

Ingham County/Lansing
Amateur Radio Public
Service Corps

Standard Operating Guidelines

Portable Emergencies and Skywarn

IC-ARPSC Mobilization Plan

Article I Mobilization Request

(Any served agency or public service group may request assistance for IC-ARPSC. However, only the (acting) Emergency Coordinator (EC) MAY approve the request and start the mobilization process. If the request is not to the EC, push it up based on chain of command.)

Section 1.01 Establish on-going communication schedule and method with served agency liaison.

1. Notify and activate Mobilization Team (MT).
 - **The EC may activate the call tree now or delay up to the point of the Warning Alert and use the Resource Net to rally member initially.**
2. Activate IC-ARPSC Resource Net
 - **Issue member check-in request announcements over local monitored frequencies.**
 - Accept member check-ins.
 - Identify current status and availability.

Article II Develop Hasty Plan

This is a fast exercise that is performed by the Mobilization Team as the basis for the Warning Alert and for further interaction with the requesting agency. The EC informs the MT in the planning process and will execute the initial stages. The HASTY PLANNING process should be brief—generally no more than 45 minutes—so that the Warning Alert can be issued as soon as is possible. However, the actual timing is dependent upon the availability of information and characteristics of the incident. The guiding goal is to issue the Warning Alert as soon as possible to do a reasonable job of informing the members.

Section 2.01 Define the mission: Who, What, Where, When

(What is the requesting agency asking from IC-ARPSC? Is it a feasible request?)

- **Establish on-going contact schedule/method with requesting agency.**
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- **Constantly assess/evaluate how the situation will effect us and/or our resources.**

Section 2.02 Situation

1. Assess Incident Characteristics

- **Type of Incident (Tornado, HasMat, WMD, etc.)**
- **Geographical Scope**
- **Severity**
- **Duration**

2. Evaluate Infrastructure Impact

Supplied by requested agency and they will request the resource.

- **Transportation**
 - Roads blocked?**
 - Fuel availability**
 - Travel Conditions**
- **Commercial Power**
 - Present Availability?**
 - Prospects?**
- **Existing Communication Resources**
 - Conventional phone and cell phone**
 - ❖ **Functional?**
 - ❖ **Reliable?**
 - ❖ **Likely circuit load?**
 - Repeater Operations**
 - Licensed radio operators**

Section 2.03 Safety

- Threats to home/family of potential volunteers?
- Dangers to / at / from assembly area?
- Issues at final deployment location?

Section 2.04 Estimate unmet communication needs

1. Nets required

- Resource Net: 145.39
- Initial Net: 146.94
- 2nd: 146.70

2. Liaison with non-county nets

Article III Hasty Service Plan

This is only the broad outline of the plan---enough to determine whom to activate.

Section 1. Local Tactical / Operational Nets

- Equipment resources
- Staffing
- NCS and station locations

Section 2. Local Resource / Logistical Net(s)

- Equipment resources
- Staffing
- NCS and station locations

Section 3. District / Section / Lateral Liaison Communication Support

- Equipment resources]
- Staffing
- NCS and station locations

Article IV Warning Alert (WA)

(The Warning alert serves two purposes. First, allow individual volunteers who have the knowledge and the time to do the best possible job of preparing to serve. Second, give the MT a better estimate of the number of and circumstances of potential volunteers.)

Section 4.01 Delivery

1) IC-ARPSC Members

- Communicated primarily via IC-ARPSC primary and backup frequencies—the Resource Net.
- Members may be contacted by phone or other means if they have not checked into the Resource Net, but the WA should be distributed via the Resource Net to all members who can monitor to reduce the load on the commercial phone system and to assure the receipt of a common message.

2) Other Recipients

- Lateral ARPSC organizations (adjacent counties)
- Section or District EC
- Requesting agency
- Other served agencies

3) The WA is always authorized by the (acting) EC, but may be communicated by anyone appointed by the EC for that purpose.

4) The WA is never used to request someone to deploy. It is used for informed preparation only.

Section 4.02 Components

1) (Abbreviated) mission and situation

- Certain information, not for public distribution, that was made part of the information given to the EC may need to be omitted from the WA.
- Hazard warnings

2) Initial Service Plan

- Member utilization
- Preliminary deployment plan

3) General Instructions

- Essentially, reminders about standing guidelines. E.g., reminding members to check the water bottles in their “go bag”.

4) Special Instructions

- Special skill or equipment requests for the members from Mt.
- Special circumstances: E.g., volunteers need to be able to feed themselves for the first 48 hour (or)
- Adjustments in the assignment of volunteers. E.g., John Doe will need to be an HF liaison rather than his normal assignment as part of the resource net.

5) Follow-up Time Frames

- Estimated time of next communication
- Estimated time for deployment

Section 4.04 Feedback

1) The Resource Net NCS or other designated individual will inform the MT of the status of the membership after the distribution of the WA.

2) The NCS will report on the success of contacting other WA recipients.

Article V Develop Detailed Plan

Section 5.01 More detailed Assessment, Analysis, and Planning

1. Use same out as for Hasty Planning Process
2. Joint—with requesting agency

Section 5.02 Evaluate Alternatives

Section 5.03 Select Best Plan Given Circumstances

Article VI Activate / Brief / Deploy

Section 6.01 Review and expand the Hasty Plan developed in item # 2

Section 6.02 Develop Transportation & Assembly Plan

Section 6.03 Equipment / Frequency Allocation Adjustments

Section 6.04 Issue member activation request (“Go” Order)

- Pre-deploy EC and AECs as required
- Use same format and techniques as for the WA

Article VII Manage, Review and Adjust Operations (Continuous)

Section 7.01 EC focus is liaison with served agencies

- Identify resource priorities of served agency
- Negotiate resource sharing with adjacent counties

Section 7.02 SAEC focus is the people and related resources

- Assign and move resources to reflect EC priorities
- Assure comfort and safety of staff
- Integrate untrained volunteers

Article VIII Shutdown

Section 8.01 Disassembly of antennas, emergency power, etc.

Section 8.02 Transportation

- Assure all members and equipment are able to return to their points of origin

Article IX Debrief and Process

Section 9.01 Collect logs and related documents

Section 9.02 Provide support / de-compression counseling is required

Ch. 2

Lansing Area ARPSC

Portable Operator Reference

edited by Dennis Boone

May 5, 2001

1. Purpose

This document combines a variety of handy reference information needed by Lansing area radio operators during public service operations. Sources include ARRL Field Service publications, QMN training documents, notes taken at the Lansing ECC, etc.

2. Contact Information

Location Means

- Lansing ECC Phone 483-6957
- Radio 146.580 simplex
- Ingham County ECC Phone ???-????
- State of Michigan EOC 336-2037
- NWS GRR 800-647-3836
- Radio 145.270- 94.8 (callsign WX8GRR)
- Radio (backup) 147.160+

3. Amateur message form

Every formal radiogram message originated and handled should contain the following component parts in the order given.

I. Preamble

- A. Number, beginning with 1 each year
- B. Precedence
- C. Handling instructions (optional)
- D. Station of origin (first amateur handler)
- E. Check (number of words/groups in text only)

F. Place of origin (not necessarily location of station of origin)

G. Time filed

H. Date

II. Address

A. Addressee's name

B. Street address

C. State or province

D. Zip or postal code

E. Telephone number

III. Text

A. Limit to 25 words if possible

B. Separate phone numbers into three groups: area code, exchange, and the rest

IV. Signature

4. Radiogram precedences

All messages handled by Amateur Radio should contain precedences—that is, an evaluation of each message's importance, made by the originating station. A precedence is an "order of handling." There are four precedences in the ARRL message form:

- Emergency,
- Priority (P),
- Welfare (W) and
- Routine ®,

in that order of handling. When and as they appear on a net or any other kind of circuit, messages will be handled in this order.

