

HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

# NH HOSPITAL AMATEUR RADIO PROGRAM (HARP)

## OPERATIONS MANUAL

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# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

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## INTRODUCTION

The purpose of the Hospital Amateur Radio Program (HARP) Operations Manual is to provide guidelines, specific instructions, and reference information necessary to connect, configure, and operate a HARP Amateur Radio station in support of backup emergency communications at New Hampshire hospitals during readiness practice drills and actual emergencies, using analog and digital hardware and software for message exchange.

We recommend that a copy of this manual and applicable supporting documents be co-located with each HARP station, for example, in a three-ring binder, for ease of access during operations and for periodic updates. To complete the Manual's contents, it will be necessary for local hospital maintainers of the Manual to follow links provided herein to obtain copies of externally created and maintained documents and forms.

Please contact one or more of the following for questions, feedback, or corrections regarding the Manual's contents and use:

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## Section 1.0 HARP STATION ICOM 2820H QUICK START

This section defines the interconnections of elements of a HARP station, and provides step-by-step instructions on how to turn on and configure the ICOM 2820H to get to the point of conducting voice reception and transmissions on a desired memory channel or frequency.

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## Section 1.0 HARP STATION ICOM 2820H QUICK START

### 1.1 BASIC CONNECTIONS AND CONFIGURATION

#### 1.1.1 OVERVIEW and CAUTIONS

The ICOM 2820H is a VHF/UHF transceiver, capable of simultaneously receiving on any combination of two, 2 meter and 70 centimeter frequencies controlled by separate VFO's or pre-programmed memory channels. Its receivers are also capable of receiving outside the amateur 2meter and 70 centimeter bands in accordance with its specifications. However, it will only transmit on one of the indicated frequencies as determined by which displayed frequency, left or right on the display, is selected as "MAIN". Moreover, it will only transmit on the FCC-allocated amateur frequencies in the 2 meter and 70 centimeter bands.

**CAUTION:** The display panel magnetically attaches to the body of the transceiver with either a short or long cable, depending on the specific installation.

Never lift the radio by the display panel as it will come loose of its magnets and may damage the interconnecting cable and/or the main body. Also, never attach the panel magnetically to the top of the radio's body as the panel's magnets may disrupt the memory's programming.

**CAUTION: Do not turn power on before verifying the correct cable connections to the radio, especially the coaxial antenna cable.**

The radio has been pre-programmed for basic operation as a HARP station and for memory channels. All radios in the HARP network have the same channel programming. After the radio is properly configured, the hand-held keypad microphone can be used to control virtually all the functions needed to operate the HARP station.

#### 1.1.2 VERIFY PROPER CONNECTIONS

**a.)** Antenna coaxial cable is connected to the coaxial jack at the OUTER EDGE of the rear of the ICOM 2820H transceiver (NOT the jack between the fan and the speaker jacks).

Verify that the coax is connected to the antenna system at the coax wall outlet.

**b.)** DC power cable is connected to the radio's red/black pigtail, and to the Astron power supply's terminals, via the power distribution strip and the PowerGate automatic battery charger module.

Refer to Figure 1.1 which shows typical HARP station interconnections. (*Connection diagram*)

#### 1.1.3 POWER UP THE RADIO and VERIFY PROPER HARP CONFIGURATION

**a.)** Turn on the power supply using the red rocker switch. The switch lights when

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the supply is on.

**b.)** Turn on the ICOM 2820H transceiver by depressing and holding the "Power" switch for 1 second, then releasing. The power switch is between the left side top and bottom knobs. The display will light up.

Refer to Figures 1.2 and 1.3 for steps c.) through f.) (*Pictures of front panel and microphone*)

**c.)** Display should show two frequencies, one on each side of the screen. If only a single frequency is displayed, momentarily depress the "F" button on the right edge of the panel, then momentarily depress the "M/CALL, MW button on the RIGHT side of the bottom row of buttons on the panel until dual frequencies appear. Then momentarily depress the "F" button again to return to normal operating display.

**d.)** Verify that "MR" appears below the right side of each frequency display. If it does not, first depress the large tuning knob on the bottom left of the panel and verify that "MAIN" shows above the left side of the frequency display. Then use the keypad microphone and depress the "MR/CALL" button at the top center of the mike. "MR" should now display on the main screen. If necessary repeat this procedure for the right hand frequency display by depressing the right-hand tuning knob, and the "MR/CALL" button on the mike.

**e.)** Before proceeding be sure "MAIN" is displayed above the left hand side of the left frequency display. If not, depress the left side large tuning knob.

NOTE: Depressing the right or left main tuning knobs shifts "MAIN" to the right and left hand radios, respectively. Both radios can receive simultaneously, but the ICOM 2820 WILL ONLY TRANSMIT ON THE FREQUENCY FOR WHICH "MAIN" is displayed. The "BAND" button on the top of the microphone can also be used but operates as a back and forth toggling function.

**f.)** Turn up the volume control on each side of the control panel and adjust the squelch control inner ring by rotating it counter clockwise until noise is heard. Adjust the volume control for comfortable level, then rotate the squelch ring clockwise until the noise is just squelched.

### 1.2 OPERATION

**a.)** The radio is now in "MR" Memory mode and is ready for transmit/receive operation using pre-stored channels.

Select the primary repeater channel (refer to the printout of frequencies vs channel numbers) for your location using the KEYPAD MIKE as follows:

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Depress the "T-OFF/ENT C" button just to the right of the "9" button.

The screen will display "CH - ".

Enter a THREE-digit channel number (leading zeros if necessary).

The channel number and its frequency will display.

NOTE: When in "MR" Memory Mode, channel numbers can also be selected sequentially by rotating the left or right main tuning knobs on the front panel.

Repeat this procedure to set the secondary hospital repeater frequency for the right side channel after shifting it to "MAIN" status. Return "MAIN" status to the left side.

**b.)** Operate the radio for transmissions by depressing the PTT button on the side of the mike.

**c.)** Transmit power can be switched between HIGH, MED, and LOW using the mike's keypad numbers "4", "5", and "6" buttons.

It is good operating procedure to use the lowest transmit power setting that achieves solid communication quality with the selected channels.

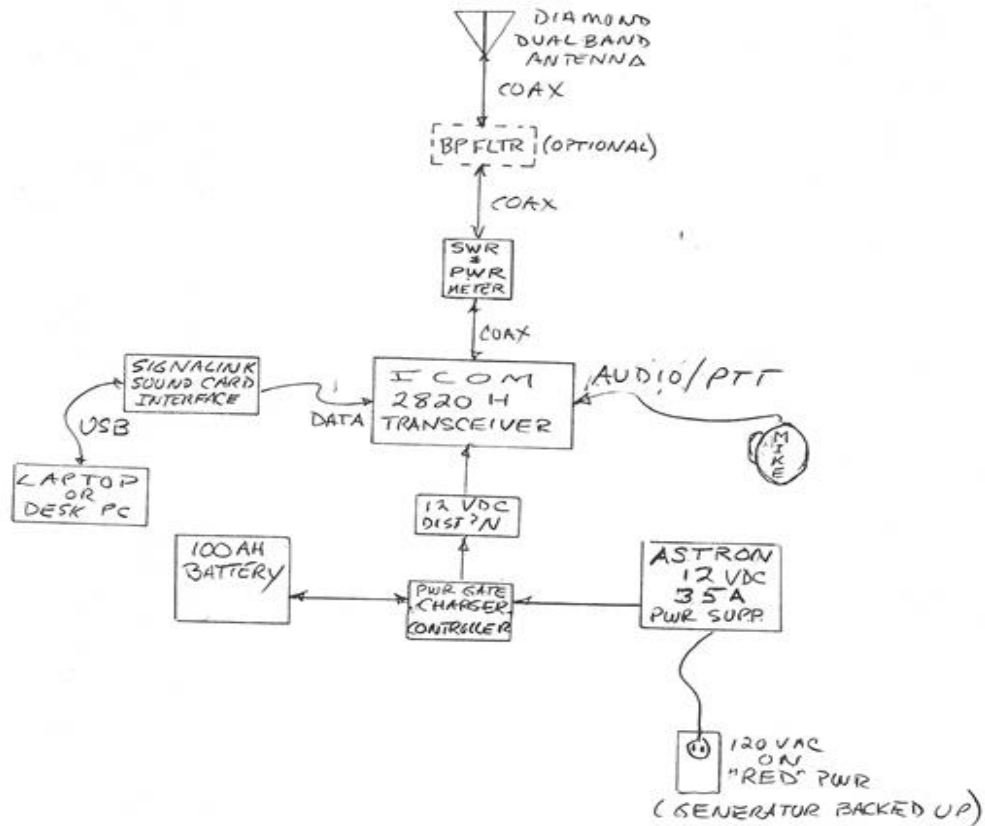
**d.)** Use established emergency communication protocols, for example, NH ARES protocols as documented in the NH ARES Emergency Communication Plan.



