North Central Area
Digital Guide
Revised 09 August 2009

The purpose of this document is to supplement the MARS Operating Instructions (MOI) and the Standard Operating Procedures (SOP) with information for members who plan to operate in the digital modes in North Central Area.

At the time of this publication we have been promised a joint service guide of SOP (Standard Operating Procedures) for digital operations but until that is made available to us we can use the information in this Guide as our standard in North Central Area.   The term digital can mean many things but in MARS the term is applied generally to the various methods of data transfer by radio in modes other than voice.   Currently AF MARS is supporting digital communications In ALE (Automatic Link Establishment), PACTOR and a variety of "direct" modes referred to as the "Sound Card" modes.   Most of the detailed information in this guide will deal with direct Keyboard to Keyboard operations using computer sound cards.

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MARS DIGITAL MODES

As a starting point we should point out that there are two basic methods in use for data transfer in MARS today. One method involves the use of connected communications such as Packet Radio, PACTOR, and ALE and all of these involve some form of handshaking. I.e. The stations become linked together and each *"packet"* or frame of information is checked for accuracy before more information is sent. Later more developed modes of this type employ ARQ (Automatic Repeat Request) whereby each frame is checked at the receiving end and resent if not received correctly and Memory ARQ where only the missed portion of a frame is retransmitted. Thus, in theory, all information is transferred error free. The other method involves direct modes starting with Teletype and progressing to newer modes that do not link the two stations together but have devised various methods of increasing accuracy with redundancy and other encoding methods. Some of the modes listed allow unconnected communications with FEC (Forward Error Correcting).   FEC is a method whereby each character is sent more than once and if received the first time is ignored on subsequent tries but if needed it is accepted on subsequent tries. For convenience in this guide all of the connected or linked type modes will be referred to as ARQ modes and the direct modes will be referred to as FEC modes although technically some do not actually employ FEC.

AUTOMATIC LINK ESTABLISHMENT (ALE)

ALE is a "handshaking mode" which basically provides for sample transmissions to be sent successively on a number of different frequencies in order to [Automatically Establish Links] with other stations in a network of similarly configured stations. The result is that communication is then achieved on the clearest channel found during the sampling. Equipment to run ALE is included in a number of government designed radios however a development team of MARS members directed by US Navy/Marine Corps MARS has been working on software that will work on most Amateur type Radios and use the station computer to generate a protocol and sound card tones to simulate those of hardware generated ALE tones.   At this point the development is quite advanced and for those who wish to become involved in the MARS ALE program, you may register through your region Digital Manager AFF3K who will pass the information on to the USAF POC for the project.   Further information may be found on the MARS ALE Web Page -----
http://www.n2ckh.com/MARS_ALE_FORUM/

WINLINK 2000 (WL2K)

 The Winlink 2K system consists of a several Radio Message Servers (RMS) and Common Message Servers (CMS) set up to receive traffic from MARS members by PACTOR I, II or III or the internet and forward it to the recipient by any one of several means including an internet link to the recipient.   While this is part of the MARS HF radio system, provisions have been made to address the system through the internet when conditions warrant.   For a more detailed description of Winlink 2000 see— **http://www.winlink.org/node/12**   That page is recommended reading for anyone interested in getting involved with WL2K.
Here is a quote from that page.
"The Army, Air Force and Navy Military Affiliate Radio System (MARS) now have a widely spread, redundant, mirror image, Radio message Servers called "PMBOs" covering the US, Europe and the Middle East. In addition, the Department of Homeland Security is sponsoring a Common Message Server to add to the reliability of the Tri-MARS Winlink 2000 service. The joint MARS Winlink 2000 network is now postured for any domestic disaster with point-to-multipoint digital Radio e-mail. An expanded Global network is planned. Because of the Army, Air Force and Navy MARS infrastructure, and due to the procedural training it demands of its volunteer members, Winlink 2000 fits in perfectly. When or if it is necessary to deploy this radio messaging system for any disaster event, its proven effectiveness from past disasters coupled with MARS proven procedures, should bring effective communications to those in need."

