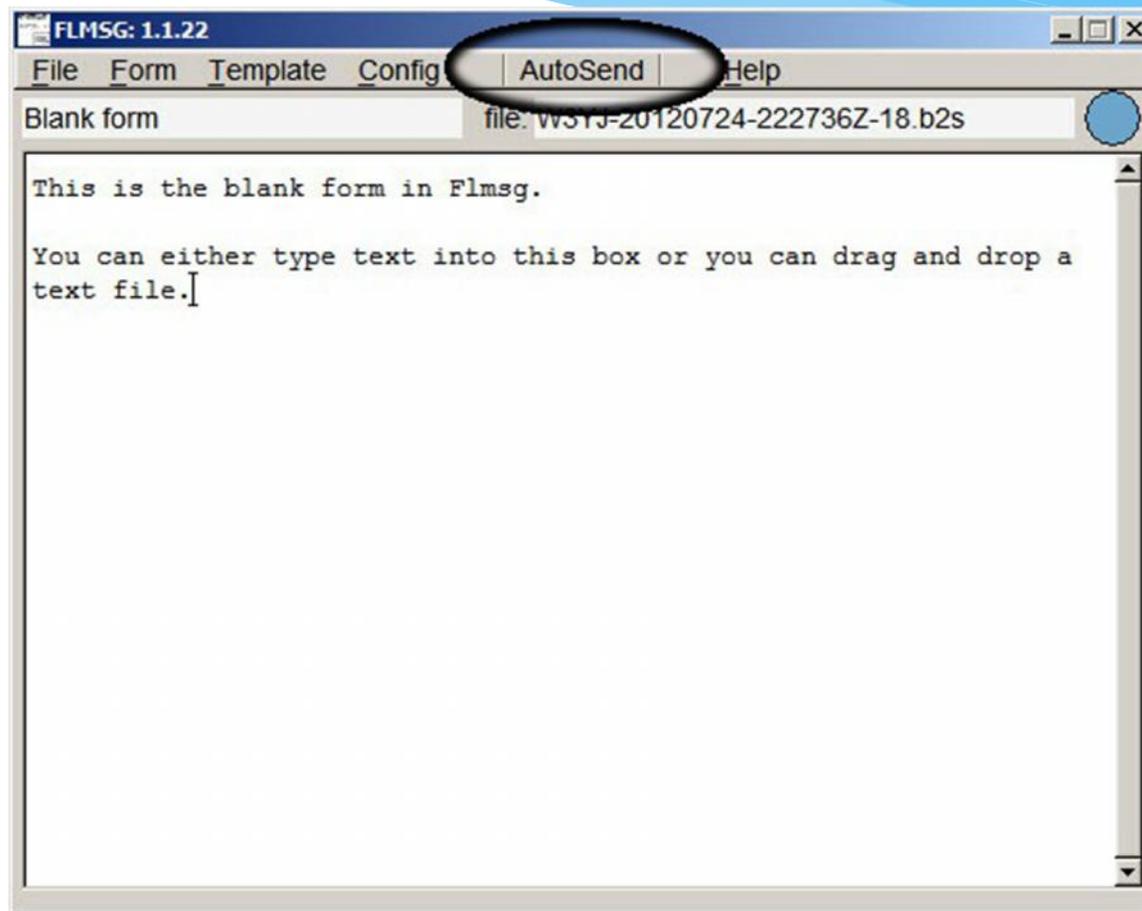
- * **Checksums allow you to be 100% sure your message was received accurately.**
- * Checksum is inserted into a file by **Flwrap**
- * Receiving station computes the checksum on the incoming file and... **if the two checksums are identical, the file was received without error.**
- * Allows multiple stations to receive and confirm data **100%**
- * Great for bulletins like situation updates, weather reports, road closures, lists of contact info.

Flmsg – Autosend Workflow

- * One click sending!
- * Enter text directly into large empty box (or form)
- * Can also drag-and-drop a text file into box
- * Push the AutoSend menu
- * Will be prompted to save file with automatically assigned unique filename
- * Flmsg will cause Flwrap to wrap (checksum) and Fldigi to automatically send the message