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Figure 1.1

Figure 1  
Typical HARP Station Interconnection



HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

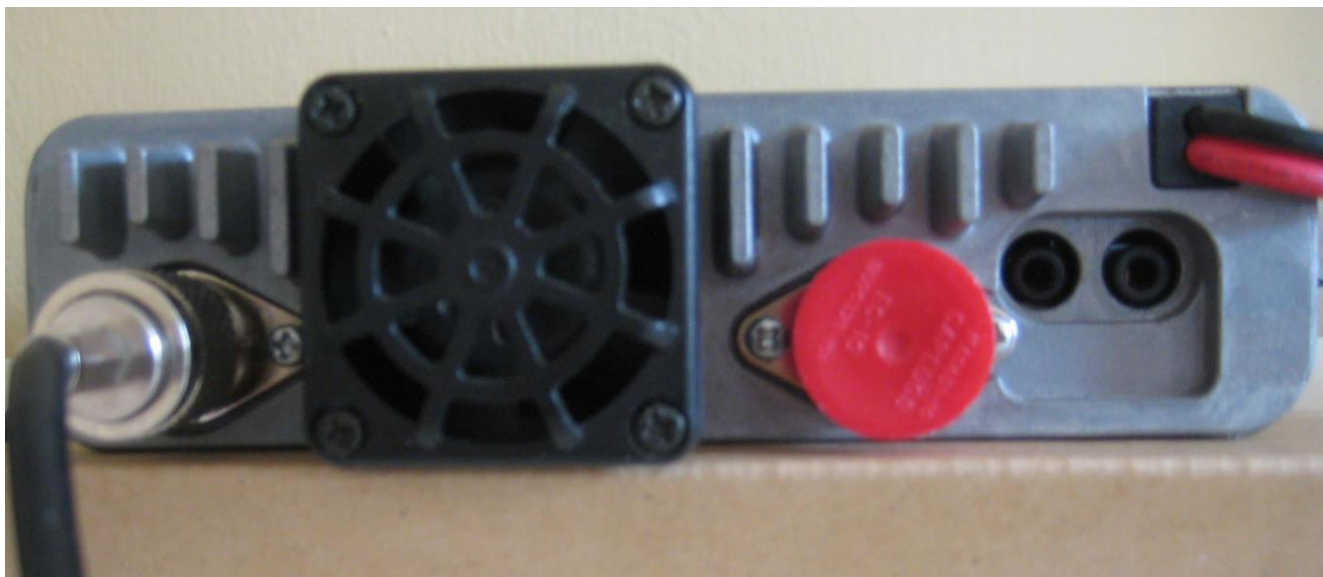


Figure 1.2

Figure 1.3

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## SECTION 2.0 VOICE MESSAGING

This section describes protocols and procedures to be used to establish and conduct voice operations and messaging when a HARP station has been activated in support of a hospital's need and request, or in the event of NH ARES activation for a real emergency or a drill.

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## Section 2.0 VOICE MESSAGING

While NH-ARES is moving increasingly toward the use of digital communications, voice messaging currently remains the basic form of establishing, coordinating and conducting emergency communications within ARES and for the operation of Hospital Amateur Radio Program ( HARP ) stations.

Upon establishing correct interconnections and configuration of HARP stations in accordance with Section 1., initial communications with other stations will be established using the conventional analog voice mode. The need for amateur radio communications from a HARP station may occur under several circumstances:

1. The hospital has an internal local emergency, e.g. total loss of telephone and/or internet communications and has an urgent need to connect with the outside world.
2. A regional emergency may exist and the hospital has been asked by other hospitals, Emergency Management or other agencies to activate their diverse communications means In support of emergency operations, including communications with one or more EOC's.
3. Local ARES may be activated to support a local or more geographically extended situation and has requested access to the HARP stations(s) in support of emergency operations.
4. A local ARES or non-ARES-involved emergency communications drill or test has been activated.

The following assumes that Amateur Radio operators directly or operating or supervising the operation of the HARP station, have nominal ARES training and experience in emergency communications.

### 2.1 ESTABLISHING INITIAL VOICE CONTACT

If, an ARES net is in progress on an accessible repeater when the HARP station is activated:

1. Check into the ARES net and report the conditions at the hospital requesting communications assistance. Be sure to indicate the level of urgency or priority of needed message traffic passing.
2. Ask that the State of NH EOC be contacted and advised of your hospital's situation.
3. Follow established ARES directed emergency net operation protocols.
4. Clearly state your communication need in concise language indicating the urgency/priority of your traffic, and its required destination. Avoid extraneous information in your exchange.
5. Follow the instructions of Net Control on how to pass your traffic. Depending on type, source, length and source of messages you send, use appropriate message forms **as** discussed in "B. MESSAGE TYPES AND FORMS" below. Before transmitting a message clearly state the type and specific message form being used.
6. Log all your communication exchanges and keep hard copies of messages delivered and received.

If no ARES net has been established either informally or formally:

1. Tune to your hospital's designated primary repeater frequency and make the following voice

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transmissions:

2. If using a repeater, transmit call sign to confirm repeater contact (tone). If using simplex, just announce call sign.
3. Announce: "This is \_\_\_\_\_ Hospital. We are declaring a communications emergency at \_\_\_\_\_ Hospital. Any stations that can copy, please respond with call sign. This is (call sign in phonetics). Repeat, as necessary until contact is made.
4. If contact cannot be made on the primary, secondary or tertiary repeaters designated for the hospital, make a call on the local ARES-designated repeater (if different). Otherwise use the National calling simplex frequency, 146.52 MHz to attempt contact.
5. If the item 4. procedures don't establish contact, scan the repeaters in the radio memory looking for activity, and when found, break in to be recognized.

### 2.2 CONDUCTING COMMUNICATION EXCHANGES

1. Once contact is made, determine and log the receiver's location, call sign and ability to assist with communications.
2. Request the receiver's assistance to transmit pending messages.
3. Also ask the contact to do one of the following things:
  - Contact local ARES to activate and assist in the communications emergency.
  - Contact The State of NH EOC via phone and ask them to alert NH-ARES of the situation for possible activation. At this point, other HARP and ARES can be activated, as needed.
4. Then follow standard procedures and protocols for passing message traffic using established ARES protocols. Use appropriate message forms based on what you have received from hospital emergency management and the type and urgency of the message. See "B. MESSAGE TYPES AND FORMS" below.
5. At the beginning of a message transmission, clearly state the type and specific message form being used.
6. If more than one station responds, consider forming an informal net and using directed net procedures.
7. Maintain a log of all communications and message traffic received and sent. Keep copies of any hard copy messages given you to send, and the hard copy of message forms you fill out for received traffic.