For Joining the MARS WL2K group or for further information go to:
http://tech.groups.yahoo.com/group/mars_wl2k/

 The software furnished for accessing WL2K is called AirMail 2000 and may be downloaded at ----------
http://www.airmail2000.com/   This program can be used as a regular Pactor terminal program or as a simulated personal Bulletin Board for your station. However, this software is a necessary station accessory if you are planning to operate in the WL2K system. . Once you have joined the MARS WL2K Yahoo Group you will find an .ini file that will insert the callsigns of all of the RMS stations and their particular frequencies.

PACTOR

All PACTOR transmitting requires a Terminal Node Controller (TNC) if the ARQ modes are to be employed. Some sound card programs allow PACTOR (Listen Mode) and FEC transmitting but the real advantage of PACTOR is when used in ARQ mode for Point to Point contact or User to BBS communication. PACTOR is an excellent error free mode for two stations to communicate but when a third party or network is involved, good throughput of information is lacking except in the most ideal conditions.   PACTOR is error free only when a station is linked and handshaking with another station. USAF MARS still supports a few non-PMBO Bulletin Boards on some limited frequencies. These are usually referred to as "Legacy Boards" and often different stations run different software so a download of each command structure is necessary. Usually H or HELP will display a list of commands for any BBS.

Any of the popular Multimode TNCs (Kantronics KAM, Timewave PK232 or MFJ 1278 or 1276) will run PACTOR I while the more expensive SCS PTC units will run PACTOR I, II and III [*]. Excellent "Windows" software is available for the PACTOR I units listed above. The ARIMAIL2000 program listed on the previous page is adequate. Another excellent program is XPWIN by XPWARE found at -----http://www.glaswerks.com/xpware/ .   This is an excellent program and although it requires a registration file for operating, there is no longer a registration fee.

All of the National Message Centers are conventional "Store and Forward" BBS systems All do not run the same software so a quick download of the help file on the ones you use will be valuable. Because of a limited number of frequencies available, this system may not provide as wide a coverage as the WL2K system.

 ------ **TBP, TPE, TPL, TPM and** (**TPG** which is sometimes used for Manned Digital Operations)

BBS CALLSIGN	LOCATION	SYSOP
AFD1MC	NY	AFA1AS
AFC1MC	CT	AFA1PF
AFC2MC	VA	AFA2ZS
AFA4MC	TX	AFA4MA (Pending Jan.2008)
AFD4MC	AR	AFA4DF
AFD5MC	ID	AFA5EP

[*] Pactor II and III are proprietary modes which are backwards compatible with Pactor I but are found only on the STC units which are twice or three times the cost of a new Pactor I TNC.

THE SOUND CARD MODES

The term "Sound Card Modes" , "Manned Digital" and "Keyboard to Keyboard" all refer to the same general process which includes a multitude of modes that can be generated in the sound card of a computer. In most cases these are direct modes similar to Radio Teletype but many new modes have been developed with superior software that achieve higher speeds and in some cases superior accuracy without necessarily increasing bandwidth. In the North Central Area we have arbitrarily adopted MFSK **16** as our standard operating mode. The choice of MFSK was made as a compromise between accuracy, speed, bandwidth and available software. A 1500 Hz. center is chosen for most modes to allow immediate switching between voice and digital however a center of 1000 Hz will be used for **MT 63** to comply with the standards set by the other services and the restrictions caused by some MT 63 software.   Since MT 63 is a mode we will use for longer transmissions and bulletins the standard will be **long interleave,** 1000 **Hz bandwidth (from 500 to 1500 Hz).**   This will result in a 1000 Hz center instead of the 1500 Hz used for most of the other digital modes.