Precedence	Definition
EMERGENCY	<p>Any message having life and death urgency to any person or group of persons, which is transmitted by Amateur Radio in the absence of regular commercial facilities. This include official messages of welfare agencies during emergencies requesting supplies, materials or instructions vital to relief of stricken populace in emergency areas. During normal times, it will be very rare. On CW, RTTY, AMTOR and packet this designation will always be spelled out. When in doubt, do not use this designation.</p>
PRIORITY	<p>Use abbreviation P on CW, RTTY, AMTOR and packet. This classification is for important messages having a specific time limit, official messages not covered in the emergency category, press dispatches and emergency-related traffic not of the utmost urgency.</p>
WELFARE	<p>This classification, abbreviated as W on CW, RTTY, AMTOR and packet, refers to either an inquiry as to the health and welfare of an individual in the disaster area, or an advisory from the disaster area that indicates that all is well. Welfare traffic is handled only after all emergency and priority traffic is cleared. The Red Cross equivalent to an incoming Welfare message is DWI (Disaster Welfare Inquiry).</p>
ROUTINE	<p>Most traffic in normal times will bear this designation. In disaster situations, traffic labeled Routine (R on CW, RTTY, AMTOR and packet) should be handled last, or not at all when circuits are busy with higher-precedence traffic.</p>
TP	<p>This unofficial precedence is sometimes used during drills. The meaning is "TEST PRECEDENCE". All simulation messages should be clearly marked as such; a TP precedence might not be good enough. The word "TEST" should probably appear in the message body as well.</p> <p>The precedence will follow, but is not a part of the message number. For example, the message may begin with "NR 207 R" on CW, "Number Two Zero Seven, Routine" on phone.</p>

5. Radiogram handling instructions

Handling instructions (HX) are less used but quite useful in handling messages. They serve to convey any special instructions to handling and delivering operators. This “prosign,” when used, is inserted into the message preamble between the precedence and the station of origin. Its use is optional with the originating stations, but once inserted is mandatory with all relaying stations. The following definitions apply:

Instruction	Definition
HXA	(Followed by number) Collect landline delivery authorized by the addressee within ... miles. (If no number, authorization is unlimited.)
HXB	(Followed by a number) Cancel message if not delivered within ... hours of filing time; service originating station
HXC	Report time and date of delivery (TOD) to originating station.
HXD	Report to originating station the identity of station from which received, plus date and time. Report station to which relayed, plus date and time, or if delivered report date, time and method of delivery.
HXE	Delivering station get reply from addressee, originate message back.
HXF	(Followed by number) Hold delivery until ... (date).
HXG	Delivery by mail or landline toll call not required. If toll or other expense involved, cancel message and service originating station.
<p>Example: NR 207 R HXA50 W4MLE 12...(etc.) If more than one HX prosign is used, the can be combined if no numbers are to be inserted, otherwise the HX should be repeated thus: NR 207 R HXAC W4MLE...(etc.). On phone, use phonetics for the letter or letters following the HX, to ensure accuracy.</p>	

6. Numbered radiograms

Radiograms for emergency use

Number	Number Meaning
One	Everyone safe here. Please don't worry
Two	Coming home as soon as possible.
Three	Am in _____ hospital. Receiving excellent care and recovering fine.
Four	Only slight property damage here. Do not be concerned about disaster reports.
Five	Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated.
Six	Will contact you as soon as possible.
Seven	Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.
Eight	Need additional _____ mobile or portable equipment for immediate emergency use.
Nine	Additional _____ radio operators needed to assist with emergency at this location.
Ten	Please contact _____. Advise to stand by and provide further emergency information, instructions or assistance.
Eleven	Establish Amateur Radio emergency communications with _____ on _____ MHz.
Twelve	Anxious to hear from you. No word in some time. Please contact me as soon as possible.
Thirteen	Medical emergency situation exists here.
Fourteen	Situation here becoming critical. Losses and damage from _____ increasing.
Fifteen	Please advise your condition and what is needed.
Sixteen	Property damage very severe in this area.
Seventeen	REACT communications services also available. Establish REACT communication with _____ on channel _____.
Eighteen	Please contact me as soon as possible at _____.
Nineteen	Request health and welfare report on _____. (State name, address and telephone number.)
Twenty	Temporarily stranded. Will need some assistance. Please contact me at _____.
Twenty one	Search and Rescue assistance is needed by local authorities here. Advise availability.
Twenty two	Need accurate information on the extent and type of conditions now existing at your location. Please furnish this information and reply without delay.
Twenty three	Report at once the accessibility and best way to reach your location.
Twenty four	Evacuation of residents from this area urgently needed. Advise plans for help.
Twenty five	Furnish as soon as possible the weather conditions at your location.
Twenty six	Help and care for evacuation of sick and injured from this location needed at once.

7. ICAO phonetic alphabet

Letter	Phonetic	Letter	Phonetic
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliette	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

8. 'QN' signals for CW nets

QN...	Definition
QNA	Answer in pre-arranged order QNN Net control station is _____
QQNB	Act as relay between _____ & _____ QNO Station is leaving the net
QNC	All net stations copy QNP Unable to copy you
QND	Net is directed (controlled by NCS) QNQ Change frequency to _____ and wait for _____ to finish handling traffic; send him traffic for _____
QNE	Entire net stand by QNR Answer and receive traffic
QNF	Net is free (not controlled) QNT Request permission to leave the net for _____ minutes
QNG	Take over as NCS QNU The net has traffic for you; stand by
QNH	Your net frequency is high QNV Establish contact with _____ on this frequency; if successful, move to _____ and send him traffic for _____
QNI	Net stations report in QNW How do I route messages for _____
QNJ	Can you copy me? QNX You are excused from the net
QNK	Transmit messages for _____ to _____ QNY Shift to _____ kHz to clear traffic with _____
QNL	Your net frequency is low QNZ Zero beat your signal with mine
QNM	You are disrupting the net; stand by

9. Useful frequencies

Ingham County ARPSC Frequencies

Output	Offset	PL	Comments
51.700			WB8RJY (Mason)
145.390	-	100.0	LCDRA
146.700	-		LCDRA
146.940	-	100.0	LCDRA
145.470	-	100.0	Link system (Onandaga input)
145.470	-	97.4	Link system (Lansing input)
146.580			RACES
147.570			RACES
145.090	s		Ingham County ARPSC packet channel
145.760	s		QMN/State EOC BBS packet channel
224.980	-		LCDRA
224.320	-		Wacousta
443.700	+		WB8RJY (Mason)
444.925	+		KE8DR Holt
446.200	s		RACES
446.400	s		RACES

Coordination with other area groups

Output	Offset	PL	Comments
4.604	s		CAP HF net
3.663	s		MI Emergency calling frequency, CW, night
7.063	s		MI Emergency calling frequency, CW, day
3.932	s		MI Emergency calling frequency, Phone, night
7.232	s		MI Emergency calling frequency, Phone, day
47.420	s		Red Cross emergency channel
47.580	s		Red Cross transportation channel
145.130	-		Portland
146.680	-		Howell
147.020	+		Owosso
147.080	+		Charlotte
147.280	+		Jackson
147.480	s		Clinton Co.
122.900	s		(AM) CAP
143.625	s		CAP ground to ground
148.125	s		CAP ground to ground, air to ground
148.150	-4.5		CAP repeater
149.5375	s		CAP air to ground
149.995	s		CAP packet
442.400	+		Owosso
443.175	+		Jackson
443.625	+		Charlotte
444.525	+		Howell

Michigan ARPSC Nets

Net Output Offset PL Notes

Net Output	Offset	PL	Notes
146.900	-		Alcona County
147.270	+		Alger County (Hiawatha Emg)
145.310	-	100.0	Arenac County
145.310	-		Bay County (ARC)
146.850	-		Dickinson County (ARES)
146.740	-		Five County (W-C MI) ARES - Newaygo et al
147.260	+		Genesee County GCARES tfc/trg
147.180	+		Gladwin County
145.130	-		Hanson Hills
146.880	-		Houghton-- Copper Country ARES
145.130	-		Ionia County ARES
146.880	-	100.0	Jackson County ARES
146.620	-		Lapeer County ARES
147.200	+		Macomb County ARES
147.000	+		Midland County ARES
145.310	-		MI Third District ARPSC
146.820	-		Muskegon County ARES
146.920	-	94.8	Newaygo County
147.140	+		Oakland County ARPSC
146.800	-		St. Clair County Red Cross ARS
145.310	-	94.8	St. Joseph County ARPSA
146.820	-		Tuscola County AR Net
145.150	-		Washtenaw County ARES
145.330	-		Wayne County ARES/RACES