### 2.3 MESSAGE TYPES AND FORMS

Generally, there are two basic message types: Tactical Messages and Formal Messages.

**Tactical Messages** are short, verbal messages for immediate and direct delivery to someone near a radio on the receiving end. Messages may be treated as tactical because they are short and quite urgent, or because they are not urgent, but are short queries or responses.

**Caution:** Although voice delivery makes it easy to convey short messages, experience teaches that writing down and reviewing even short messages before delivery avoids ambiguity and confusion when repetition and responses are required. Work with your message originator to get simplicity, clarity and conciseness before communicating.

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**Formal Messages** are typically longer, and more detailed, often agency-originated on forms, and may require more time or multiple relays to deliver. Before transmission by voice, these should be reviewed by the operator and discussed if possible with the originator to achieve clarity, conciseness, and to remove ambiguity. Once approved by the originator, they must not be edited or modified by the sending operator.

**Message Forms – Refer to Attachment C. for blank copies of actual forms.**

There are three primary message forms that a HARP operator may encounter: 1. The standard **ARRL Radiogram** form; 2. The **ICS-213** message form; or 3. The **HICS-213** message form, a Hospital Incident Command System variation of the ICS-213. All three of these forms are available as templates for digital messaging as described in Section 4.

In New Hampshire ARES, we use a form of the ICS-213 form which embeds the standard ICS-213 format in an ARRL-type Radiogram header and footer. This makes the message format more robust in assuring accurate transmission with proper priority, handling and word count accuracy, while retaining all the format of the standard ICS-213.

At NH ARES Web site please see: <http://www.nh-ares.org/forms/ICS-213RadioMessage.PDF>

The Hospital ICS-213 (HICS-213) has been developed specifically for hospital use, has provision for message priority, and would be used if presented to the HARP operator for handling. At the HICS center Web site please see:

<http://hicscenter.org/Shared%20Documents/HicsForms/HICS%20213-General%20Message.pdf>

The standard ARRL Radiogram form should be used to concisely write messages presented verbally or handwritten not on an ICS or HICS form. However, if the Incident Command System is in operation at the hospital site, it is preferred to use the ICS-213 or HICS-213 form.

At the NH ARES Web site please see: <http://www.nh-ares.org/forms/ARRLRadiogram-2up.pdf>

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The screenshot shows a window titled 'RADIOGRAM-2011.pdf - Adobe Acrobat Reader DC'. The window contains the ARRL logo and the title 'ARRL — the national association for Amateur Radio™ RADIOGRAM'. Below the title is a header table with columns: NUMBER, PRECEDENCE, HX, STATION OF ORIGIN, CHECK, PLACE OF ORIGIN, TIME FILED, and DATE. The form is divided into 'TO' and 'FROM' sections. The 'TO' section includes fields for TO, PHONE NUMBER, and E-MAIL, and a box for 'THIS RADIO MESSAGE WAS RECEIVED AT' with sub-fields for AMATEUR STATION, PHONE, NAME, E-MAIL, STREET, and CITY, STATE, ZIP. The 'FROM' section includes fields for FROM, DATE, and TIME. There are also 'REC'D' and 'SENT' sections with explanatory text. The text under 'REC'D' states: 'This message was handled at no charge by a licensed Amateur Radio operator, whose address is shown in the box at right above. No compensation can be accepted by a "ham" operator. A return message may be filed with the "ham" delivering this message to you. Further information on Amateur Radio may be obtained from ARRL Headquarters, 225 Main Street, Newington, CT 06111 or [www.arrl.org](http://www.arrl.org).' The text under 'SENT' states: 'The ARRL is the national association for Amateur Radio and the publisher of QST magazine. One of its functions is promotion of public service communication among Amateur Radio operators. To that end, the ARRL has organized the National Traffic System for daily nationwide message handling.' The date '1320 2/11' is printed at the bottom right.

NUMBER	PRECEDENCE	HX	STATION OF ORIGIN	CHECK	PLACE OF ORIGIN	TIME FILED	DATE
--------	------------	----	-------------------	-------	-----------------	------------	------

TO

THIS RADIO MESSAGE WAS RECEIVED AT

AMATEUR STATION \_\_\_\_\_ PHONE \_\_\_\_\_

NAME \_\_\_\_\_ E-MAIL \_\_\_\_\_

STREET \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

PHONE NUMBER \_\_\_\_\_

E-MAIL \_\_\_\_\_

---

FROM	DATE	TIME	TO	DATE	TIME
------	------	------	----	------	------

**REC'D**

This message was handled at no charge by a licensed Amateur Radio operator, whose address is shown in the box at right above. No compensation can be accepted by a "ham" operator. A return message may be filed with the "ham" delivering this message to you. Further information on Amateur Radio may be obtained from ARRL Headquarters, 225 Main Street, Newington, CT 06111 or [www.arrl.org](http://www.arrl.org).

**SENT**

The ARRL is the national association for Amateur Radio and the publisher of QST magazine. One of its functions is promotion of public service communication among Amateur Radio operators. To that end, the ARRL has organized the National Traffic System for daily nationwide message handling.

1320 2/11



# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

ICB-213 RADIO MESSAGE							
Number	Precedence	Handling	Station of Origin	Check	Place of Origin	Time Filed	Date Filed
1. Incident Name: _____							
2. To:			ICB Position:				
3. From:			ICB Position:				
4. Subject:			5. Date:		6. Time:		
7. Message: (One word per line)							
_____	_____	_____	_____	_____	_____	_____	5
_____	_____	_____	_____	_____	_____	_____	10
_____	_____	_____	_____	_____	_____	_____	15
_____	_____	_____	_____	_____	_____	_____	20
_____	_____	_____	_____	_____	_____	_____	25
_____	_____	_____	_____	_____	_____	_____	30
_____	_____	_____	_____	_____	_____	_____	35
_____	_____	_____	_____	_____	_____	_____	40
_____	_____	_____	_____	_____	_____	_____	45
8. Approved by:			ICB Position:				
Received From	Date	Time	Sent To	Date	Time		

REPLY RADIO MESSAGE ICB-213							
Number	Precedence	Handling	Station of Origin	Check	Place of Origin	Time Filed	Date Filed
1. Incident Name: _____							
2. To:			ICB Position:				
3. From:			ICB Position:				
4. Subject:			5. Date:		6. Time:		
7. Message: (One word per line)							
Original Message Number: _____ Place of Origin: _____							
_____	_____	_____	_____	_____	_____	_____	5
_____	_____	_____	_____	_____	_____	_____	10
_____	_____	_____	_____	_____	_____	_____	15
_____	_____	_____	_____	_____	_____	_____	20
_____	_____	_____	_____	_____	_____	_____	25
_____	_____	_____	_____	_____	_____	_____	30
_____	_____	_____	_____	_____	_____	_____	35
_____	_____	_____	_____	_____	_____	_____	40
8. Approved by:			ICB Position:				
Received From	Date	Time	Sent To	Date	Time		

NHARES - NHRS&M 1-25-12

# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

## HICS 213 Form

### INCIDENT MESSAGE FORM



1. FROM (SENDER) \_\_\_\_\_ 2. TO (RECEIVER) \_\_\_\_\_

3. DATE RECEIVED \_\_\_\_\_ 4. TIME RECEIVED \_\_\_\_\_ 5. RECEIVED VIA \_\_\_\_\_ 6. REPLY REQUESTED \_\_\_\_\_  
 Phone  Radio  Yes  No  
 Other: \_\_\_\_\_ If Yes, REPLY TO (if different from Sender): \_\_\_\_\_

