

White Paper NTS-007

Embedding FLMSG ICS Forms Within a Radiogram

for use of all traffic handlers

Contact:
Steve Phillips K6JT
Plano, TX 75025
K6JT@ARRL.NET

Secretary Radio Relay international

Prepared By: *Stephen P Hansen*

Checked By:



Steve Hansen KB1TCE
DRS Maine

Steve Phillips K6JT
Secretary RRI

Approved By: *Joseph Ames*

Approved By: *Robert Griffin*

Joseph Ames W3JY
Former Chair Eastern Staff

Robert Griffin K6YR
Coordinator West RRI

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1. Scope

1.1. General

The ARRL Programs and Services Committee had requested that the National Traffic System (NTS) support the Incident Command System (ICS) type 213 form in addition to the standard radiograms that have been used for over 50 years. Work was completed to define how to handle the ICS message content in all modes, digital, voice, and CW. This information is provided in an updated Methods and Practices Guide, widely available later this year.

Meanwhile, tests were made on how to embed ICS-213 messages using the FLMSG program (free to radio amateurs) so that such messages may be passed with the standard radiogram as a 'wrapper'. This paper describes the results of that work.

1.2. Introduction

The FLMSG program – part of the Narrow Band Emergency Messaging System (NBEMS) suite created by Dave Freese, W1HKJ – may be used separately from the NBEMS FLDIGI program to produce ICS forms in text format for inclusion in a radiogram transmitted by digital means.

Note that the author, W1HKJ, prefers that the programs be referred to in lower case (flmsg, fldigi). However, for clarity, they are shown in all upper-case in this document.

At the receiving end, the text can be opened with FLMSG, allowing a printable product in standard Federal Emergency Management Agency (FEMA) (or other) format. FLMSG will also produce either an HTML rendering of the form (for transfer by E-mail or as a print-out for hand delivery), or a text-only format suitable for voice or CW transmission.

This paper will describe using the native FLMSG file itself to transfer the information via Digital or Winlink to a Digital Station closest to the final destination. Formatting of text-only ICS-213 content into a radiogram is also described for use in CW and Voice nets.

2. Applicable Documents

FLMSG Program and Guides	http://w1hkj.com/
NTS-002	NTS Digital Operations. Via the link on http://www.k6jt.com/
Interim Methods and Practices Guide	Methods and Practices Guide (Old version): http://www.arrl.org/appendix-b-nts-methods-and-practices-guidelines
Addendum to MPG	Interim addendum to the MPG above: http://dl.dropboxusercontent.com/u/73013707/MPG6A9V15AICSG.pdf
Winlink Various	http://www.winlink.org/

3. Overview of FLMSG

FLMSG is a forms composition program that includes ICS and Radiogram forms along with generic and blank forms. It can also be used for preparing spreadsheets in .csv (comma separated values) format. FLMSG was developed by W1HKJ in 2007 as a component in the “NBEMS” (Narrow Band Emergency Messaging System) suite of programs that also includes FLDIGI. However, it can be used as a stand-alone application. It is cross-platform, open source software. The NBEMS suite may be downloaded from <http://w1hkj.com/>.

As a stand-alone, FLMSG will produce three principle types of output:

1. A native text file with an extension that is related to the type of form (e.g. an ICS-213 file is *.213). This file contains commands that enable the file to be reopened by another copy of FLMSG.
2. A viewable text output without the above commands.
3. An HTML output that produces a properly formatted, printable form.

FLMSG currently supports the following message formats:

ICS 203, 205, 205A, 206, 213, 214, 216, 309

Standard Radiogram

Plaintext

Blank

Spreadsheet (csv format)

In addition, there are HICS, Red Cross, IARU, MARS and weather reporting forms.

Pre-prepared FLMSG text files may be imported into FLMSG using File-Open or via the Drag and Drop (DnD) function. For this, simply drag the file to the blue dot on the FLMSG main window. The form fields are generally self-explanatory but help notes will appear when you hover your cursor over a field.

3.1. Text Editing Software

The editing process described requires the ability to copy or edit and paste the text files produced by FLMSG.

FLMSG is a native Linux program. There was initially a problem with Windows files lacking the requisite CR and LF after each line. However, the most recent builds of FLMSG now generate the correct line endings for Windows. Although any text editor can be used now, even Notepad, the preferred editors are Notepad++ (<http://notepad-plus-plus.org>) freeware for Windows or the cross-platform Geany (<http://geany.org>). Both of these are true text editors and may be used for the creation and management of all .txt files that are used with digital radio software. They can also be used to manage the conversion of end-of-line sequencing between DOS, Macintosh OS X and Linux native file formats. Note that Windows 10 contains an equivalent program to Wordpad. It has been renamed “WRITE”.