Since we are limited to the 3 AREA frequencies we sometimes find that communication is very difficult even with MFSK 16 and at those times we will switch to **OLIVIA** 32 Tones at 1000 hz. bandwidth. It is slow but often provides the ability to communicate when no other mode will cover the Area. In the North Central Area we continually test other modes as they are developed and also variations of the mode mentioned above.   Excellent Multimode Software is now available, completely free, and some others require a reasonable registration fee but all work well both transmitting and receiving. Early versions of some limited software allowed only PSK31 and a few other modes but the following listed programs cover the gamut and with a reasonably modern computer, will allow you to work all the available modes.

There is other software and some of it is very good but most others are specialized for particular modes.   The three listed below are recommend since each one provides you with all of the modes in use at this time. However, new software and upgrades to these are appearing on a regular basis.

MUTIPSK may be downloaded from the authors page **http://f6cte.free.fr/index_anglais.htm**

Ham Radio Deluxe/Digital Master 780 (DM780) http://hrd.ham-radio.ch/ Download both but DM780 is the multimode program.

MixW   http://www.mixw.net/   MixW is widely used but requires a $50 registration fee after a trial period.

For Linux users check out **gMFSK, fldigi** for Sound Card   and **Hterm** for Pactor. A number of Sound Card programs for Linux and Windows may be found listed at:--- **http://members.fortunecity.com/xe1bef/soundcard.htm**

SOUND CARD SET UP

In order to monitor these modes all that is necessary is a length of shielded audio cable from an external speaker jack on your transceiver to the sound card on your station computer. Generally the Line Input works best but on some sound cards it will be necessary to use the Mic. Input.   In order to transmit and key the transceiver you will need an interface. Plans for building a simple "Home Brew" interface can be found on the Internet (Included below) and there are several interfaces on the market that work well. Originally, interfacing the sound card with the transceiver was achieved through serial ports but since they are becoming more on modern computers several solutions have been devised.   Adding a serial card to an expansion slot is one economical solution and provides extra ports for other uses such as running a TNC or other proprietary programs such as ALE etc. New solutions to this are being developed and interfaces which run off a USB port with a self contained soundcard are now being used successfully.

Commercial interfaces usually come with complete setup and documentations but different software programs, while containing help files usually take some time to get used to. You will find that help on the NCA Nets is plentiful and many members who have experience in these modes will be more than ready to help you get started..

Here is a list of some Commercial Interfaces. They vary in cost but all listed here are currently in use in North Central Area.

Unit	Manuf.	Info Site	Approximate Price
RASCAL	BUXCOMM	http://www.packetradio.com/	$50 Kit $30
RigBlaster	West Mountain Radio	http://www.westmountainradio.com/	$60 to $280
Signal Link SL1	Signal Link	http://www.eham.net/reviews/detail/6395	$70
Signal Link USB	(Built in Sound Card)	" "	$90
MFJ Makes several at various prices.		http://www.mfjenterprises.com/Catergories.php?sec=10	

There are some other brands but I know of no others currently in use in this AREA.

In an emergency, if no interface is available, very temporary communications can be achieved by strapping the microphone to the computer speaker and keying the transmitter with VOX. If a radio has a good VOX and good Anti-VOX this mode can work as long as the operator is careful to isolate the acoustical coupling from all extraneous sounds at the operating position. If a good VOX is not available a PTT arrangement can be set up.

