

# CT ARES – Region 2

## Personal and Family Preparedness

CT ARES - REGION 2  
ZONE MAP  
12-19-2011





# Personal and Family Preparedness

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- I. Prevent a 'Personal' Disaster
- II. ARES Communications Plans
- III. Good Amateur Radio Operating Practice
- IV. Individual Equipment Recommendations
- V. "Go Box" - "Go Kit" - "Go Bag"
- VI. "Walkabout Gear"



# Objectives

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At the end of this course you will be able to:

- ❖ Explain what is most important in disaster preparation
- ❖ List the steps in family preparedness
- ❖ List the ARES preparedness steps
- ❖ Explain why frequency planning is important
- ❖ List the equipment recommendations for ARES operation



# I. Prevent a 'Personal' Disaster

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- Any community can be affected by a disaster  
– don't let it become 'your' disaster
- **Family comes FIRST**
  - **Your family must be self-reliant**
    - You can't adequately perform your ARES/RACES duties unless you KNOW your family will be safe
  - **Develop a plan with your family**
  - ***Then,*** you can concentrate on your task



# I. Prevent a 'Personal' Disaster (cont.)

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- Step One - Determine the hazards your community faces.
  - Natural: Floods, tornadoes, fires, earthquakes
  - Technological: HAZMAT releases, pipeline breaks, power failures
  - Resource Shortages: Drought, water or fuel shortages
  - Other Consequences: Criminal acts, Civil unrest, Terrorism



# I. Prevent a 'Personal' Disaster (cont.)

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- Step Two - Obtain knowledge of how to cope with known hazards
  - **What** are the recommended evacuation routes?
    - Shelter locations and directions will be determined at the time of evacuation
  - **Whom** would you call?
  - **Where** would family members meet if they become separated?
  - **How** would you and your family members get together?



# I. Prevent a 'Personal' Disaster (cont.)

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- Step Three – Develop a Family Disaster Plan
  - **Neighborhood Refuge**
    - Neighbor *within walking distance*
    - Safe for children when you aren't home
    - Meet and account for everyone after a fire
  - **Farther Away Friend**
    - Use as alternative to public shelter
    - "Out of Area Contact" - If family becomes separated, this party agrees to accept collect calls from everyone to assure they are save



## I. Prevent a 'Personal' Disaster (cont.)

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- Ensure that your family members know how to shut off:
  - Electricity
  - Gas
  - Water

**At the main sources**, should they need to evacuate





## II. ARES Communications Plans

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- ROUTINE Simplex Operations
  - Repeaters are for *backup*
  - Not for use as the primary incident working frequency
  - Reserve repeaters for traffic requiring wide area coverage



## II. ARES Communications Plans (cont.)

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- Establish **LOCAL** Plans
  - Contingency plans for operations
  - After disaster-related loss of repeaters
  - Test regularly in exercises
- **Standardize** Radio Frequencies
  - Program radios with the frequencies and memory channels found in the Region 2 Radio Communications Plan (ICS-205)



## II. ARES Communications Plans (cont.)

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### **The Region 2 Radio Communication Plan (ICS – 205)**

**is Found in the**

**CT ARES – Region 2  
Emergency Operation Plan**  
Pages 10 - 15 (& Pages 16 - 18)



## II. ARES Communications Plans (cont.)

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- Why Do We Need Simplex?
  - **Essential** for **local** ARES operations
    - Reduces congestion – keeps repeaters available for high priority messages
    - Repeater non-availability due to disaster damage
    - AC failures deplete battery backup after outage

## II. ARES/RACES Communications

### Plans (cont.)

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- Why Do We Need Simplex? (cont.)
  - **It Does NOT** tie up a Regional/Area repeater asset for local area activities
    - Use only when wide-area coverage is needed
  - **Use** drills to hone skills
    - Practice in simulated emergency conditions
  - **Ideal** for localized events and activities



## II. ARES Communications Plans (cont.)

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- Simplex Awareness
  - **Where** is the `reverse' button?
  - **Don't** hog the repeater for local rag chews
  - **Use** repeater to make initial contact
  - **Then... Listen** to the repeater input
    - **IF** both stations have good copy...
    - **THEN** change to Simplex, but...
    - **PLEASE...** respect the band plan!