Area Emergency Services

Output	Input	PL	Comments
153.770	154.325	173.8	Lansing Fire #1
154.445	153.950	173.8	Lansing Fire 2#
153.770	153.770	173.8	Lansing Fire #3
154.445	154.445	173.8	Lansing Fire #4
154.295	154.295		CSQ State-wide fire
155.940	155.940	103.5	Mason Fire (also Onandaga, Leslie)
154.430	154.430	103.5	Delhi Fire (also Holt, Lansing Twp, Mer. Twp)
154.100	154.100		CSQ East Lansing Fire
154.220	154.220	110.9	Dewitt Fire
155.280	155.280	103.5	911 Center (also Mercy Ambulance)
155.280	155.280		CSQ Mutual aid
155.280	155.280	rx 97.4 tx 210.7	All hospitals
155.340	155.340	rx 97.4 tx 110.9	IRMC Greenlawn
155.340	155.340	rx 97.4 tx 127.3	IRMC Pennsylvania
155.340	155.340	rx 97.4 tx 100.0	Sparrow
155.340	155.340	rx 97.4 tx 88.5	St. Lawrence
162.400			Weather
460.200	465.200	162.2	Lansing Police #1
460.300	465.300	162.2	Lansing Police #2
460.400	465.400	162.2	Lansing Police #3
460.500	465.500	162.2	Lansing Police #4
460.050	465.050	162.2	Tri-County
460.350	465.350	162.2	Ingham Co. Sheriff
460.475	465.475	162.2	Lansing Twp. Police
460.350	465.350	162.2	East Lansing Police #1
460.450	465.450	162.2	East Lansing Police #2
460.100	465.100	162.2	Meridian Twp. Police
460.425	460.425	162.2	Eaton Co. Sheriff
460.625	465.625	162.2	Eaton Co. Fire
460.275	465.275	162.2	MSU Police #1
460.550	465.550	162.2	MSU Police #2
460.575	465.575	DPL 654	Delta Twp. Fire
461.025	466.025	162.2	LCC Police
462.550			GMRS #1
462.575			GMRS #2
460.600	465.600	162.2	Grand Ledge Fire
465.200	460.200	162.2	Lansing Police #1R
465.300	460.300	162.2	Lansing Police #2R
465.400	460.400	162.2	Lansing Police #3R
465.500	460.500	162.2	Lansing Police #4R

10. Lansing EOC operating procedures

I. All personnel shall check in and out

- A. Check in and out with person in control of personnel at the EOC.**
- B. Let whoever is controlling the Amateur Radio Operations know you are there or if you have to leave.**
- C. You work for the governmental entity in whose EOC you are located.**

II. Radios

- A. Make sure your radios are working.**
- B. Are power supplies on and working?**
- C. Is the antenna plugged into the radio?**
- D. HF radios**
 - i. State emergency frequency is 3932 kHz.**
 - ii. 7pm Michigan Traffic Net frequency 3952 kHz.**
- E. VHF radios**
 - i. Operating frequencies of Lansing repeaters 146.940 Mhz, 146.700 Mhz, 145.390 Mhz, all minus offset.**
 - ii. Lansing repeaters require a PL tone of 100 Hz.**
 - iii. Simplex operations will be on 146.58 MHz.**
 - iv. VHF packet operations will be conducted on 145.090 MHz**
- F. Use headphones in the EOC to reduce noise and make listening easier.**
- G. If using packet radio:**
 - i. Is the computer working?**
 - ii. Is the radio set to the proper packet frequency?**
 - iii. Does the TNC work?**
 - iv. Are the packet programs working?**
- H. You should have one person per radio and one extra for a runner.**
 - i. The State EOC call sign is WC8EOC.**

III. Equipment

A. Do you have the proper and needed supplies:

- i. Paper and pencils/pens?**
- ii. Message forms?**
- iii. Maps of the city, county and state?**

B. Do you have the following software:

- i. Text editor for creating messages?**
- ii. Program for logging?**

C. Paper in printers?

D. Is there a telephone available for Amateur Radio Operators

IV. Amateur Radio Operators

A. You need one operator per radio.

B. You need one additional operator to handle logging, and fill in if needed.

C. All operators will sign in, logging their name, call sign and starting date/time.

D. All operators will sign out, logging their call sign and ending date/time.

E. All operators will record on message forms all messages and reports sent or received.

F. All operators will log on log forms all messages and reports.

G. Determine as quickly as possible the duration of the operation.

i. Will you need relief operators (sleeping, eating, restroom breaks)?

ii. Do people have to go to work?

H. What facilities are available to operators:

- i. Water?**
- ii. Food?**
- iii. Lavatory?**
- iv. Arest area?**

I. Operators should remember to bring any personal needs:

- i. Medical supplies?**
- ii. Other hygiene needs?**

IV. Operator Duties

- A. Your job is to transmit and receive message traffic and information reports.**
- B. You will not give out information unless directed to do so.**
- C. You will handle only EMERGENCY traffic into and out of the EOC.**
- D. Do not get into an argument about handling traffic.**
- E. If there is a request for Health and Welfare traffic it shall be directed to the Red Cross or other channels/frequencies.**
- F. Keep all transmission short and to the point.**

G. Process messages:

- i. Receive messages over the air and give them to the proper person for handling.**
- ii. Accept messages for transmission from proper authorities.**
- iii. Sending messages**
 - a. Speed is only valuable if it doesn't impair clarity and copiability.**
 - b. Think about how fast another person can copy.**

c. Difficult words, acronyms, unusual spellings and mixed groups need to be spelled out phonetically.

iv. Use of prosigns and prowords where appropriate.

v. Use plain language wherever possible.

vi. Use the international phonetic alphabet to spell words.

H. Logging functions for messages and other recorded details:

i. All messages will be logged in and out of the EOC

a. Message number if there is one.

b. Date/time of origination.

c. Date/time received or sent.

d. Call sign of station message was sent to or received from.

e. Who message was from.

f. Who message was to.

ii. Record information received or events you heard:

a. Call sign of reporting station.

b. Date/time of report.

c. Nature of report.

iii. Starting time and quitting time of operators.

I. Who are you in contact with and where are they located:

i. What is their call sign?

ii. What governmental agency do they represent?

iii. Where are they located?

iv. What other amateurs are in the field?

J. Operators should know how to operate a bulletin board system.

i. Functions.

ii. Commands.

iii. Message format.

iv. How to enter a message into the system.

v. How to get a message out of the system.

vi. Ability to touch type is useful.

K. Conduct only necessary communications.

L. All functions will be kept to a formal nature.

V. Messages

A. All message and reports will be emergency messages to and from the EOC.

B. All message will be on a standard message form—either ARRL or the agency message form. Do not use small scraps of paper.

C. All messages shall be written out so they are legible.

i. Who is message from - full title and name?

ii. Who is message to - full title and name?

iii. Time the message was originated?

iv. Messages should be concise and to the point, not long winded.

v. Do not get into dissussion about wording of message.

D. All messages will be transmitted as recorded.

i. No extra words will be added to messages.

ii. No words will be deleted from message.

iii. You will not change the wording of a message.

E. All messages will have a time of origination in UTC (aka GMT, Zulu) time.

F. Record who was the receiving or transmitting station for the message.

G. All messages should be in ARRL format or the format of the sending agency.

H. H. All messages shall be logged in and out.

i. Time received or transmitted.

ii. Who received or transmitted the message.

iii. Record the message number, you created/originated or the number of the message received.

iv. If possible who the message was from and to.

v. If sent or received from a BBS record that call sign.