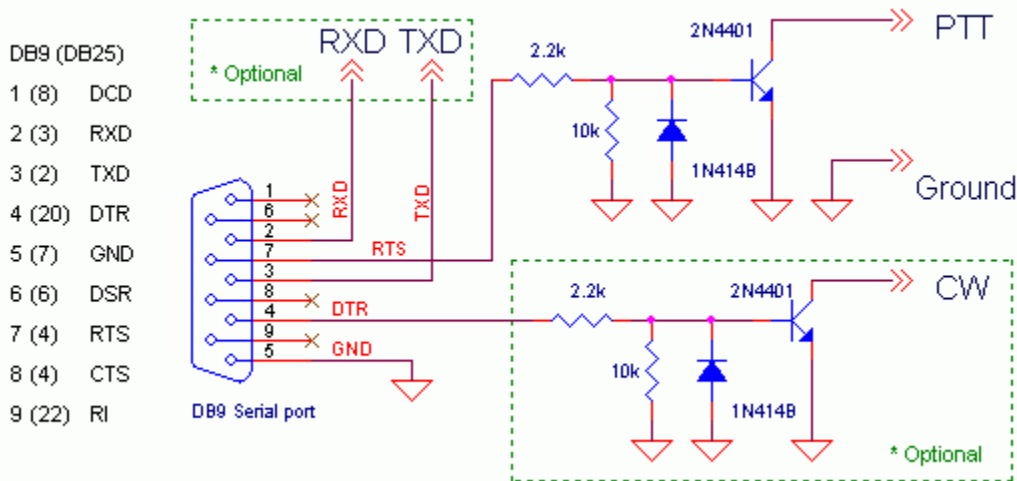## REPRINT OF A SIMPLE HOME BREW INTERFACE
Courtesy of UT2UZ & UU9JDR

.:: Direct connection (simple home made interface) ::. Courtesy of UT2UZ & UU9JDR

connecting a transceiver.

It is a "hardware" keying via RTS or DTR line of a serial port (preferred).

A simple circuit for connecting PTT, CW, and CAT (RXD and TXD) lines to the computer can be as follows. Use a 9- or 25-pin connector.

OPERATING PRACTICES

Operating Practices for ALE and PACTOR and other ARQ modes are unique and can be found in the links provided on Page Two and Three.   This section will deal mainly with Keyboard to Keyboard operations and the modes that use the computer soundcards.   This will start with listing a few helpful hints, some unique to MARS and should be noted especially by members who have some experience with these modes on the Amateur Bands.

Always make certain that your MARS Affiliate Callsign and not your Amateur Call or an Official (Billet) callsign is used. Digital transmissions are an excellent way to run a live network and send long files or bulletins simultaneously to all on a network but conversely, this is an inefficient method of conversation between two stations and since throughput is generally slower than voice, redundant phrases should be avoided.
A few of the most used Operating Signals (Q & Z Signals) should be memorized and used to shorten transmissions, however avoid mixing them with plain language phrases that may mean the same thing or that have no meaning at all. To illustrate, Here is an actual example of a recent transmission by a MARS OFFICIAL. Underlined is what should have been sent.

DE AFAXYY, ROGER I HAVE YOUR **QRK** AS **5** AT MY LOCATION**, INT** WHAT IS MY **QRK** AT THIS TIME INT   **K.**

 Correct way.   **DE AFAXYY QRK 5 INT QRK   K**   This means exactly the same thing.

Of course plain language is proper during station comments and informal conversations but by thinking through your comments ahead of time you can reduce redundancy. Of course plain language has a place in the TEXT of messages. The main concern is not to allow plain language combined with operating signals destroy the efficiency of the signals.
  Do not let the lack of knowledge of Operating Signals keep you from entering digital nets.   Monitor for awhile and see what is happening and then if you are not familiar with the Q & Z Signals just use plain language until you feel comfortable with them.

Here are some of the Common Pro-Signs listed with their voice equivalent.

PROSIGNS

Prosign   **Voice Equivalent**

AR means   **"OUT"**   **and no reply is expected or allowed unless communication is re-established**

BT means   **"BREAK"**   **This is the prosign used to separate the text. Does not mean OUT.**

DE means   **"THIS IS"** **followed by callsign.**

K means   **"OVER"**   **and a reply is expected.**

IMI means   **"Say again" or "I say again"**

INT   has no direct equivalent in voice but is sometimes confused with a question mark.   INT is a prosign that indicates the interrogatory case and is used only to precede an operating signal to make it a question

E.G. INT ZBO " Do you have traffic". ---INT QRK "Radio Check"   INT QSP "Can you relay" or "Is there a relay"
 Occasionally if you use a prosign or Operating Signal that is not one of the usual ones it may be necessary to add a plain language definition after it until stations get familiar with it but keep the plain language separate .
EG. INT QRZ IMI (Unknown station Say Again) etc.