Once any of the above editors is installed, associate your FLMSG text files with your chosen editor. The examples in this document will use Notepad++.

3.2. FLMSG File Locations

If using the File-Save defaults, FLMSG files will be saved to:

On XP: C:\Documents and Settings\\NBEMS.files
On Vista and later: C:\Users\\NBEMS.files
On Linux: /home/<username>/nbems
On OS X: /home/<username>/nbems

Data files are located in the sub directory "ICS/messages"
Template files are located in the sub directory "ICS/templates"
View files (.rtf, .html, .txt) are located in the "ICS/" subdirectory.

Finding saved files can be difficult. A useful tactic is to manually save files to a folder on the computer's desktop or other easy to find location. Creating a shortcut to the NBEMS main folder on the desktop would also work well. The operator may give the file a name that is easier to recognize than the default name using File-Save As.

Note that on Macintosh and other Unix-based systems, the use of the dot-name (.nbems) will make the folder and/or file invisible to the normal user interface. For this reason, FLMSG contains an option under the "File" menu named "Folders" that will open the otherwise hidden .nbems folder, giving the user access to all files. This is not an issue for Windows.

4. Composing the FLMSG ICS-213 Form

Open FLMSG. You will see some fields at the bottom (apply compression, mode, etc.). These are associated with operation with FLDIGI and may be ignored.

If this is a new installation of FLMSG, click Config and enter personal information and preferred date/time format.

Select Form-ICS-ICS213. This will bring up the ICS-213 template as shown below.

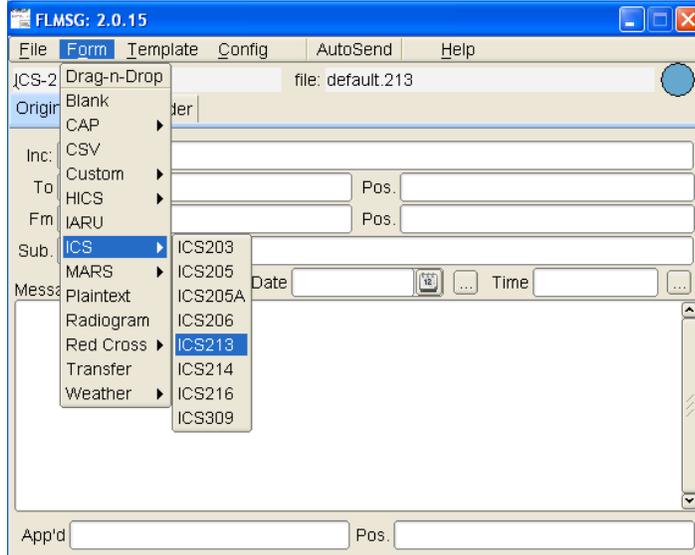
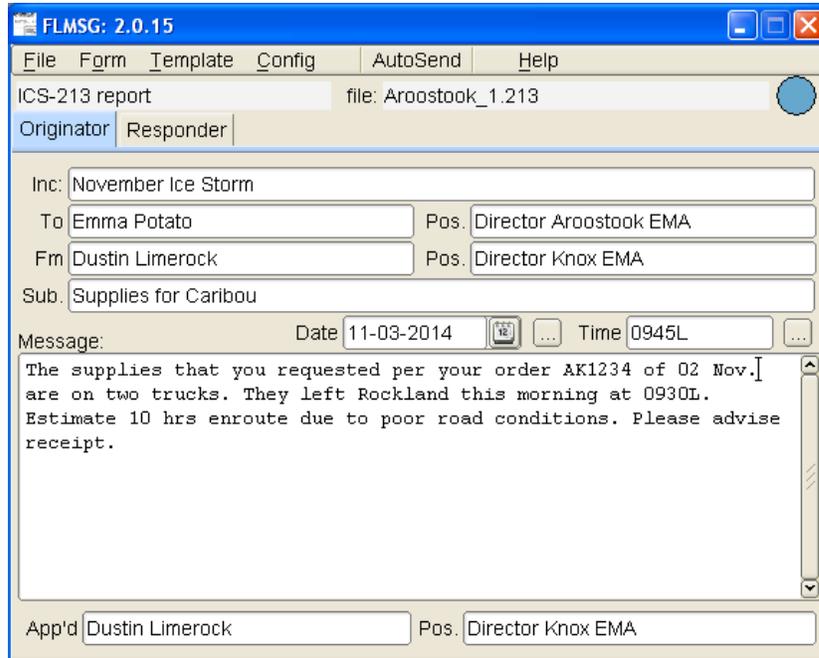


Figure 1. ICS-213 Template Selection

Fill in the fields as shown in the figure below. Mousing over a field will bring up some explanatory text. The current date and time may be auto filled by clicking on the auto fill buttons. Date and time formats may be set using the Config menu. You may also enter these manually. Note that the form has Originator and Responder tabs.