I. All messages will be give to one person for further handling.

J. Do not throw any messages away—keep a file or place for them.

K. All transmissions will be in plain English. The use of Q or Z signals will be avoided.

L. L. Use the standard phonetic alphabet to spell out words.

VI. NCS DUTIES

11. Relevant emergency and traffic nets

Net Time (Winter) Frequency

Time	Day	Frequency	Net
1330Z	1 st Wed/quarter	3960 kHz, 7285 kHz	FEMA Region 5 Emergency Net
2030 EST	Dy	3932 kHz, 7232 kHz	Great Lakes Emergency and Traffic Net
1100 EST	Dy	3953 kHz	Michigan Amateur Communications System
1300 EST	Dy	3953 kHz	Michigan Amateur Communications System
1900 EST	Dy	3952 kHz	Michigan Traffic Net (MITN)
1830 EST	Dy	3663 kHz, 7063 kHz, 1812 kHz	QMN early
2200 EST	Dy	3663 kHz, 7063 kHz, 1812 kHz	QMN late
1630Z	Sat	7265 kHz	Salvation Army Team Emergency Radio Net
1400Z	M-F	14265 kHz	Salvation Army Team Emergency Radio Net
1700 EST	Dy	3921 kHz	UP Net
1900 EST	Dy	3935 kHz	Wolverine SSB Net

12. QMN Packet Radio Network

Primary BBS	W8IHX-1	Detroit	
Secondary BBS	W8IHX-3	Ann Arbor Red Cross	
Digipeaters	W8IHX	QMN-1	Detroit
		QMN-2	Ann Arbor
		QMN-3	Milan
		QMN-4	Chelsea
		QMN-5	White Lake
		QMN-8	Flint
Served Agencies	NWS-DTX	QMN-5	K8DTX-5
	MSP District 2	N8FZT-1	
	State EOC	WC8EOC	
	Oakland EOC	W8OAK	
	Washtenaw Co. EOC	N8MWD-5	
Wayne Co. EOC	WC8AAA		
Frequencies	VHF	HF	
	145.760	7072.5	

13. Key FCC regulations related to emergency operations

The following segment of the FCC regulations (Title 47 USC) are drawn from the ARRL web page at

<http://www2.arrl.org/field/regulations/news/part97/e.html>.

§97.401 Operation during a disaster.

(a) When normal communication systems are overloaded, damaged or disrupted because a disaster has occurred, or is likely to occur, in an area where the amateur service is regulated by the FCC, an amateur station may make transmissions necessary to meet essential communication needs and facilitate relief actions.

(b) When normal communication systems are overloaded, damaged or disrupted because a natural disaster has occurred, or is likely to occur, in an area where the amateur service is not regulated by the FCC, a station assisting in meeting essential communication needs and facilitating relief actions may do so only in accord with ITU Resolution No. 640 (Geneva, 1979). The 80 m, 75 m, 40 m, 30 m, 20 m, 17 m, 15 m, 12 m, and 2 m bands may be used for these purposes.

(c) When a disaster disrupts normal communication systems in a particular area, the FCC may declare a temporary state of communication emergency. The declaration will set forth any special conditions and special rules to be observed by stations during the communication emergency. A request for a declaration of a temporary state of emergency should be directed to the EIC in the area concerned.

(d) A station in, or within 92.6 km of, Alaska may transmit emissions J3E and R3E on the channel at 5.1675 MHz for emergency communications. The channel must be shared with stations licensed in the Alaska-private fixedservice. The transmitter power must not exceed 150 W.

§97.403 Safety of life and protection of property.

No provision of these rules prevents the use by an amateur station of any means of radio communication at its disposal to provide essential communication needs in connection with the immediate safety of human life and immediate protection of property when normal communication systems are not available.

§97.405 Station in distress.

(a) No provision of these rules prevents the use by an amateur station in distress of any means at its disposal to attract attention, make known its condition and location, and obtain assistance.

(b) No provision of these rules prevents the use by a station, in the exceptional circumstances described in paragraph (a), of any means of radio communications at its disposal to assist a station in distress.

§97.407 Radio amateur civil emergency service.

(a) No station may transmit in RACES unless it is an FCC-licensed primary, club, or military recreation station and it is certified by a civil defense organization as registered with that organization, or it is an FCC-licensed RACES station. No person may be the control operator of a RACES station, or may be the control operator of an amateur station transmitting in

RACES unless that person holds a FCC-issued amateur operator license and is certified by a civil defense organization as enrolled in that organization.

(b) The frequency bands and segments and emissions authorized to the control operator are available to stations transmitting communications in RACES on a shared basis with the amateur service. In the event of an emergency which necessitates the invoking of the President's War Emergency Powers under the provisions of §706 of the Communications Act of 1934, as amended, 47 U.S.C. §606, RACES stations and amateur stations participating in RACES may only transmit on the following frequency segments:

(1) The 1800-1825 kHz, 1975-2000 kHz, 3.50-3.55 MHz, 3.93-3.98 MHz, 3.984-4.000 MHz, 7.079-7.125 MHz, 7.245-7.255 MHz, 10.10-10.15 MHz, 14.047-14.053 MHz, 14.22-14.23 MHz, 14.331-14.350 MHz, 21.047-21.053 MHz, 21.228-21.267 MHz, 28.55-28.75 MHz, 29.237-29.273 MHz, 29.45-29.65 MHz, 50.35-50.75 MHz, 52-54 MHz, 144.50-145.71 MHz, 146-148 MHz, 2390-2450 MHz segments;

(2) The 1.25 m, 70 cm and 23 cm bands; and

(3) The channels at 3.997 MHz and 53.30 MHz may be used in emergency areas when required to make initial contact with a military unit and for communications with military stations on matters requiring coordination.

(c) A RACES station may only communicate with:

(1) Another RACES station;

(2) An amateur station registered with a civil defense organization;

(3) A United States Government station authorized by the responsible agency to communicate with RACES stations;

(4) A station in a service regulated by the FCC whenever such communication is authorized by the FCC.

(d) An amateur station registered with a civil defense organization may only communicate with:

(1) A RACES station licensed to the civil defense organization with which the amateur station is registered;

(2) The following stations upon authorization of the responsible civil defense official for the organization with which the amateur station is registered:

(i) A RACES station licensed to another civil defense organization;

(ii) An amateur station registered with the same or another civil defense organization;

(iii) A United States Government station authorized by the responsible agency to communicate with RACES stations; and

(iv) A station in a service regulated by the FCC whenever such communication is authorized by the FCC.

(e) All communications transmitted in RACES must be specifically authorized by the civil defense organization for the area served. Only civil defense communications of the following types may be transmitted:

(1) Messages concerning impending or actual conditions jeopardizing the public safety, or affecting the national defense or security during periods of local, regional, or national civil emergencies;

(2) Messages directly concerning the immediate safety of life of individuals, the immediate protection of property, maintenance of law and order, alleviation of human suffering and need, and the combating of armed attack or sabotage;

(3) Messages directly concerning the accumulation and dissemination of public information or instructions to the civilian population essential to the activities of the civil defense organization or other authorized governmental or relief agencies; and

(4) Communications for RACES training drills and tests necessary to ensure the establishment and maintenance of orderly and efficient operation of the RACES as ordered by the responsible civil defense organizations served. Such drills and tests may not exceed a total time of 1 hour per week. With the approval of the chief officer for emergency planning the applicable State, Commonwealth, District or territory, however, such tests and drills may be conducted for a period not to exceed 72 hours no more than twice in any calendar year.

14. Practice groups for traffic nets

1 Chemtrec	16 3663 kHz	31 DOT 1203	46 ERV	61 Barometric Pressure	76 TDD
2 Hazmat	17 Containers	32 Observation	47 SATERN	62 29.91	77 Thermic Syphon
3 6 th Street	18 Methyl Isocyanate	33 Vapor Pressure	48 Surgeon	63 EOC	78 Baker Valve
4 Griffith	19 Motorola	34 KA8KTY	49 Frank J. Navin	64 Oxygen	79 Diazinon
5 Lori	20 W8IHX	35 KC8GMT	50 Carl Mays	65 Infectious	80 TACAN System
6 Laura	21 Walters	36 250 PSI	51 Pactor	66 Karl F. Weihman	81 VHF Omni Range
7 Nancy	22 6EV7	37 PCBs	52 Amtor	67 Aaron Weiss	82 Altimeter
8 Nanci	23 2N2253	38 Polychlorinate d Biphenyl	53 PSK 31	68 5075 Lonyo Avenue	83 Approximating
9 Wisniewski	24 John	39 Emmylou Harris	54 West Grand Boulevard	69 22345 Garvin Street	84 Bulletin
10 Sulfur	25 Jon	40 48867	55 North Woodward Avenue	70 Christopher Ozcan	85 Capsized
11 Tetraflouride	26 SCBA	41 517-723-4978	56 Owosso	71 Raymond Packer	86 Fluctuates
12 LC50	27 Dispatcher	42 313-555-1270	57 Grand Marais	72 668-2953	87 Boiler
13 Dilution	28 Reportable Quantity	43 132 nd Street	58 Marquette	73 2389 Tamarack	88 Disposition
14 VHF	29 Stanley Wojciechowski	44 Ernesto Gonzalez	59 Sequoia Ave	74 Matt Lessnau	89 Dibenzoil Peroxide
15 APRS	30 Explosives	45 Cynthia D. Ziegler	60 Precipitation	75 Excavating	

15. Practice messages for traffic nets

These training texts are to be transmitted in standard radiogram format. Be sure to occasionally include an optional item in the preamble, such as handling instructions (HX-) or "Time of Origin." The exact "check" is indicated in parenthesis adjacent to the text.