The next page lists a number of the most commonly used Operating Signals along with their voice equivalents. There are more but these should cover most situations that we encounter in MARS communications.

OPERATING SIGNALS (Q & Z)

Here is a list of the most often used Q and Z signals. The meanings are paraphrased or given a MARS voice equivalent. Mainly, Z signals are military and Q signals are for other services. Q signals may be used on MARS nets when there is no Z signal equivalent.

QIC Establish communications with--
QRK Readability of signal (1 to 5)..
QRM I am being interfered with
QRN Static (Atmospheric noise)
QRU No traffic
QRV Ready to copy
QRZ You are being called by-----
QSL ROGER (Acknowledge receipt)
QSO I can communicate with-----
QSP I will relay(or relay to--)
QSY Change freq.(or to ----Khz.)
QTA Cancel Msg. as if not sent
QTC I have-Msgs.(Use ZBO for MARS)

ZBO I have traffic (list number and precedence)
ZEN message delivered by----
ZEV message acknowledged (QSL)
ZGE Send callsign twice
ZGN Nothing heard
ZKA I am net control
ZKB Obtain NCS permission
ZKD Take control of net
ZKE I report into the net
ZKJ Close (Net or Station)
ZKR I am maintaining watch on----
ZKS The following stations are on the net.
ZOG Send message (To) 1. for action 2.for info.
ZRC Tune to (1. Proper freq.) (2. my signal)
ZRF I will send a tuning signal
ZUE Affirmative (Yes)
ZUG Negative (No) AR Out
 ZUJ Wait (Standby)
AR   Out
DE This is.
K   Over
INT is a PROSIGN to be used ahead of a Q or Z signal. It is not a question mark.
IMI Say again or I say again

Some examples"
INT QRV........Are you ready to copy
INT QRK........Radio Check
INT QSP...…...Is there a Relay)
INT ZBO........Do you have traffic
INT ZKJ........May I close my station ETC.

Voice to Q/Z Signal Equivalents.

Here is an alphabetical list of common procedural phrases followed by the concise prosign or Q/Z signal recommended for MARS TOR networks in North Central Area. The prosign "INT" is used to precede a Q/Z signal making it a request or question. "INT is not a question mark.

ARE YOU READY TO COPY----------------------- INT QRV
CAN YOU RELAY ----------------------------------- INT QSP
I ROGER YOUR NUMBER 1------------------------ZEV OR QSL NR 1
I ROGER THE FOLLOWING INTO THE NET--- ZKS (Followed by Callsigns)
LIST YOUR TRAFFIC----------------------------------INT ZBO
MAY I CALL AFA3XX-------------------------------- INT QIC AFA3XX
MAY I CLOSE MY STATION----------------------- INT ZKJ
NOTHING HEARD------------------------------------- ZGN
NO TRAFFIC-- QRU
OUT---.AR
OVER-- K
RADIO CHECK (HOW COPY)-------------------------INT QRK (loud and clear would be QRK 5)
READY TO COPY ------------------------------------- QRV
RELAY --QSP
SAY AGAIN OR I SAY AGAIN----------------------- IMI
SEND YOUR TRAFFIC (MESSAGE(S)------------- ZOG
TUNE TO MY SIGNAL (MARK) -------------------- ZRC-2
UNKNOWN STATION SAY AGAIN---------------- INT QRZ IMI
WAIT--- ZUJ
WHO IS NET CONTROL------------------------------ INT ZKA
WORDS TWICE………………………………………….ZGE

NET PROCEDURE

Since the promised joint service SOP (Standard Operation Procedure) for Digital Operations is not yet available, this material is being presented for use in the North Central Area based on information from ACP 131(C) and the practical information gleaned from use on the air in the current digital networks. While much of this information may remain as valid, be prepared to accept some changes in on-the-air procedure to conform with the demands of a new SOP document.