FLMSG: 2.0.15

File Form Template Config AutoSend Help

ICS-213 report file: Aroostook_1.213

Originator Responder

Inc: November Ice Storm

To: Emma Potato Pos: Director Aroostook EMA

Fm: Dustin Limerock Pos: Director Knox EMA

Sub: Supplies for Caribou

Message: Date: 11-03-2014 Time: 0945L

The supplies that you requested per your order AK1234 of 02 Nov. are on two trucks. They left Rockland this morning at 0930L. Estimate 10 hrs enroute due to poor road conditions. Please advise receipt.

App'd: Dustin Limerock Pos: Director Knox EMA

Figure 2. ICS-213 Field Data Entry

Save the file with the *.213 extension. It will be used as an attachment to a radiogram as described in subsequent sections.

To save a paper copy, click File-View-Html file copy. The form will open in your computer's browser. See the figure below.

GENERAL MESSAGE (ICS-213)

1. Incident Name (optional): November Ice Storm		
2. To (Name and Position): Emma Potato	Director Aroostook EMA	
3. From (Name and Position): Dustin Limerock	Director Knox EMA	
4. Subject : Supplies for Caribou	5. Date : 11-03-2014	6. Time : 0945L
7. Message : The supplies that you requested per your order AK1234 of 02 Nov. are on two trucks. They left Rockland this morning at 0930L. Estimate 10 hrs enroute due to poor road conditions. Please advise receipt.		
8. Approved by: Name : Dustin Limerock	Signature : _____	Position/Title : Director Knox EMA
9. Reply : 		
10. Replied by: Name : ICS-213	Position/Title : Date/Time :	Signature: _____

Figure 3. ICS-213 HTML Printable Form

4.1. Inserting the ICS Data into a Radiogram

Start by selecting the "View : Plain Text" option in FLMSG, which will open a new window with the pure text. The text is ready to copy and paste into a radiogram form between the BTs. It may be opened with any text editor, for example, Notepad, Wordpad or WRITE (Windows 10) or Notepad++ if installed.

It is very helpful to be able to see the end-of-line symbols, which Notepad++ supports, as some problems in transmission may result from erroneous or spurious characters. One issue is that text prepared with Linux or Mac use LF for the line feed. Since FLMSG is Linux native, LF is the line feed. On the other hand, Windows has a CR/LF line feed. FLMSG will now generate the correct line endings for each platform.

FLMSG puts a heading on the text file (ICS 213 GENERAL MESSAGE) followed by a blank line, which are not used in a radiogram. Start copying from the Inc: (incident) line. This may be pasted directly into a new Airmail or RMS Express message.

4.2. Preparing the Radiogram

In Airmail, compose the radiogram according to the standard format with two exceptions:

The check is replaced with "ICS XX" (the XX indicating a check is not used in ICS Messages) and the FLMSG text is placed between the breaks (BT).

Some operators have stated that there should be a check, even for ICS messages. While this may work for short messages that have little or no punctuation, it quickly becomes unusable for longer messages over about 50 words, and how to count punctuation also becomes an issue. For example, a list of supplies might be something like:

Needed Supplies and Quantity: Bandages, 6 boxes; Aspirin, 500 tablets; D-cell batteries, 2 dozen.

Is Quantity: one word or two (including the colon)? Do semicolons and commas count as a word? Does the Check apply only to the ICS-213 Message block or to the entire text? And so forth. ICS messages are allowed to be mixed upper and lower case and use any punctuation and also special characters such as [<] > , etc.

For all messages, put the text-only form of the ICS-213 fields, described in the last section, into the radiogram proper and the internal format from FLMSG included as an attachment. Each field of the ICS form is preceded by the field description, per FEMA documentation. Techniques for voicing this type of information or sending on CW are documented in an updated Methods and Practices Guide addendum. Note that the standard “wrapper” radiogram content is used with the ICS-213 text data placed between the breaks (BT).

When the receiving / delivering operator has FLMSG and receives the attachment via Winlink 2000 or Digital Mailbox, then the attachment can be saved and opened by FLMSG, allowing production of the full HTML rendered form for printing / delivery.