An example message might be formatted as follows:

21 R W8IHX 16 ANN ARBOR MI 2330Z JUN 10

N8AHA

WHEN CHECKING INTO THE NET WITHOUT TRAFFIC STATE NO TRAFFIC ON PHONE OR QRU ON CW

JIM WB8SIW

- (1) NTS PROVIDES A SYSTEM OF LAYERED NETS WHICH FACILITATE THE EXCHANGE OF TRAFFIC THROUGHOUT NORTH AMERICA X ALL NTS TRAFFIC IS HANDLED USING A STANDARD FORMAT (26)
- (2) THERE ARE FIVE NTS LEVELS LOCAL SECTION REGION AREA AND TCC X LOCAL NETS TYPICALLY SERVE A METROPOLITAN AREA OR COUNTY ARES PROGRAM (23)
- (3) SECTION NTS NETS TYPICALLY SERVE A STATE OR AN ARRL SECTION X THESE ARE THE MOST NUMEROUS OF NTS NETS (20)
- (4) REGION NETS ACCEPT CHECK INS FROM SPECIALLY ASSIGNED REPRESENTATIVES FROM SECTION NETS X THEY FACILITATE THE EXCHANGE OF TRAFFIC THROUGHOUT A REGION OR CALL SIGN DISTRICT (26)
- (5) AREA NETS ACCEPT CHECK INS FROM REGION NET LIAISON STATIONS X THEY FACILITATE THE EXCHANGE OF TRAFFIC THROUGHOUT THE EASTERN CENTRAL OR PACIFIC AREAS OF NORTH AMERICA (27)
- (6) TRANS CONTINENTAL CORP OR TCC LINKS THE AREA NETS TOGETHER THROUGH HIGH SPEED POINT TO POINT CIRCUITS X THIS FACILITATES TRAFFIC FLOWACROSS AREA BOUNDARIES (25)
- (7) WHEN CHECKING INTO THE NET WITHOUT TRAFFIC STATE NO TRAFFIC ON PHONE OR QRU ON CW (16)
- (8) WHEN CHECKING IN WITH TRAFFIC INDICATE THE QUANTITY AND DESTINATION X IF IT IS FOR A DESTINATION OUTSIDE THE COVERAGE OF THE NET STATE THROUGH (25)

(9) BE SURE TO UTILIZE THE CORRECT PHONETIC ALPHABET WHEN CHECKING INTO A PHONE NET X ALWAYS STATE YOUR CALL SIGN PHONETICALLY (21)

(10) ON CW BE SURE TO TRANSMIT NO FASTER THAN YOU ARE ABLE TO COPY X USE THE KEY, KEYS OR KEYBOARD THAT YOU ARE MOST COMFORTABLE WITH (27)

(11) THE FOLLOWING TRAINING MESSAGES WILL COVER IN DETAIL THE NTS RADIOGRAM FORMAT (12)

(12) THE MESSAGE NUMBER SHOULD BEGIN WITH THE NUMERAL ONE X ASSIGN A NEW NUMBER TO EACH MESSAGE X AVOID LARGE NUMBERS (21)

(13) THE PRECEDENCE INDICATES THE IMPORTANCE OF THE MESSAGE X IT IS ASSIGNED AT THE ORIGINATING STATION AND CAN NOT BE CHANGED (21)

(14) IN ORDER OF IMPORTANCE THE PRECEDENCES ARE EMERGENCY PRIORITY WELFARE AND ROUTINE X SEE THE ARRL PINK CARD FOR MORE DETAILS (21)

(15) THE STATION OF ORIGIN IS THE CALL SIGN OF THE FIRST PERSON TO PLACE THE MESSAGE ON AIR X IT IS NOT THE CALL SIGN OF THE PERSON WHO DRAFTS THE MESSAGE (32)

(16) HANDLING INSTRUCTIONS ARE OPTIONAL X A COMPLETE LIST OF HANDLING INSTRUCTIONS ARE AVAILABLE ON THE PINK CARD ARRL FORM FSD-218 (20)

(17) THE CHECK IS A COUNT OF THE NUMBER OF WORDS OR GROUPS IN THE TEXT X IT DOES NOT INCLUDE THE ADDRESS OR SIGNATURE (24)

(18) MIXED GROUPS AND GROUPS OF FIGURES ARE COUNTED AS ONE X FOR EXAMPLE FSD218 COUNTS AS ONE GROUP (18)

(19) THE PLACE OF ORIGIN IS THE LOCATION OF THE INDIVIDUAL WHOSE NAME APPEARS AS THE SIGNATURE X IT IS NOT THE LOCATION OF THE STATION OF ORIGIN (27)

(20) THE TIME OF ORIGIN IS OPTIONAL X IT IS ALWAYS EXPRESSED IN GMT/UTC (13)

(21) THE DATE OF ORIGIN IS EXPRESSED IN THE FORM OF A THREE LETTER MONTH AND DAY FOR EXAMPLE AUG 23 X DO NOT INCLUDE THE YEAR (26)

(22) REMEMBER THAT A NEW RADIO DAY STARTS AT 0001 UTC XRADIOGRAMS ORIGINATED AFTER 7PM EST MUST INDICATE TOMORROWS DATE (20)

(23) THE ADDRESS SHOULD BE AS COMPLETE AS POSSIBLE X INCLUDE THE TELEPHONE NUMBER WHEN AVAILABLE (15)

(24) THE PORTION OF THE MESSAGE WHICH INCLUDES THE MESSAGE NUMBER THROUGH ADDRESS IS CALLED THE PREAMBLE X IT IS SEPARATED FROM THE TEXT BY THE PROSIGN BREAK (27)

(25) THE TEXT SHOULD BE LIMITED TO 25 GROUPS WHENEVER POSSIBLE X THERE SHOULD BE NO PUNCTUATION WITH THE EXCEPTION OF THE XRAY WHICH REPRESENTS A PERIOD (26)

(26) THE TEXT IS SEPARATED FROM THE SIGNATURE BY ANOTHER BREAK (10)

(27) WHEN AN OPERATOR ON PHONE SAYS BREAK HE WILL UNKEY HIS MIC AND LISTEN FOR FILLS X IF YOU DO NOT REQUIRE FILLS REMAIN SILENT (25)

(28) WHEN ACTIVE ON CW NETS TRY TO EQUIP YOUR STATION FOR FULL BREAK IN X QSK SIGNIFICANTLY IMPROVES TRAFFIC HANDLING EFFICIENCY (21)

(29) THE PROWORD OVER MEANS A REPLY OR FURTHER COMMUNICATIONS IS EXPECTED X OUT MEANS NO REPLY IS EXPECTED X OUT IS LIKE HANGING UP THE PHONE (26)

(30) CW OPERATORS SHOULD SIMPLY STATE QSL TO ACKNOWLEDGE RECEIPT OF A MESSAGE (12)

(31) WHEN REQUESTING FILLS ON PHONE USE THE PHRASE SAY AGAIN FOLLOWED BY WORD BEFORE WORD AFTER OR THE OTHER STANDARD PHRASES X SEE THE MICHIGAN NET PUBLIC SERVICE COMMUNICATIONS HANDBOOK FOR MORE DETAILS (33)

(32) WHEN REQUESTING FILLS ON CW TRANSMIT THE INTERROGATORY FOLLOWED BY WA WB OR BN FOR WORD AFTER WORD BEFORE OR BETWEEN (21)

(33) WHEN RESPONDING TO A FILL REQUEST REPEAT THE FILL REQUEST FOLLOWED BY THE MISSING INFORMATION (15)

(34) WHENEVER POSSIBLE TRAFFIC SHOULD BE CLEARED OFF OF THE MAIN NET FREQUENCY X BE SURE TO LET NET CONTROL KNOW WHEN YOUVE RETURNED (23)

(35) ALWAYS COMPLY IMMEDIATELY WITH THE INSTRUCTIONS OF NCS X DO NOT TRANSMIT WITHOUT HIS/HER PERMISSION (15)

(36) NEVER LEAVE THE NET WITHOUT NOTIFYING NCS (7)