7. PRIORITY \_\_\_\_\_  
 Urgent - High  Non Urgent - Medium  Informational - Low

8. MESSAGE (KEEP ALL MESSAGES/REQUESTS BRIEF, TO THE POINT, AND VERY SPECIFIC)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. ACTION TAKEN (IF ANY)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RECEIVED BY \_\_\_\_\_ TIME RECEIVED \_\_\_\_\_  
Comments: \_\_\_\_\_  
Forward To: \_\_\_\_\_

RECEIVED BY \_\_\_\_\_ TIME RECEIVED \_\_\_\_\_  
Comments: \_\_\_\_\_  
Forward To: \_\_\_\_\_

10. FACILITY NAME \_\_\_\_\_

PURPOSE: PROVIDE STANDARDIZED METHOD FOR RECORDING MESSAGES RECEIVED BY PHONE OR RADIO. ORIGINATOR: ALL POSITIONS.  
ORIGINAL TO: RECEIVER. COPIES TO: DOCUMENTATION UNIT LEADER AND MESSAGE TAKER. HICS 213

## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

### Standard ITU Phonetic Alphabet Letter Phonetic Pronunciation and Number Pronunciation

A Alfa "AL-fah"  
B Bravo "BRAH-voh"  
C Charlie "CHAR-lee"  
D Delta "DELL-tah"  
E Echo "ECK-oh"  
F Foxtrot "FOKS-trot"  
G Golf "GOLF"  
H Hotel "hoh-TELL"  
I India "IN-dee-ah"  
J Juliet "JEW-lee-et"  
K Kilo "KEE-loh"  
L Lima "LEE-mah"  
M Mike "MIKE"  
N November "no-VEM-ber"  
O Oscar "OSS-car"  
P Papa "pah-PAH" or "PAH-pah"  
Q Quebec "keh-BECK"  
R Romeo "ROW-me-oh"  
S Sierra "see-AIR-rah"  
T Tango "TANG-go"  
U Uniform "YOU-nee-form"  
V Victor "VIK-ter"  
W Whiskey "WISS-key"  
X X-ray "ECKS-ray"  
Y Yankee "YANG-key"  
Z Zulu "ZOO-loo"  
0 "ZEE-roh"  
1 "WUN"  
2 "TOO"  
3 "TREE"  
4 "FOW-er"  
5 "FIFE"  
6 "SIX"  
7 "SEV-en"  
8 "ATE"  
9 "NYE-ner"

## Section 3.0      EMERGENCY AND TRAINING OPERATIONS

This section provides guidelines and specific procedures for conducting network operations both during drills and training exercises, and during actual emergency call ups. It includes a script for the weekly HARP training net.

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## Section 3.0 EMERGENCY AND TRAINING OPERATIONS

### 3.1 OPERATIONS DURING AN EMERGENCY

#### 3.1.1 ACTIVATION

A HARP station may be activated by volunteer Amateur Radio operators when requested by authorized hospital personnel. This may occur as a result of a need for backup emergency radio communications between the hospital and the local EOC or other agencies.

If the local ARES area has been activated and an ARES net is in operation or becomes operational, the HARP station will join the ARES net and operate under ARES protocols for emergency communications.

When the local or State ARES has been activated, ARES may request access to a hospital's HARP station in support of emergency communications. In that case, authorized hospital personnel shall be contacted by local ARES leadership to approve HARP access and operation.

NH ARES activation occurs in accordance with the NH ARES Emergency Communications Plan Section 8.0 and Attachment A of that plan.

#### 3.1.2 HARP STATION OPERATON

Refer to Section 2.1 procedures for establishing voice contact with stations during an emergency when either an ARES emergency net has or has not been activated.

Participation in ARES NETS shall be conducted in accordance with the ARES Emergency Communications Plan accessible at:

<http://www.nh-ares.org/CommPlan/CommPlan.php>

If an ARES net is not activated and more than one other station is involved in a hospital's emergency communication needs, it is recommended that ARES procedures for conducting a directed net be followed.

Section 3.3 contains a matrix showing what repeaters are accessible and most effective for HARP station communications at the hospitals.

Current Statewide ARES Net frequencies are designated in Appendix B of the NH ARES Emergency Communications Plan. Accessible at :

<http://www.nh-ares.org/CommPlan/AttachmentB-Nets&Frequencies.pdf>

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## 3.2 OPERATIONS DURING EXERCISES AND DRILLS

### 3.2.1 HARP TRAINING NETS

The following script should be followed in establishing and running a HARP training net:

**Each hospital please fill in the blanks in section (a.)**

(a.) HARP Net Parameters:

Hospital: \_\_\_\_\_

Net Day and Time: \_\_\_\_\_

Primary Repeater Frequency: \_\_\_\_\_

Secondary Repeater Frequencies: \_\_\_\_\_

(b.) HARP NET Net Control Station (N.C.S.) SCRIPT :

-Good afternoon, this is: ( **Give Name, Call Sign, and Hospital** ) Net Control for today's HARP NET (Hospital Amateur Radio Program).

-The purpose of this Net is to develop paths of communication between Hospitals using both Simplex and Repeaters and develop proficiency passing voice and Digital messages along these paths.

-This Net meets weekly on Wednesdays from 1600 to 1700 local.

-This is a directed Net, all communications will go through Net Control.

-Emergency and Priority Traffic may break into this Net at any time.

-When checking into this Net give Name, Call Sign, Hospital, ARES affiliation, or location, and whether or not you have traffic.

-Anyone wishing to check in, please do so now.

-List and Acknowledge check-ins.

-We will proceed with Training at this time.

-Week 1, orient new hospitals, pass voice messages.

-Week 2, test repeaters and simplex paths between hospitals.

-Week 3, Fldigi and Flmsg.

-Week 4, Fldigi and Flamp.

-Are there any other check-ins? ( ask periodically )

-Is there any other business to come before this Net before we close?

-Thanks to all who participated in the HARP NET today.

-Thanks to the Repeater owners who allowed us the use of their Repeaters today.

-This is ( **Give Name, Call Sign, Hospital or location** ), securing the HARP Net and returning all Repeaters to normal use. See you next Wednesday at 4PM.

73, All

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### 3.2.2 ARES EXERCISES AND DRILLS

HARP activation and participation in ARES exercises and drills shall be conducted in accordance with the ARES Emergency Communications Plan accessible at:

<http://www.nh-ares.org/CommPlan/CommPlan.php>

Current Statewide ARES Net frequencies are designated in Appendix B of the NH ARES Emergency Communications Plan. Accessible at :

<http://www.nh-ares.org/CommPlan/AttachmentB-Nets&Frequencies.pdf>

Section 3.3 contains a matrix showing what repeaters are accessible and most effective for HARP station communications at the hospitals.

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## 3.3 HOSPITAL/REPEATER CONNECTIVITY MATRIX

Note: Numbers in the boxes are HARP transceiver channel numbers.