All of the good software programs provide for simple methods of programming MACROs for sending the often repeated short transmissions that are need on the networks. NCS particularly should have several with a net call and other repeated signals. Band conditions will dictate whether calls are to be made twice or how often things need to be repeated.

A normal collective call (Net Call) by the NCS.

NCM1 DE AFA5XX INT ZKE INT ZBO K (*This is (Callsign) do you wish to check in ?—Do you have traffic ? Over*)

Typical Check in would be

AFA5XX DE AFA7YY ZKE QRU K (*Net Control this is (Callsign) Checking in with no traffic Over*)

OR

AFA5XX DE AFA7ZZ ZKE ZBO 2 R 1 P K (*Net Control this is (Callsign) Checking in with 2 Routines and 1 priority OVER) K*

Net control instructs AFA5ZZ to list his traffic—

AFA7ZZ DE AFA5XX INT ZBO K

Answer—

DE AFA7ZZ ZBO 1 R CHICAGO, IL 1 R OMAHA NE 1 R LIBERTY MO 1 P MADISON WI K

The net control will either make another net call or instruct AFA3ZZ to start sending traffic in this manner.

AFA7ZZ de AFA7XX QIC AFA5QQ ZOG 1 P AR

Response by AFA7ZZ

AFA5QQ DE AFA7ZZ 1P INT QRV K AFA5QQ responds with **DE AFA5QQ QRV** if he is ready and ZUJ if he is not and will then need to notify AFA7ZZ when he is ready.

Informal conversations and free nets must wait until all the traffic that can be passed, is passed.
Roll calls may be held at the discretion the NCS but calling roll from a keyboard is not as convenient as doing it by voice.

Periodic net calls must be made and short breaks in transmissions should be made to allow stations a chance to check in or break-in to the net when higher precedence traffic is to be listed.

Roll Calls may be expedited by the NCS giving his callsign only once at the beginning and calling each station in sequence with…

AFA5AA INT QRK …K answer **DE AFA5AA QRK 5 K** NCS answers QRK 5 and goes on to the next station.

AFA7BB INT QRK K **DE AFA7BB QRK 3 K** and so forth.

A net closing may be accomplished by simply sending

DE (Callsign) NET ZKJ AR

MESSAGE FORMAT
(Plaindress)

The same message format* is used in both voice and digital procedure but by replacing all of the prowords with the usual prosigns and operating signals the format, at least in print, appears to be more concise. You may make a template from the following to keep in a file as a station aid for drafting digital messages. It should be evident that all transmissions of this sort must be prepared "offline" and saved for transmission until time for transmission.

(Callsign) DE (Callsign)
NR _____

M or
R or _____**Z**_____ **2009**
P or   (Date time Group)   (Month)

FM _____
                    (name of originating party)

_____

_____   _____
                                                                      (Callsign and state of originating station)
TO _____

_____

INFO _____

GR _____
            (if used)
BT
Plain Language Text _____

BT
End this with a K if an acknowledgment is required or
/EX or **CTRL Z** if this has been deposited on a BBS,

EEI MESSAGE FORMAT
All ACTUAL EVENT EEI messages are to be addressed to aan3eei@winlink.org.
The EEI format uses the same MARS heading as the Plaindress format however many EEI Messages will be put on BBS or PMBOs (RMC) and if they are going through the Winlink 2000 (WL2K) system, there is now a requirement to put two forward slashes and a Precedence prosign M, R or P at the beginning of each subject line before sending your message. Also note that each line in the text of an EEI message must now include a description of the meaning of the line.
IF ENTERING INTO THE WL2K SYSTEM, ACCESS the PMBO by PACTOR. Send
S or ST (**Callsign or other Valid recipient**)
When prompted for the Subject: send
//MARS R/EXERCISE EEI "Event Identifier"
or
//MARS P/ACTUAL EEI "Event Identifier"
and then enter your message as prepared below If using a Classic (Legacy) BBS system you may enter normally with the Send or Send Traffic command and the Name the subject and wait for the message prompt and send the message as prepared below.