Flmsg – AutoSend

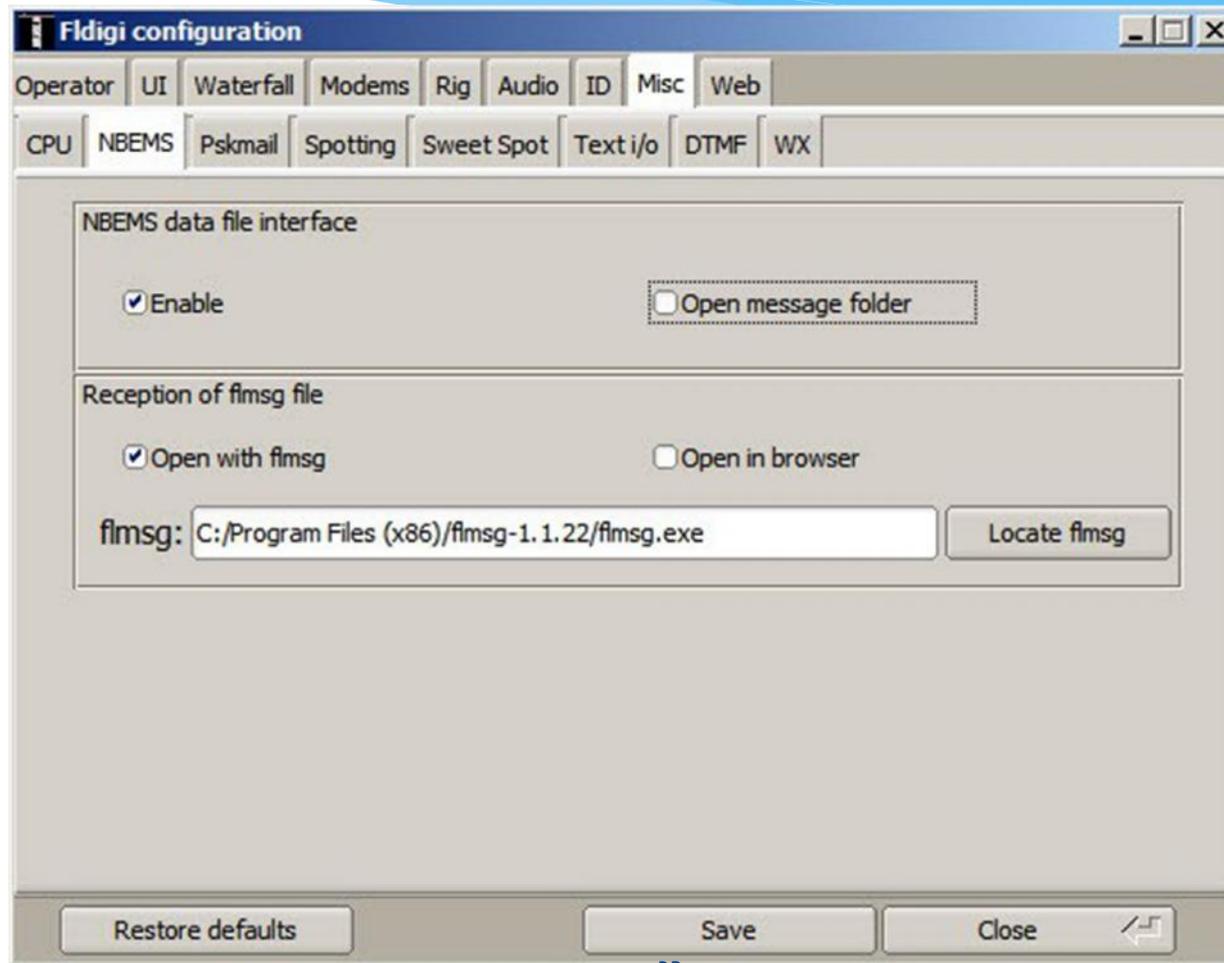
Blank Form



Flmsg – Auto Display

- * Incoming messages automatically opened in Flmsg!
- * Auto open messages in browsers!
- * Walk away and come back to see messages!
- * Display in browser - great for EOC or Served Agency
- * Configuration:
 - * In Fldigi, Config->Misc, choose NBEMS tab
 - * Check appropriate boxes
 - * Check “Enable NBEMS data interface”
 - * Enter complete path to flmsg

Configure **fldigi** Misc, NBEMS Locate flmsg



Configure **fldigi** Misc, NBEMS Locate flmsg

- * **Mac (OS X)** - A file browser is opened to the "Applications" folder. Locate the flmsg icon, and right click on it. Select "Show Package Contents". Double click "Contents". Double click on "MacOS". You will be viewing an icon labeled "flmsg". Drag and drop the icon on to the "flmsg:" entry box and the value will be correctly entered. Example:
/Applications/flmsg-1.1.22.app/Contents/MacOS/flmsg
- * **PC (Windows 7)** – Find the .exe file, right click on flmsg.exe and choose **Select**. Example:
"C:\\Program Files (x86)\\flmsg-1.1.22\\flmsg.exe"

Flmsg – more Configuration

Personal data

Call:

Tel:

Name:

Addr:

City/St/Zip:

Configure date/time

YYYY-MM-DD hhmmL

YYYY-DD-MM hh:mmL

MM/DD/YY hhmmZ

DD/MM/YY hh:mmZ

hhmm UTC

hh:mm UTC

Configure files & formatting

Wrap

Open folder when exporting

Naming Files

Callsign Date-time

Serial # Next #

MARS roster file

Html message text

Word wrap at characters

Configure radiogram

message words/line

Auto incr'

Next #

Show ARL desc'

Fmsg - Forms

- * Blank: no fields, just text, but checksum and filed
- * Plaintext: Title, To, Fm, Sub, Date, Time, Message
- * ICS: 203, 205, 205A, 206, 213, 214, 216
- * HICS: 203, 206, 213, 214
- * Radiograms: IARU, ARRL
- * Red Cross – Welfare, 5739, 5739A, 5739B
- * Comma Separated List (CSV) (spreadsheet)
- * LDS Welfare Message Form (under development???)

IPC Messages Informational

Box 1 - Date: 1-22-2014

Box 2 - Time: 0800 PST

Box 3 - Unit: Glendora State

Box 4 - Presiding Officer: President John Doe

Box 5 - Reporting Officer: Bishop Joe Blow

Box 6 - Emergency Type: Earthquake

Box 7 - Location and Extent: Souths Hills, Glendora CA

Box 8 - Members Injured: none Missing:none Dead: none Okay: 60

Box 9 - Evc.Volunteers Injured: none Missing:none Dead:none Okay:8

Box 10 - Church Prop Damage (Habitable, Inhabitable, Destroyed): Main Facility:Habitable Facilities: Habitable Member Homes: 6 Inhabitable

Box 11 - Utilities Power(on/off):OFF Water(on/off):OFF Gas(on/off):OFF

Box 12 - Assistance Needed: Need a generator and water at Main Facility and Elwood facility

Box 13 - Resources We Can Share: Food, medical supplies

Box 14 - Message: 6 families have been displaced and are currently at Elwood facility

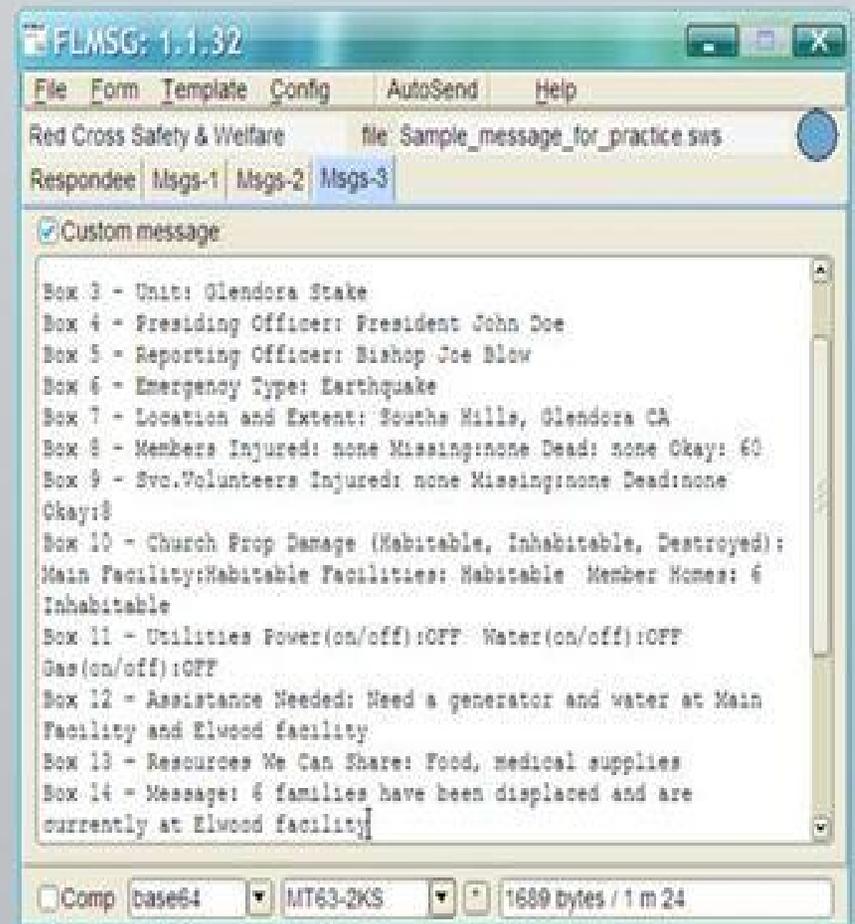
Box 15 - Storehouse Receiving Report: Los Angeles

Box 16 - Additional Notes Location: none

Box 17 - To Whom is Message (By Addressed Date) (Matty)