(37) IF YOU MUST LEAVE THE NET FOR A SHORT TIME LET NCS KNOW HOW LONG YOU WILL BE GONE X USE THE QNT SIGNAL ON CW NETS (27)

(38) WHEN TRANSMITTING TRAFFIC IMAGINE YOURSELF WRITING IT BY HAND AS YOU SPEAK X THIS WILL HELP YOU TRANSMIT AT SUCH A SPEED THAT THE RECEIVING OPERATOR CAN KEEP UP (29)

(39) WHEN TRANSMITTING DIFFICULT NAMES OR WORDS ON PHONE PRONOUNCE THE WORD STATE I SPELL AND FOLLOWBY SPELLING THE WORD PHONETICALLY X ALWAYS USE ITU/ICAO PHONETIC ALPHABET (27)

(40) ON PHONE PRECEDE GROUPS OF FIGURES SUCH AS TELEPHONE NUMBERS AND ZIP CODES WITH THE PHRASE FIGURES (17)

(41) ON PHONE PRECEDE MIXED GROUPS OF LETTERS AND FIGURES WITH THE PHRASE I SPELL (14)

(42) ON PHONE THERE ARE NO SUCH EXPRESSIONS OR PROWORDS AS MIXED GROUPS PHONE WITH AREA CODE OR COMMON SPELLING (19)

(43) WHEN CHECKING INTO A PHONE NET STATE THIS IS FOLLOWED BY A PAUSE AND THEN YOUR CALL SIGN PHONETICALLY X THIS PREVENTS DOUBLES (23)

(44) EQUIP YOUR STATION WITH EMERGENCY POWER X REGISTER WITH YOUR LOCAL ARES/RACES GROUPS (13)

(45) PARTICIPATE IN THE QMN/NWS RAIN GAUGE NETWORK WHENEVER POSSIBLE (9)

(46) LET YOUR LOCAL EMERGENCY COORDINATOR KNOW THAT YOU ARE ACTIVE ON NTS NETS X IF YOU DON'T HAVE AN EC WHY NOT CONSIDER TAKING ON THE CHALLENGE (27)

(48) WHEN INCLUDING AN ARL NUMBERED RADIOGRAM TEXT IN THE MESSAGE BE SURE TO PRECEDE THE CHECK COUNT WITH THE LETTERS ARL (21)

(49) THE CHECK SHOULD REFLECT THE NUMBER OF GROUPS ACTUALLY TRANSMITED NOT THE NUMBER OF WORDS IN AN ARL RADIOGRAM TEXT X FOR EXAMPLE ARL ONE HAS A CHECK OF TWO (30)

(50) MORE THAN ONE ARL NUMBERED RADIOGRAM TEXT MAY BE INCLUDED IN A MESSAGE X BE SURE TO FILL IN THE BLANKS AFTER EACH ARL NUMBER (25)

(51) THE SIGNATURE MAY INCLUDE TELEPHONE NUMBERS OR ADDRESSES (8)

(52) ON CW SEPARATE EACH LINE OF THE ADDRESS OR SIGNATURE WITH THE PROSIGN AA WHICH IS THE AMERICAN MORSE COMMA (20)

(53) ON CW USE THE DOUBLE DASH OR BT AS THE PROSIGN FOR BREAK BETWEEN THE PREAMBLE AND TEXT AS WELL AS THE TEXT AND SIGNATURE (25)

(54) CW NETS ARE IDEAL FOR QRP MOBILE OR EMERGENCY STATIONS X LEARN CW TRAFFIC HANDLING FOR MAXIMUM EMERGENCY PREPAREDNESS (19)

(55) WHEN CONDITIONS ARE POOR A CW NET WILL OFTEN HANDLE TRAFFIC EASILY WHEN PHONE NETS ARE STRUGGLING (17)

(56) WELFARE TRAFFIC REFLECTS THE CONDITION OR WELL BEING OF INDIVIDUALS IN A DISASTER AREA X PLEASE TRY TO USE ARL NUMBERED RADIOGRAM TEXTS FOR ALL WELFARE TRAFFIC (27)

(57) PRIORITY TRAFFIC SHOULD ALWAYS BE HANDLED BEFORE WELFARE OR ROUTINE TRAFFIC (11)

(58) THE PRECEDENCE EMERGENCY IS ALWAYS SPELLED OUT ON CW X EMERGENCY MESSAGES SHOULD GET OFF AT THE FIRST ACCESS TO COMMERCIAL OR GOVERNMENT PHONE OR TELEGRAPH SERVICE (27)

(59) DO NOT HOLD ROUTINE TRAFFIC FOR LONGER THAN 48 HOURS X IF UNDELIVERABLE ORIGINATE A SERVICE MESSAGE BACK TO THE ORIGINATING STATION OR MAIL THE MESSAGE DIRECTLY TO THE ADDRESSEE (30)

(60) NEVER FAIL TO DELIVER OR SERVICE BACK AN NTS RADIOGRAM (10)

(61) BOOK TRAFFIC IS ANY SET OF MESSAGES HAVING A COMMON TEXT X THE COMMON PARTS ARE TRANSMITTED FIRST FOLLOWED BY THOSE THAT DIFFER X EACH PORTION IS SEPARATED BY A BREAK (31)

(62) BE SURE TO REPORT YOUR MONTHLY TRAFFIC TOTAL TO THE ARRL SECTION MANAGER AT THE END OF THE MONTH X REPORTS ARE DUE BY THE 5TH (26)

(63) PARTICIPATE IN THE LEAGUES PSHR PROGRAM X SEND YOUR MONTHLY PSHR REPORT TO THE SECTION TRAFFIC MANAGER X DETAILS IN QST PUBLIC SERVICE COLUMN (24)

(64) NTS MESSAGE FORMAT AND PROCEDURES IMPROVE THE ACCURACY AND EFFICIENCY OF DISASTER COMMUNICATIONS (13)

(65) QMN RAIN GAUGE REPORTS ARE TRANSMITTED ONLY WHEN MEASURABLE PRECIPITATION OCCURS (11)

(66) SPECIAL EMERGENCY NETS MAY BE HELD DURING MAJOR SNOW STORMS FLOODING OR DURING SEVERE THUNDERSTORM EVENTS (16)

(67) WHEN CAMPING OR HIKING TAKE ALONG A LOW POWER BATTERY OPERATED TRANSCEIVER X USE NTS TO KEEP IN TOUCH (19)

(68) TAKE FEMA INDEPENDENT STUDY COURSE IS2 X AVAILABLE FROM YOUR EMERGENCY MANAGER OR RACES OFFICER (15)

(69) TAKE A BASIC AND ADVANCED SKYWARN CLASS X CHECK THE QMN WEB PAGE FOR A STATEWIDE SCHEDULE OF CLASSES (19)

(70) REGISTER WITH SATERN THE SALVATION ARMY TEAM EMERGENCY RADIO NETWORK X DETAILS ON QMN WEB PAGE (16)

(71) TAKE RED CROSS COURSE INTRODUCTION TO DISASTER SERVICES X REGISTER FOR CLASS AT LOCAL CHAPTER (15)

(72) PREPARE A JUMP KIT WITH PORTABLE TWOMETER RIG MAGMOUNT ANTENNA SPARE BATTERIES AND OTHER ACCESSORIES FOR EMERGENCY RESPONSE (20)

(73) DEVELOP PORTABLE HF CAPABILITY FOR EMERGENCY RESPONSE (7)

(74) TRAIN A FRIEND TO ASSIST WITH REPRESENTING YOUR AREA ON NTS NETS (12)

(75) A DIVERSITY OF MODES AND CAPABILITIES IS ESSENTIAL TO A RELIABLE EMERGENCY COMMUNICATIONS PROGRAM (14)

16. ARRL DEC / State Police Districts

Ch. 3

Lansing Area SKYWARN Ingham County Amateur Radio Public Service Corps

Net Manual

Purpose

The purpose of the Lansing Area SKYWARN is to provide useful severe weather-related information to the National Weather Service so that it may better carry out its duty to protect life, property, and commerce in its County Warning Area (CWA) during times of hazardous weather.

Objectives of this document

This document is aimed at providing Lansing Area SKYWARN officials, emergency management officials, the local amateur radio community, and other groups with detailed information on the Lansing Area SKYWARN net: its functions, structure, and operating procedure.