* See Plaindress Message Format in North Central Area Training Guide

EEI MESSAGE FORM
(Can Be used as a template for transmission)

NR _____

R or P _____Z _____ _____

      (6 digit Date time group)   *(Month)*   *(Year)*

FM_____ _____ _____

      (Name)   *(callsign)*   *(State)*

TO_____ _____ _____

      (Name)   *(callsign)*   *(State)*

INFO_____

      (Natl EC—State EC –SMD – RMD)

_____

BT

ACTUAL EVENT/EEI or MARS EXERCISE/ EEI
(one or the other but not both.)

1. EVENT IDENTIFIER_____

A. AREA IMPACTED _____

B. EMERGENCY MEDICAL: _____

C. LOCAL TRANSPORTATION_____

D. GENERAL DAMAGE DESCRIPTION_____

E. UTILITY STATUS _____

F. COMMUNICATION STATUS _____

G. SOURCE OF INFO._____

H. REMARKS_____

ACTUAL EVENT/EEI or MARS EXERCISE/ EEI
BT

K

DIGITAL EEI EXERCISE EXAMPLE

The following is an example of an EXERCISE EEI message, as it would be formatted for transmission by digital means. Unless it is an "Actual Event" EX messages are to be sent entirely by radio.

DE AFA5JR NR 1

R: 071410 Z SEP. 2009

FM: JERRY RYAN /AFA5JR / WI
TO: AFN2EC@WINLINK.ORG
INFO: AFD4EC / SC
      AFN7NC / NE
      AFE5EC / WI
      AFF5WI /WI
BT
MARS EXERCISE/ EEI
SUBJECT: EEI REPORT
1. EVENT IDENTIFIER: LOST SUPPORT
A. AREA IMPACTED: POLK COUNTY WI, WASHINGTON AND CHICAGO COUNTIES MN
B. EMERGENCY MEDICAL: OPERATIONAL
C. LOCAL TRANSPORTATION: US HIGHWAY 8 BRIDGE BETWEEN ST CROIX FALLS WI AND TAYLORS FALLS MN CLOSED.
D: GENERAL DAMAGE DESCRIPTION: STRUCTURAL DAMAGE TO HIGHWAY BRIDGE 8
E. UTILITY STATUS: NOT AFFECTED
F. COMMUNICATION STATUS: NOT AFFECTED
G. SOURCE OF INFO: LOCAL RADIO STATION WPCA
H. REMARKS: TANKER TRUCK ACCIDENT ON BRIDGE CAUSED EXTENSIVE DAMAGE TO BRIDGE CAUSING BRIDGE CLOSURE. TRAFFIC REROUTED. NO ESTIMATED TIME OF REPAIR.
MARS EXERCISE/ EEI
BT

EEI ACTUAL EVENT TEMPLATE
(ALL UPPERCASE except necessary email addresses)

Actual event messages are to be sent by email as follows:
Copies may be sent to the INFO Addressee by Email or Radio.

TO: aan3eei@winlink.org
Subject://MARS P/ACTUAL EEI

DE (Your Callsign) NR X
P   (dtg) (month) (year)
FM (Originating station Name and email address)
TO   AAN3EEI@WINLINK.ORG
INFO AFN2EC@WINLINK.ORG<AFN2EC>
        GHENSLEY@INFOAVE.NET <AFD4EC SC>
        n9ftfred@hotmail.com <AFE5EC WI>
        Fmiller333@MSN.COM   <AFN7NC NE>
        (EMAIL ADDRESS FOR YOUR SMD)

BT
ACTUAL EVENT EEI
1. EVENT IDENTIFIER:
A. AREA IMPACTED:
B. EMERGENCY MEDICAL:
C. LOCAL TRANSPORTATION:
D. GENERAL DAMAGE ASSESSMENT:
E. UTILITY STATUS:
F. COMMUNICATION STATUS:
G. SOURCE OF INFORMATION:
H. REMARKS:
ACTUAL EVENT EEI
BT