The complete sample radiogram is shown in the following table. All portions of a standard radiogram, including the preamble, addressee, and address are used, even if some of it duplicates what is in the ICS-213 text proper. Similarly, a standard signature follows the text and BT, even if it duplicates what is in the ICS-213 form. Op Notes may also be used, as is normal for a radiogram. Note also that all radiogram information is upper case while the ICS-213 text may be mixed case. This is in compliance with what is in the updated Methods and Practices Guide (which also supports all upper case in the ICS-213).

Table 1, Prepared Radiogram in Airmail (General Usage)

3 P HXE KB1TCE ICS XX ROCKLAND ME NOV 03
EMMA POTATO
AROOSTOOK COUNTY EMA DIRECTOR
158 SWEDEN ST
CARIBOU ME 04736
207 493 4328
BT
GENERAL MESSAGE (ICS 213)
1. Incident Name: November Ice Storm
2. To: Emma Potato, Director Aroostook EMA
3. From: Dustin Limerock, Director Knox EMA
4. Subject: Supplies for Caribou
5. Date: 11-03-2014
6. Time: 0945L
7. Message:
The supplies that you requested per your order AK1234 of 02 Nov. are on two trucks. They left Rockland this morning at 0930L. Estimate 10 hrs enroute due to poor road conditions. Please advise receipt.
8. Approved by:
Name: Dustin Limerock
Signature:
Position/Title: Director Knox EMA
9. Reply:
10. Replied by:
Name:
Position/Title:
Signature:
Date/Time: , *
ICS213 **
BT
DUSTIN LIMEROCK
OP NOTE ATTACHMENT INCLUDED IN FLMSG FORMAT

* Flmsg inserts a comma as the field separator for date and time. This may be deleted.

** No need to include "ICS213" at the end – it is on the official form but may be deleted.

4.3. Attachment Content

The attachment contains the native FLMSG formatted data, which allows FLMSG to regenerate the full text and HTML versions of the message. For the sample message given in the last section, it would contain the following:

Table 2, FLMSG Internal Format Attachment Content

<FLMSG>2.0.15
:hdr_ed:22
KB1TCE 20140311094556
<ics213>
:inc:18 November Ice Storm
:to:11 Emma Potato
:p1:22 Director Aroostook EMA
:fm:15 Dustin Limerock
:p2:17 Director Knox EMA
:d1:10 11-03-2014
:t1:5 0945L
:sb:20 Supplies for Caribou
:s1:16 Dustin Limerock
:p3:17 Director Knox EMA
:mg:202 The supplies that you requested per your order AK1234 of 02 Nov. are on two trucks. They left Rockland this morning at 0930L. Estimate 10 hrs enroute due to poor road conditions. Please advise receipt.

This contains all of the information that is required to reconstruct the FLMSG file at the receiving end. Most of the fields are self-explanatory. The call sign that is assigned to the application is shown along with the date/time stamp. Each field contains an identifier along with the number of characters (including spaces) in the field.

The data in the file will have only the Linux type line feed terminators. However, since this file will be opened only by FLMSG and need not be viewed as a text file itself, there is no need to convert to the CR/LF Windows format.

4.4. Receiving and Replying to the ICS Radiogram

If only the text information is received, not the attachment, then it is handled like any radiogram. However, when the attachment with internal FLMSG formatting is provided, the following procedure is used:

- Save the attachment as a text file to the ICS/messages folder with .213 extension
- Open the file in FLMSG (File-Open or “drag and drop” to the blue circle at the top right of an open FLMSG window)

To respond to the message, simply click the Responder tab in FLMSG and fill out the fields.

- Save the file and select the View : Plain Text option in FLMSG

- Proceed as for the original message as described in section 4.1
- Copy into a new radiogram with proper return addressing

Note that per FEMA, proper handling of an ICS form requires sending along the original message content with the response. This is further described in the Methods and Practices Guide.

5. Notes

5.1. Acronyms and Abbreviations

DRS	Digital Relay Station
DTN	Digital Traffic Network (formerly NTSD) – Independent of ARRL
FEMA	Federal Emergency Management Agency
FLDIGI	Program in NBEMS Suite to Transmit in Digital Modes
FLMSG	Program in NBEMS Suite to Format Messages
ICS	Incident Command System
MPG	Methods and Practices Guide
NBEMS	Narrow Band Emergency Messaging System
NTS	National Traffic System
NTSD	National Traffic System Digital Subsystem (renamed Digital Traffic Network as of August 2016)
WL2K or Winlink 2K	Winlink 2000 communications system (winlink.org)