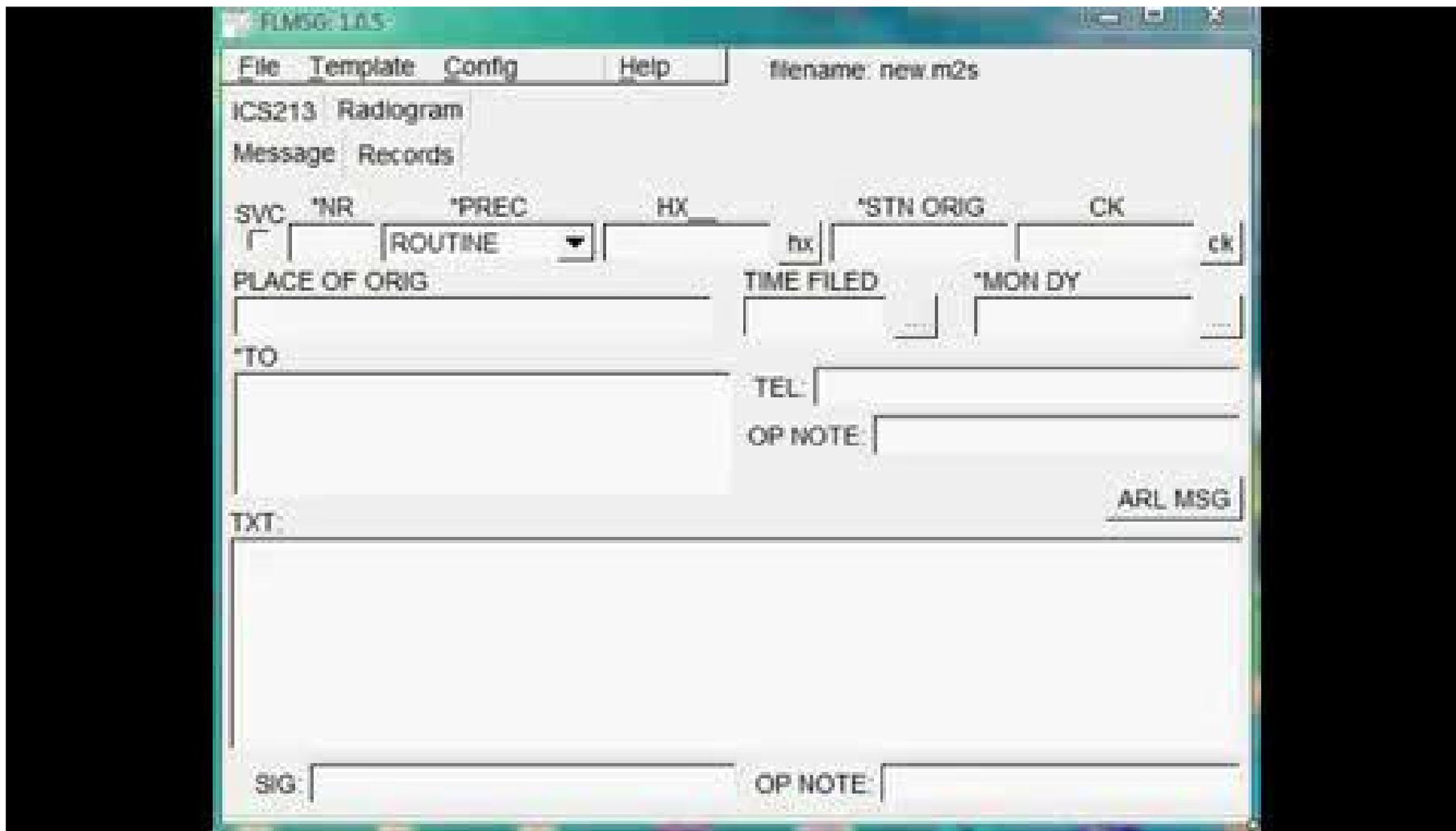
Box 18 - Road Sign (Name, Call Sign, Frequency, Phone, Location): Warn Hayden, N7YLA, 146.711,626-963-5065 Glendora CA

Box 19 - Person Forwarded (Name, Call Sign, Frequency, Phone, Location) Date (Matty) AG69C, 144.360, 714-234-6676, Cypress CA



MS Word doc was automatically converted from this received FLMSG file

Filling in a Radiogram Form



VIDEO: – How the Radiogram form is filled in.

An ARES Test of NBEMS



**VIDEO: NBEMS demonstration at the Cape Cod, Massachusetts
Red Cross Chapter**

Questions?

Download NBEMS

- * Download Page:

<http://w1hkj.com/download.html>

- * Also download Help files, including details on more features.

Software Demonstration

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