CH	REPEATER	CHE	CMC	CON	COT	ELL	EXE	FKN	HUG	LRG	MEM	MR	POR	SMH	VRH	WDH	WMC	YM	DHM C
28	FRANKLIN		---	28		28	---	28	28	28	28	28		---	---	---	---	28	---
35	AGASSIZ		---	---		35	---	---	---	---	---	---		---	---	---	35	---	---
36	MT WASH 2M		---	---		---	36	---	36	36	36	36		---	---	36	36	36	---
41	MANCHESTER		41	41		41		---	---	---	---	41		---	---		---	---	---
49	HILLSBORO MT		49	49		49	49	---		---	---			---	---		---	---	
52	CONWAY		---	---		---	---	---	52	---	52	52		---	---				
53	MT WASH 440	53		---			53		53	53	53	53		---	---	53	53	53	
57	ASCUTNEY		---	57		57	---	57	---	57	---	57		57	57	---	---		57
58	SADDLEBACK		58	58		58	58	58	---	58	58	58		58	---	58	---	58	---
59	ALTON		---	59		59	59	59	59	59	59	59		---	---	59	---	59	---
60	CLAREMONT			---			---	---	---	---	---	---			60		---		
61	DERRY						61												
64	EPSOM		64	64		64	64	64	64	64	64	64		64	---	64	---	64	---
101	KENSINGTON		101	101		101	101	---	---	---	---	101		---	---	101	---	101	---
106	CHESTER		---	---			106	---	---	---	---	---		---	---		---	106	
109	MOOSE HANOVER			---		109	---	109	---	---	---	109		109	---	---	---		109
119	NORTHWOOD						119												
128	PITTSFIELD MT		128	128		128	128	128	128	128	128	128		128	---	128	---	128	---
136	HENNIKER		---	136		136	136	136	---	136	---	136		---	---	136	---	136	---
139	GUNSTOCK			139		139	---	139	139	139	139	139		139	---	139	---	139	---
145	HUDSON		145	145		145	145	---	---	145	145	145		---	---	---	---		---
152	PEMBROKE		152	152		152	---	152	---	152	---	152		---	---	152	---		---



## SECTION 4.0      DIGITAL OPERATION CONNECTIONS AND CONFIGURATIONS

This section provides detailed, step-by-step instructions for connecting and configuring a computer, external radio interface sound card, and the ICOM 2820H transceiver for digital mode communications using the Fldigi software and its associated software programs.

# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

## Section 4.0 DIGITAL OPERATION CONNECTIONS AND CONFIGURATIONS

### 4.1 DIGITAL COMMUNICATION SET UP

Digital communications via the ICOM 2820 requires a computer running the FLdigi suite of software AND a sound card interface unit. HARP operators generally bring their own personal laptop computers to HARP activations. The HARP radio set up includes a Signalink USB sound card interface unit.

Initiating digital communications capability requires the following sequence of actions, in the order described. Basically, the Signalink USB interface unit needs to be connected to the radio before it is attached to the computer, and the computer needs to be attached to the Signalink USB interface unit before the FLdigi suite of software applications are launched.

### 4.2 DIGITAL INTERFACE CONNECTION

Attach Signalink USB interface unit to radio & computer

The ICOM 2820 radio has a removable control head, behind which will be found the DIN-8 data port. The control head is affixed to the radio with magnetic tabs. To remove the control head and access the DIN-8 data port, gently pull the control head forward. A short cable connects the control head to the radio.

The Signalink USB has two (2) cables for interfacing between radio and computer.

To connect to the radio, use the gray (usually) cable with DIN-8 plug on one end and RJ-45 on the other. Plug the RJ-45 into the Signalink USB interface unit on its rear panel. Plug the DIN-8 into the radio DIN-8 data port.

### 4.3 CONNECT COMPUTER

In order for FLdigi to work properly, the Signalink USB interface unit must be attached before the FLdigi software suite is launched. If not, FLdigi will not detect the Signalink USB interface unit and will not be able to access it for digital communications.

Turn on the (laptop) computer.

To connect to the computer, use the black (usually) cable with USB-A (broad, flat) connector on one end and USB-B (square-ish) on the other. Plug the USB-B into the Signalink USB interface unit on its rear panel. Plug the USB-A plug into a USB port on the computer.

If this is the first time the Signalink USB interface unit has been connected to a particular USB port on the computer, the Plug-and-Play driver installation routine will be initiated in order to complete the connection. A dialog box will open indicating that the

## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

driver is being installed. A dialog box will indicate when the Signalink USB interface unit is ready to use.

The computer will supply power to the Signalink USB interface unit. Press the red PWR button on the Signalink USB interface unit and a green LED will light indicating power.

### 4.4 LAUNCH FLdigi SOFTWARE SUITE

HARP uses the FLdigi suite of digital communications software.

If you have not already installed and configured the FLdigi suite (FLdigi, FLmsg, and FLamp) of software, refer to SECTION 7.1 – DIGITAL COMMUNICATIONS SOFTWARE CONFIGURATION.

If you installed FLdigi, FLmsg and FLamp using the default process, icons were placed on the desktop.

Locate and double click each icon, in the following order, to launch the applications:

1. FLdigi
2. FLmsg
3. FLamp

If there are no desktop icons, look in

Start > Programs > FLdigi folder and single click on FLdigi application.

Start > Programs > FLmsg folder and single click on FLmsg application.

Start > Programs > FLamp folder and single click on FLamp application.

### 4.5 VERIFY FLdigi SOUND CARD CONFIGURATION & TUNE RADIO

In order to function, FLdigi needs to be communicating with the Signalink USB interface unit sound card. The process to confirm this communication path is as follows:

-Set the TX and RX dials to the '9 o'clock' position on the Signalink USB interface unit.

-Set the DLY dial to 7 o'clock position.

These settings usually provide effective VHF transmit and receive levels. They can be adjusted in actual use, as needed, to get clear digital copy.

-Click on the FLdigi Configure > Sound card menu.

A dialog box for the Audio > Devices will open.

-Click to place a check mark in the Port Audio box.

-Click on the Capture drop-down and select the sound card that has 'USB Audio CODEC' in the name.

-Click on the Playback drop-down and select the sound card that has 'USB Audio CODEC' in the name.

-Click Save

-Click Close

## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

Now confirm that FLdigi can transmit a digital signal via the Signalink USB interface unit. Verify that the radio channel is clear.

- Announce that you are testing digital and give your Call Sign.
- Click on the "Tune" button located in the upper right hand corner of the FLdigi application window.
- The Signalink USB interface unit should be keyed on.
- A red PTT LED will light.
- The ICOM 2820 will transmit a tone and the SWR/PWR meter will indicate output Power.
- The Signalink USB interface unit TX control can be adjusted to determine output power.
- Click on the "Tune" button again to stop test transmission.
- The radio is now set up for digital use.

If the Signalink USB interface unit does not key on, or there is no indication of output power, refer to SECTION 7.1 – DIGITAL COMMUNICATIONS SOFTWARE CONFIGURATION. It may be necessary to adjust the Signalink USB sound card Playback audio level in the computer Sound Control Panel, and/or the FLdigi Configure > Rig Control menu settings.