The Role of the National Weather Service

The National Weather Service (NWS) office in Grand Rapids, Michigan prepares general forecasts and issued watches, warnings, and advisories relating to severe local storms, floods, winter storms, and other hazards for the following 23 counties in southern Lower Michigan:

Allegan, Barry, Calhoun, Clare, Clinton, Eaton, Gratiot, Ingham, Ionia, Isabella, Jackson, Kalamazoo, Kent, Lake, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, Ottawa, Van Buren

Additionally, the National Weather Service provides training for all SKYWARN spotter groups within this CWA.

Lansing Area SKYWARN

I. Leadership Structure

SKYWARN is a special nationwide joint effort between the American Radio Relay League's (ARRL) Amateur Radio Emergency Service (ARES) and the National Weather Service. Therefore, Lansing Area SKYWARN, being the primary SKYWARN net of Ingham County, Michigan, shall be led under the sole direction of the Ingham County Amateur Radio Public Service Corps (IC-ARPSC) in the best interest of the NWS. The IC-ARPSC is the ARES authority of Ingham County.

When activated, the Lansing Area SKYWARN net shall operate under the direction of an appointed net control operator. When needed, a special NWS liaison operator will serve as a communications link between the net control operator and the NWS. The net control operator may also appoint other liaison operators to neighboring county SKYWARN nets to keep abreast of happenings elsewhere. Backup personnel may also be appointed on short notice to assume net control or a liaison position should the primary net control or liaison operator(s) lose communications or require relief.

This system, as recommended by the NWS, will help facilitate efficient communications within the local SKYWARN net, between local nets, and between local nets and the NWS during severe weather situations. The use of backup personnel assures a smooth transition of responsibility, if needed, so net disruptions are minimized or avoided. Here is a general description of some of the specialized positions in a typical net situation:

A. NET CONTROL OPERATOR:

direct the net

- Activate and deactivate the net when appropriate
- Record check in information if time permits. Information may include each spotter's call sign, name and location
- Coordinate spotters in the field to key locations (if needed) without compromising safety
- Receive spotter reports and forward them, if necessary, to NWS and other agencies
- Announce relevant NWS statements and weather updates

If the net must be moved to an alternative frequency, the net control may consider doing a full or partial roll-call to check if the transition was made by all personnel. It is recommended that the net control follow the "Lansing Area SKYWARN Net Operation Plan" when addressing the entire net. Most importantly, the net control should do whatever is necessary to maintain an efficient and controlled net throughout the duration of a net activation.

B. LIAISON OPERATOR(S):

relay traffic between the local net and the NWS, and /or the local net and another local net, and/or between the local net and another group (such as local media)

- Copy all reports and forward automatically or if advised to by net control
- Update net control with messages from the represented group

II. Net Operation

The Lansing Area SKYWARN net shall activate when at least one of the following counties is under a severe thunderstorm or tornado watch and/or warning:

Ingham, Eaton, Clinton

Lansing Area SKYWARN may also activate at the request of the NWS or emergency management for winter weather or flood events. There are two levels of net activation:

1) Standby Condition: a severe thunderstorm or tornado watch is in effect for at least one of the above counties

2) Full Operation: a severe thunderstorm warning or tornado warning is in effect for at least one of the above counties (with or without an accompanying watch)

NOTE: The net control operator may choose to upgrade the net to full operation when no warnings are in effect for any of the above counties. This may be done in rapidly developing situations or when a warning is anticipated shortly. The conditions stated in Number 2 automatically upgrade/start the net in/to full operation.

In addition to normal watch/warning type operations, the net control operator may also choose to provide pre-event updates, especially if severe weather is likely to affect the area in the short term (such as that day).

III. Spotters

A. QUALIFICATION:

Severe weather spotting can be a dangerous activity if a basic understanding of thunderstorm structure and behavior is lacking. Spotting should not be attempted without knowledge of these concepts. An amateur radio license does not qualify an individual as a SKYWARN spotter; proper training does.

Therefore, to promote both safety and an overall quality SKYWARN net, it is the position of the National Weather Service and the Ingham County Amateur Radio Public Service Corps that spotters affiliated with Lansing Area SKYWARN will have attended at least one SKYWARN training class of any level at least every other year.

B. REPORTING:

When the net is in standby condition, normal traffic may continue on the frequency. The purpose of the standby condition is to allow SKYWARN personnel to prepare for a possible severe weather event. Spotters should check in, provide all necessary information to net control, report any of the phenomena listed below, and listen for updates from net control. If severe weather becomes imminent, the net will be started in/upgraded to full operation. Nets may be activated in full operation to start with, with little or not time for check ins and other preparations.

When in full operation, the net becomes formal and directed, and the frequency is secured for the sole use of trained spotters and/or emergency traffic. Spotters are asked to report only the following to net control, whether in standby or full operation:

- Tornadoes or funnel clouds
- Wall clouds (specify rotating or non-rotating)
- Shelf or roll clouds
- Wind speeds in excess of 40 mph (specify estimated or measured)
- Hail or any size (specified in inches, NOT as a comparison to an object)
- Storm-related damage (especially if it is life threatening)

When making reports, spotters should always use the T.E.L. (Time-Event-Location) system (in any order). Use of the T.E.L. system eliminates time consuming "Question-Answer" type exchanges between the net control spotters. A properly made report contains all basic information in one

transmission. Here is an example of a report made that contains all T.E.L. information:

SPOTTER: "KC8DJH"

NET CONTROL: "KC8DJH, go ahead."

SPOTTER : "This is KC8DJH. At 6:24 pm, 1 inch hail, 7 miles north of Eaton Rapids."

NET CONTROL: "Copy, KC8DJH."

If the report is current, as most reports are, a reference should be made such as "currently" or "right now".

General phenomena, such as rainfall, lightning, thunder, sky conditions, etc. should never be reported unless specifically called for by net control. Spotters should always listen to the reports of others before making a report. The reports with the most priority should have precedence. In an extremely urgent situation, such as an ongoing tornado or life threatening damage, net control may ask that all lesser reports (such as small hail) be suspended until further notice. If all SKYWARN personnel use judgment before transmitting, the frequency will stay much less congested.

NOTE: An amateur who is not a SKYWARN spotter may make urgent reports via the Lansing Area SKYWARN net, but such reports should be passed to the NWS and other agencies as a "general public" report.

IV. Miscellaneous Information

Lansing Area SKYWARN net frequencies:

Priority	Frequency	Offset	PL
Primary	145.390	-	100hz input
1 st backup (if primary fails)	146.700	-	
2 nd backup (if 1 st backup fails)	146.940	-	100hz input
3 rd backup (if all above repeaters fail)	146.580	s	

Lansing Area SKYWARN

General Information for Spotters

Jaymes S. Kenyon, KC8DJH
Net Control

The purpose of the Lansing Area SKYWARN is to provide useful severe weather-related information to the National Weather Service so that it may better carry out its duty to protect life, property, and commerce in its County Warning Area (CWA) during times of hazardous weather. To help maintain a net that serves this purpose, spotters affiliated with Lansing Area SKYWARN should follow these general guidelines:

- A. BE AWARE OF THE SITUATION.** The net functions in two basic conditions depending on the severe thunderstorm/tornado watch/warning status of Eaton, Ingham, and Clinton counties.

Standby Condition: A severe thunderstorm or tornado watch is in effect for at least one of the above counties. Normal traffic may continue on the frequency. Spotters should check in with all necessary information, move to preferred locations (if desired), provide any reports (listed below) and listen for updates from net control.

Remember...in rapidly developing situations, the net may be activated in full operation to start with, with little or no time for check ins and other preparations.

- B. REPORT ONLY SEVERE WEATHER-RELATED OBSERVATIONS** that are described in training and in supplemental material. The following should be reported to net control, whether in standby or full operation:

- Tornadoes or funnel clouds
- Wall clouds (specify rotating or non-rotating)
- Shelf or roll clouds
- Wind speeds in excess of 40 mph (specify estimated or measured)
- Hail or any size (specified in inches, NOT as a comparison to an object)
- Flooding
- Storm-related damage (especially if it is life threatening)

Use the T.E.L. (Time-Event-Location) system when reporting (in any order). Use of this system eliminates multiple, time consuming exchanges between net control and spotter.

A proper spotter report might go:

SPOTTER: "KC8DJH"

NET CONTROL: "KC8DJH, go ahead."

SPOTTER : "This is KC8DJH. At 6:24 pm, 1 inch hail, 7 miles north of Eaton Rapids."

NET CONTROL: "Copy, KC8DJH."

This provides net control with all necessary information in a very short period of time. If the report is current, simply state "currently" or "right now". If located outside a town, give a direction and miles from the nearest town (e.g., "7 miles north of Eaton Rapids"). If in a small town, simply state the town. If in a large town, such as Lansing, give a general direction reference (such as "Northeast Lansing").

- C. DO NOT REPORT GENERAL PHENOMENA** that is always associated with thunderstorms, such as rainfall, lightning, thunder, sky conditions, etc. Such reports are not needed and only take up valuable time on the air, possibly preventing important reports from being passed in a timely fashion.

- D. USE GOOD JUDGMENT.** Before making a report, listen to the reports of others on the net. Let spotters with the most urgent reports (such as an ongoing tornado or life threatening damage) take precedence over lesser reports (such as small hail). In extremely urgent situation, the net control may ask that all “low priority” reports be suspended until further notice.

- E. DIRECT ALL TRAFFIC TO NET CONTROL.** The net control operator will coordinate spotters, receive reports, provide general updates, and announce National Weather Service statements.

Lansing Area SKYWARN Net Frequencies

Priority	Frequency	Offset	PL
Primary	145.390	-	100hz input
1 st backup (if primary fails)	146.700	-	
2 nd backup (if 1 st backup fails)	146.940	-	100hz input
3 rd backup (if all above repeaters fail)	146.580	s	

Lansing Area SKYWARN Net Operation Plan

Upon INITIAL ACTIVATION...

- This is (Call Sign _____), Lansing Area SKYWARN net control. (Read NWS bulletin).
- To repeat...(Summarize bulletin).
- The Lansing Area SKYWARN net is now activated on this frequency at (time:_____).
- Standby.....

PROCEED TO:

- Standby Status
- Full Operation Status

IN STANDBY CONDITION

(IN-AREA WATCH(ES) WITH NO IN-AREA WARNING(S))

- This is (call sign:_____), Lansing Area SKYWARN net control. (Read NWS bulletin or summarize situation).
- Because severe weather is not an immediate threat to the area at this time, the net (has been downgraded to/ remains in/ is in) standby condition and normal traffic may (continue/ resume) on the frequency. National Weather Service statements will be read periodically by net control. I will now standby for check ins from trained spotters in Ingham, Eaton, and Clinton counties. When checking in, please provide your call sign phonetically along with your location and county.
- This is (call sign: _____) standing by.

ROUTINE:

- Announce any out-of-area- warning(s) upon issuance (optional)
- Announce any in-area-warning(s) upon issuance...go to FULL OPERATION status

In Full Operation (In-area warning(s))

- This is (call sign: _____), Lansing Area SKYWARN net control.
- (Read NWS bulletin or summarize situation).
- Because of ongoing severe weather in the area, the net (has been upgraded to/ remains in/ is in) full operation status. This is a formal and directed net. Please reserve the frequency for the use of trained spotters and emergency traffic. Spotters need not check in at this time. I will now standby for reports of tornadoes, funnel clouds, wall clouds, shelf or roll clouds, wind speeds in excess of 40 mph, hail of any size (in inches), flooding, and storm related damage. Please do not report general rainfall, lightning, thunder, or sky conditions. Use the Time-Event-Location system with every report. Should this repeater fail, the backup frequency is (freq. _____).
- This is (Call sign: _____) standing by.

PERIODICALLY ANNOUNCE:

- This is (Call sign: _____), Lansing Area SKYWARN net control. (Read NWS bulletin or summarize warning situation.)
- The SKYWARN net remains in full operation status. I will now standby for reports from trained spotters of tornadoes, funnel clouds, wall clouds, shelf or roll clouds, wind speeds in excess of 40 mph, hail of any size (in inches), flooding, and storm-related damage. Use the Time-Event-Location system with every report. Should this repeater fail, the backup frequency is (freq. _____).
- This is (Call sign: _____) standing by.

ROUTINE:

- Announce in-area warning(s) upon issuance and expiration/ cancellation.
- If none are still in effect....go to STANDBY status or CLOSE net if no in-area watch(es) is in effect
- Announce any in-area watch(es) upon issuance

UPON CLOSING (IN-AREA WATCH(ES) AND/OR WARNING(S) NO LONGER IN EFFECT

- This is (Call sign: _____), Lansing Area SKYWARN net control.
- (Read NWS statement).
- Because severe weather is no longer a threat in the area, the SKYWARN net is now deactivated at (time: _____) and the frequency is returned for general use. This is (Call sign: _____) clear.

National Weather Service Grand Rapids, Michigan

SKYWARN Frequencies by County

County	Frequency	Offset	Tone
Allegan	147.240	+	
Barry	146.500	147.500 input	
Calhoun	146.660	-	
Clare	147.200	+	
Clinton	147.480	Simplex	
Eaton	147.080	+	
Gratiot	145.370	-	
Ingham	145.390	-	100hz
Ionia	145.130	-	94.8hz
Isabella	147.200	+	
Jackson	146.880	-	100hz
Kalamazoo	147.000	+	94.8hz
Kent	147.260	+	94.8hz
Lake	146.740	-	
Mason	145.470	-	94.8hz
Mecosta	146.740	-	
Montcalm	146.880	-	103.5hz
Muskegon	146.820	-	94.8hz
Newaygo	146.920	-	94.8hz
Oceana	146.640	-	94.8hz
Osceola	146.740	-	
Ottawa	145.490	- <linked> 147.060 +	94.8hz each
Van Buren	147-360	+	
NWS liaison net	145.270	-	94.8hz
...backup	147.260	+	94.8hz

(+) and (-) denote standard 600khz T/R offset

Contact Information

Location Means

Lansing ECC Phone 483-6957

Radio 146.580 simplex

Ingham County ECC Phone ???-????

State of Michigan EOC 336-2037

NWS GRR 800-647-3836

Radio 145.270- 94.8 (callsign WX8GRR)

Radio (backup) 147.160+

Favorable storm conditions

- (1) Dewpoint of 60 degrees or higher**
- (2) Cold or warm front approaching**
- (3) Overcast layer dissipates by mid-day (indicates adequate warming)**
- (4) Sky color is milky blue**
- (5) Brisk wind from E, SE, S, or SW**
- (6) Presence of tufted altocumulus clouds**
- (7) Building cumulus clouds**
- (8) Strong jet stream from SW, W or NW**
- (9) Crisply defined cloud towers**

Beaufort Wind Speed Scale

Wind Speed Effects

Calm	Smoke rises vertically. Tree leaves are quiet.
1-3	Smoke drifts
4-7	Wind is noticeable on face. Wind vanes move. Leaves rustle.
8-12	Light flags “fly”. Force of wind is noticeable when walking. Twigs move.
13-18	Dust and loose paper move. Dry snow drifts. Small branches move.
19-24	Dust and loose snow fly to several feet in height. Small trees sway.
25-30	Loose clothing flaps. Blowing snow flies high. Large branches move. Wind whistles in utility wires.
30-40	Large trees move. Small twigs break off.
40-50	Walking is difficult. Half inch limbs break. Some shingles blow off roofs. Garbage cans and lawn furniture blow around.
50-60	Driving is difficult. Two inch limbs break. Many shingles blow off roofs. Metal lawn buildings blow around. Chimneys and TV antennas may be damaged. Open garages, sheds and pole barns may trap enough wind to be damaged.
60-70	Six inch limbs break off. Utility wires blow down, or are damaged by falling tree matter. Shallow rooted trees topple. Pole buildings are destroyed.
70-110	Some roof surfaces are peeled off. Windows break due to wind pressure. Mobile homes overturn. Well rooted trees snap off or topple. Moving automobiles are pushed off the road.
110-160	Mobile homes are destroyed. Roof structures are torn off of houses. Many well-rooted trees are snapped off or toppled. Railroad boxcars tip over.
160-210	Frame houses are destroyed. Trains overturn. Steel frame buildings are torn. Automobiles are lifted and moved short distances. Forests are levelled.
210-260	Steel buildings are severely damaged. Trees are debarked by flying debris. Cars and trains fly or roll significant distances. Medium sized objects such as branches or poles become flying missiles.
260-320	Entire houses are moved as units. Steel reinforced concrete structures are badly damaged. Large objects such as trucks, buses and railroad cars become flying missiles.