## SECTION 5.0

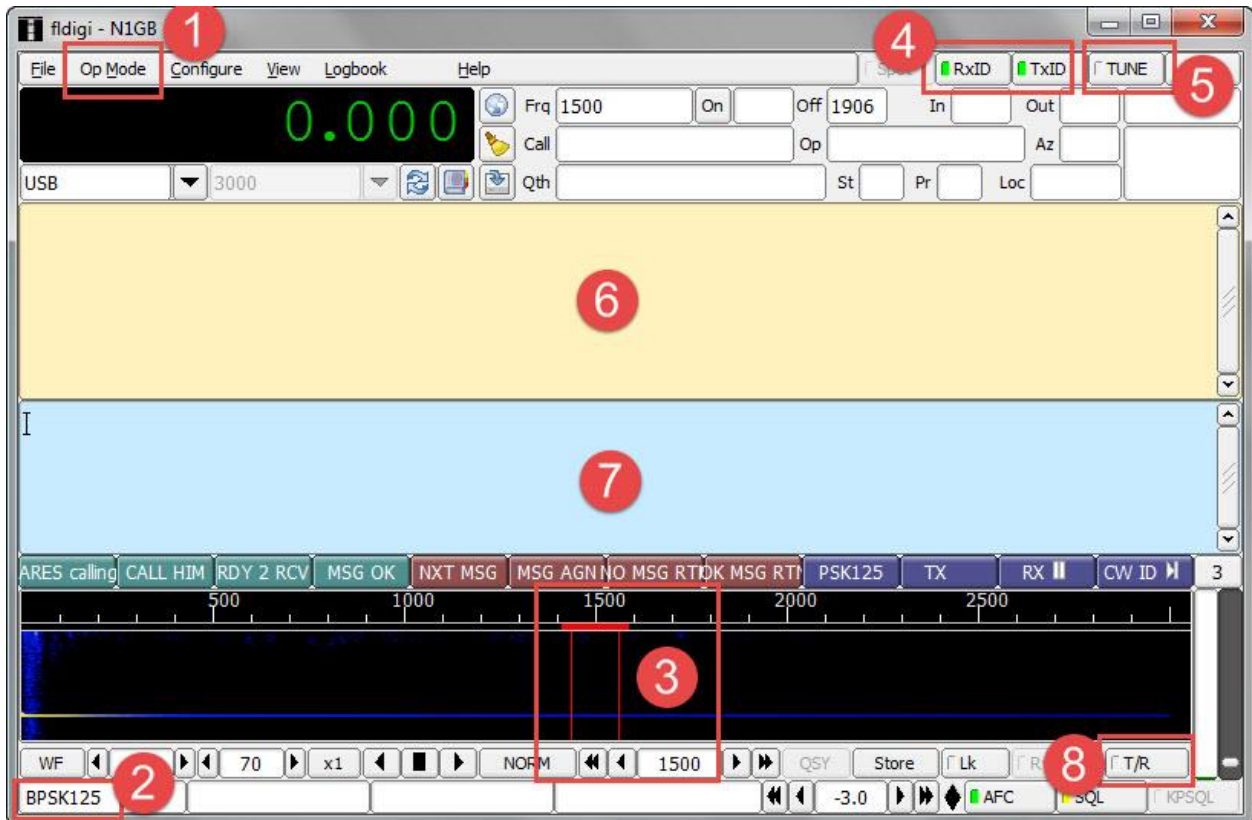
## DIGITAL MESSAGING

The purpose of this section is to provide step-by-step, “Quick Start” procedures to set up, configure, and use the software elements for NBEMS message communications which include, Fldigi, Flmsg, and Flamp.

# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

## Section 5.0 DIGITAL MESSAGING

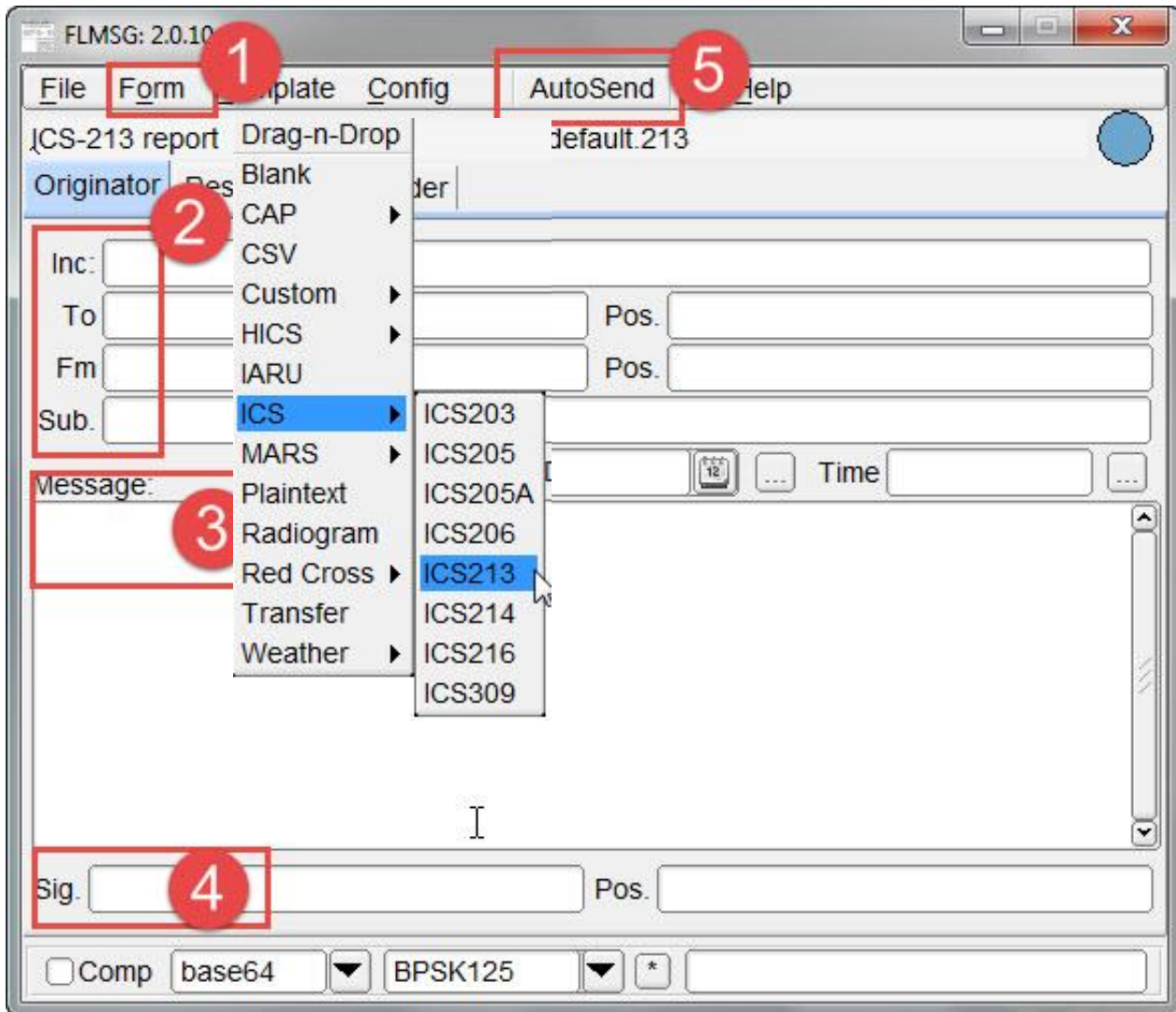
### 5.1 FLdigi QUICK START - Modem based digital communication application



1. Choose operating Mode (Modem) from drop down list
  2. BPSK125 is HARP standard beginning Mode (Modem) that is chosen in Step 1
  3. Click to set TX/RX cursor at 1500 (can also be typed in textbox)
  4. Click to turn on RX-ID and TX-ID
  5. Click Tune to verify readiness to TX (click again to stop Tuning)
  6. RX window – received text will display here
  7. TX window – text to be transmitted is typed here
  8. TX/RX toggle – click to begin TX / click again to stop TX
- Note: FLmsg Autosend will control the TX/RX automatically  
Note: FLamp XMIT will control the TX/RX automatically

# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

## 5.2 FLmsg QUICK START - Standard Forms based application for use with FLdigi

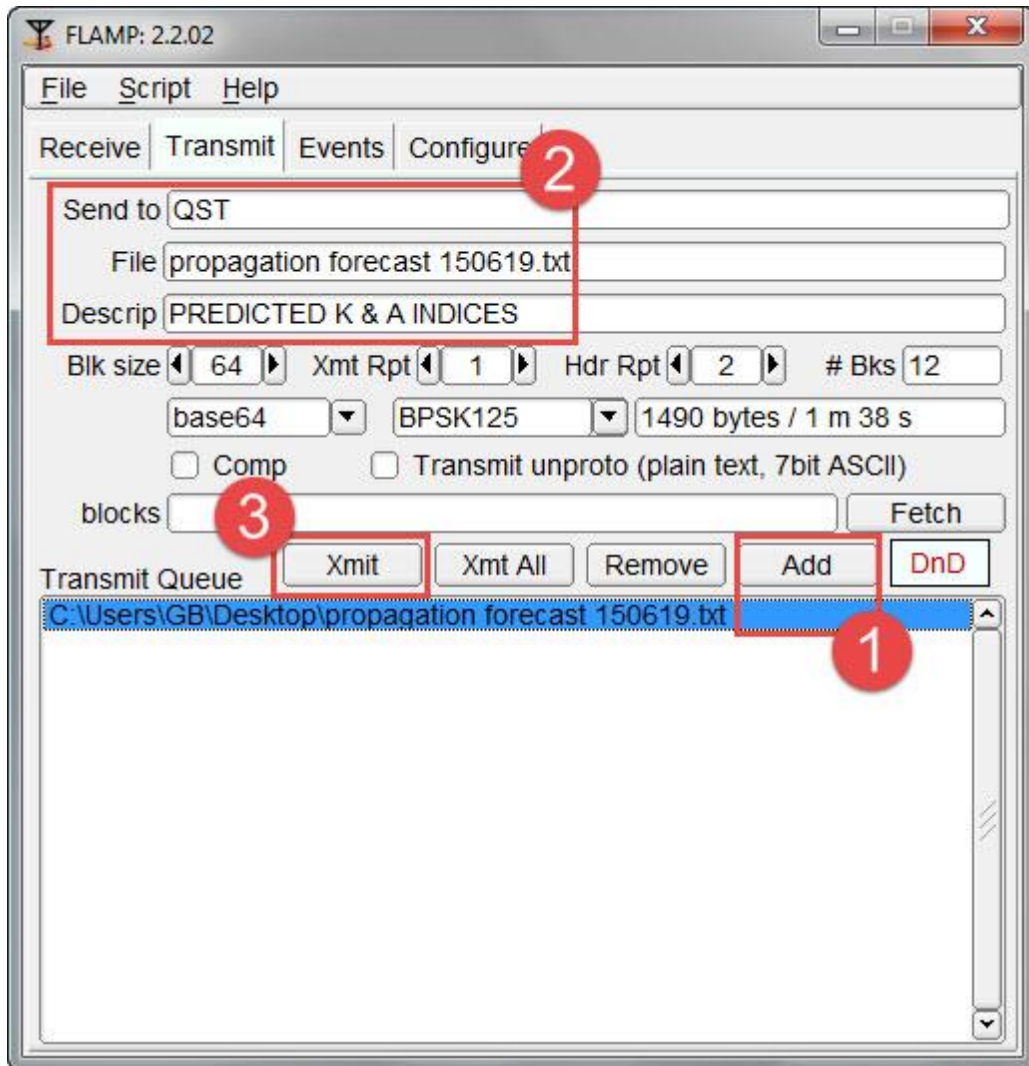


1. Select Form from Drop Down menu
2. Fill in Form Header, Date and Time
3. Fill in Form Message
4. Fill in Signature
5. Click Autosend to TX

## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

### 5.3 FLamp QUICK START – Attached document application for use with FLdigi

#### a.) TX a document



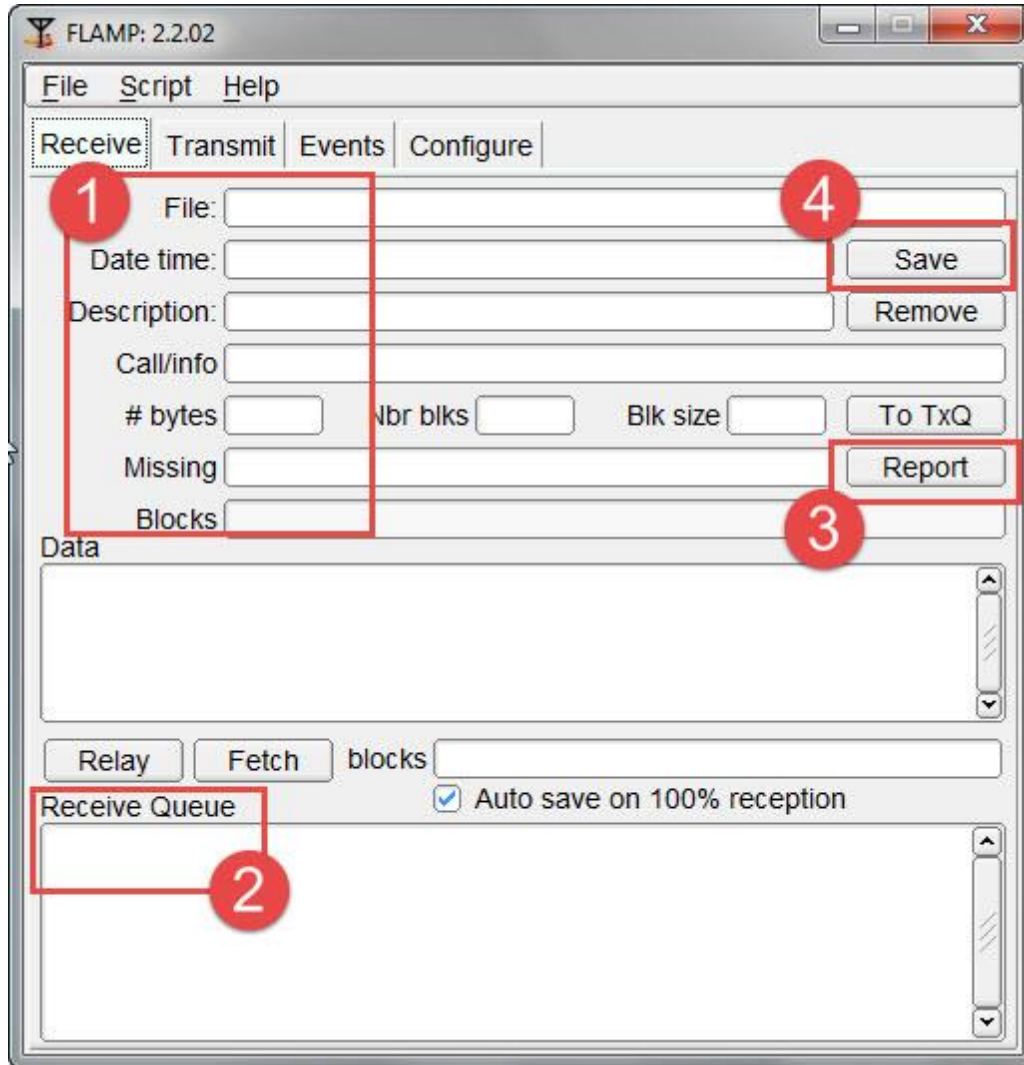
1. Click ADD button and use file search dialog to find desired Attachment document file.  
Click OK to ADD file to Transmit Queue
2. Complete the Header information
3. Click XMIT to TX (Autosend)



## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

### 5.4 FLamp QUICK START – Attached document application for use with FLdigi

#### a.) RX a document



1. As an Attachment file Header is received, the information will be filled in automatically
2. As an Attachment file Document is received, the filename & percent received will be displayed
3. Upon completion of receipt, click REPORT button to inform TX station that either:
  - a. File has been 100% received, or
  - b. File has missing header and/or blocks that need to be re-transmitted

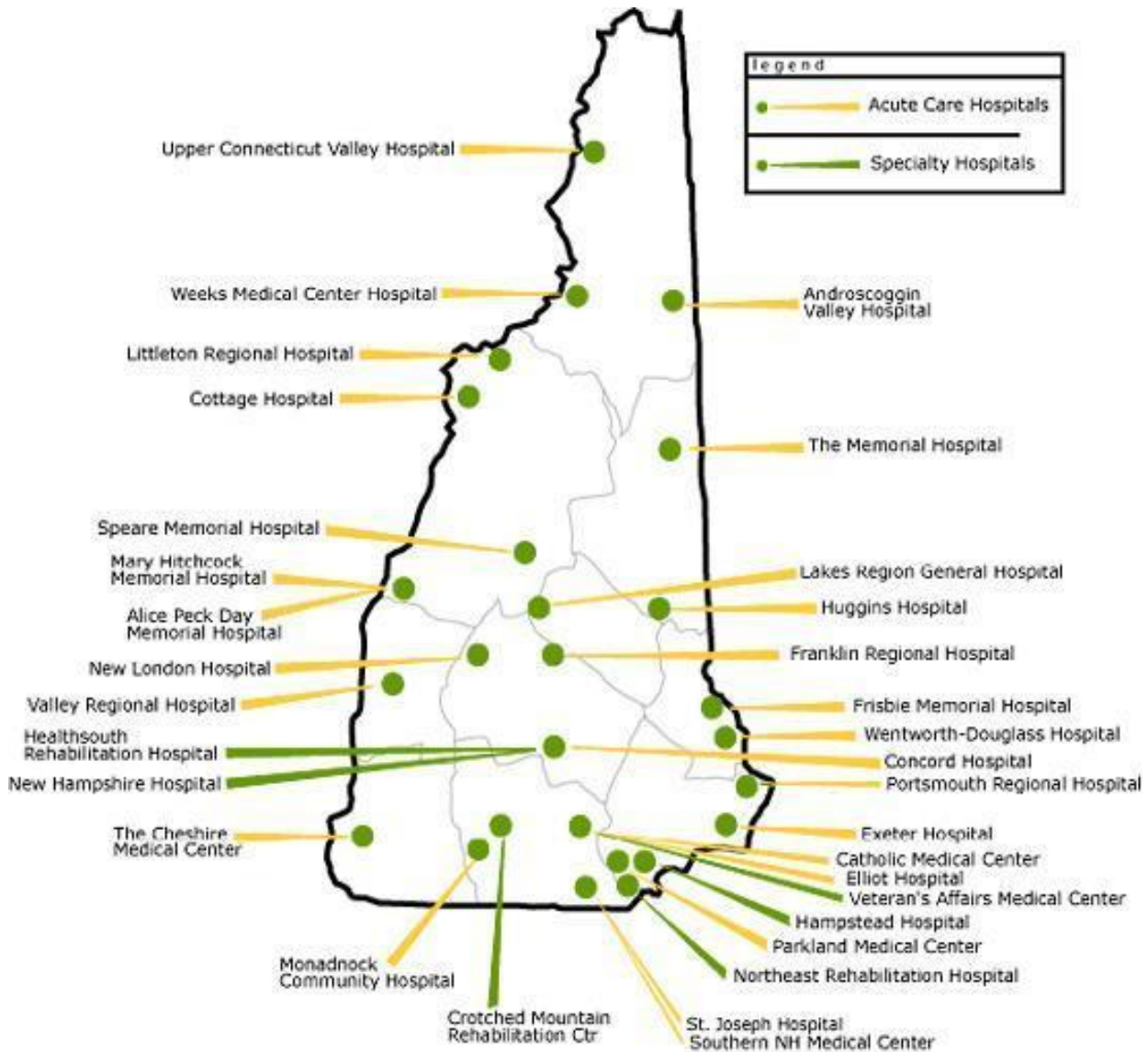
## SECTION 6.0 ORGANIZATIONS AND PEOPLE

This section contains information, or references to information, identifying New Hampshire hospitals participating in HARP, key people at those hospitals supporting HARP, New Hampshire Amateur Radio Emergency Service (NH ARES) members operating the HARP stations and the leadership of NH ARES.

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## Section 6.0 Organizations and People

### 6.1 Map of New Hampshire Hospitals from New Hampshire Hospital Association Web site.



## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

### 6.2 Hospital Personnel Supporting HARP

Please refer to Attachment A.1

### 6.3 New Hampshire Amateur Radio Emergency Service (NH ARES) Members Supporting HARP station operations.

Please refer to Attachment A .2

### 6.4 NH ARES Leadership

Please refer to: <http://www.nh-ares.org/OrgPlan/AttachmentA-LeadershipListing.pdf>

### 6.5 NH ARES Group Map – Shows NH ARES EC Areas

Please refer to: <http://www.nh-ares.org/CommPlan/AttachmentH-AreaMap.pdf>

## SECTION 7.0      REFERENCE INFORMATION

This section identifies reference documentation which contains much more detailed information on the hardware and software elements of a HARP station and its configuration and operation. It also includes references to the NH ARES plans and organization.

# HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

## Section 7.0 Reference Information

### 7.1 ICOM 2820H Dual Band Transceiver

#### 7.1.1 ICOM 2820H User Manual – please see:

[http://www.icom.co.jp/world/support/download/manual/disp\\_down.php?SWT=&ID=20071106003&G NR=Amateur&TYPE=Mobile&PDNM=IC-2820H&INQWORDSWT=No&INQWORD=](http://www.icom.co.jp/world/support/download/manual/disp_down.php?SWT=&ID=20071106003&G NR=Amateur&TYPE=Mobile&PDNM=IC-2820H&INQWORDSWT=No&INQWORD=)

#### 7.1.2 HARP Channel Programming for ICOM 2820H – please see Attachment B

### 7.2 NH ARES Emergency Communication Plan Attachment O: HF & VHF-FM Digital Operations

<http://www.nh-ares.org/CommPlan/CommPlan.php>

### 7.3 Digital Communication Software Configuration

Refer to applicable sections of the NBEMS tutorial presentation found at:

<http://gblakesl.net/HARP/Configuring-FLdigi-digital-communications-150722.pptx>

### 7.4 NH ARES Emergency Communication Plan – Please see:

<http://www.nh-ares.org/CommPlan/CommPlan.php>

### 7.5 NH ARES Organization Plan – Please see:

<http://www.nh-ares.org/OrgPlan/index.php>

Note: The NH-ARES Web site at <http://www.nh-ares.org/> contains many links to documents and organizations useful to preparedness for, and operation during, drills and active emergency events.

## ATTACHMENTS

Attachments in this section are documents which provide information in support of HARP stations, and which are subject to frequent updates, are owned and maintained by other organizations or individuals, are too large for the main body of the Manual, or are multiple copies of forms needed for operational use.

## HOSPITAL AMATEUR RADIO PROGRAM (HARP) OPERATIONS MANUAL

### Attachments:

#### A. Organizations and People

##### A.1 NH Hospitals – Names, Roles and Contact Information

( A table containing this information will be added as soon as available)

##### A.2 HARP Net – HARP station operators and the NH hospitals and contact information.

( A table containing this information will be added as soon as available)

##### A.3 NH ARES Leadership – Please see the NH ARES Organization Plan at:

<http://www.nh-ares.org/orgplan/attachmenta-leadershiplisting.pdf>

#### B. ICOM 2820H Channel Programming for HARP stations

( A tabulation of this information will be added as soon as available)

#### C. Forms – Multiple Copies (Station operators please obtain and copy for this section)

##### C.1 ARRL Radiogram

##### C.2 ICS 213 with ARRL Header

##### C.3 HICS 213

#### D. NBEMS Digital Communications Software Tutorial Presentation

This very comprehensive slide show presentation, as referenced in Section 7.1, is available at:

<http://gblakesl.net/HARP/Configuring-FLdigi-digital-communications-150722.pptx>