## II. ARES Communications Plans (cont.)

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- Become Familiar With Appropriate Simplex Frequencies
  - Not “coordinated,” – “gentlemen’s agreement”
    - Reduces interference during local operations
    - Relinquish during ARES operations
    - Normal amateur usage *encouraged* at other times
    - Encourage routine monitoring for preparedness



## II. ARES Communications Plans (cont.)

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- Become Familiar With Appropriate Simplex Frequencies (cont.)
  - Observe band plans
    - Use standard channelization!
    - Doing so reduces adjacent channel interference
    - All routine use, drills, non-emergency operations
    - Use pre-assigned freqs for local ops





# III. Good Amateur Radio Operating Practice

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- LISTEN before keying up
  - Monitor so you don't "step on" other users
  - Avoid unnecessary output power
    - Splattering and over-deviation
  - Appropriate use of cross-band repeat
    - Routine use of CTCSS (Continuous Tone Coded Squelch System) to reduce interference



## III. Good Amateur Radio Operating Practice (cont.)

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- Portable/Temporary repeaters
  - Use the Shared-Non-Protected pair w/CTCCS
- Regional tone/'splinter channel' plans
  - Enables multi-jurisdictional sharing of limited UHF frequencies for local incident area 'talk-around'



## III. Good Amateur Radio Operating Practice (cont.)

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- Don't Expect Repeaters to "Always Be There"
  - **DON'T depend on an HT as your only rig!**
    - **Inadequate as a 'primary' rig for emergencies**
    - Limits you mostly to nearby repeaters
    - Severely limits your useful simplex range
    - Typical "rubber duck" is -5 dB!
      - Average HT simplex range is 1 – 2 miles



## III. Good Amateur Radio Operating Practice (cont.)

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- Don't Expect Repeaters to "Always Be There" (cont.)
  - EVERYONE still needs an **HT for "Walkabouts"**
  - EVERYONE still needs an **HT as a spare, or backup!**



## III. Good Amateur Radio Operating Practice (cont.)

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- **Local Nets Are Training Opportunities**
  - Do more than just collect names on a roster!
  - Teach and routinely use directed net procedures
  - Rotate NCS (Net Control Station) operators so everyone learns how
  - Generate and handle some formal written traffic
  - Encourage operators to use emergency power



## III. Good Amateur Radio Operating Practice (cont.)

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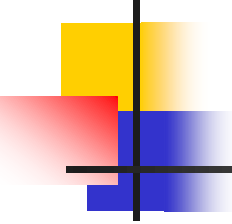
- Local Nets Are Training Opportunities (cont.)
  - Practice setting up in field/mobile locations
  - Leave breaks so others can make contacts
  - Encourage “weak signal” capability and LISTEN!
  - Test limits of coverage, teach operators to call for and relay outlying stations as a matter of routine



## IV. Individual Equipment Recommendations

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- Emphasis on RELIABILITY
- 24 hours minimum battery power
- Dual-band Radio (144/440 MHz)
- Mobile/Portable/Base capability
- 25 watts minimum RF output

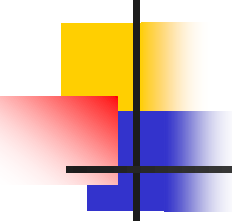


## IV. Individual Equipment Recommendations (cont.)

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- Recommend a Mobile Rig Because
  - Reliable simplex capability
  - Is less dependent upon the repeater infrastructure
  - Has higher power capability





## IV. Individual Equipment Recommendations (cont.)

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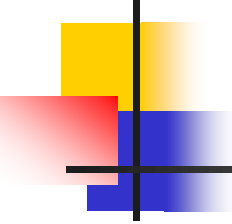
- Basic Rig Should Be Capable of
  - Operating on 12-15V DC power (battery capable)
  - “Low” (~5W battery conserve) and
  - “High” (25W min. RF output for reliable simplex)
  - Frequency agile, field programmable, w/CTCSS
  - Cross-band repeat - not essential, but desirable
  - Minimum 10 spare field-programmable memories
  - Portable/Mobile HF desirable
  - Data Communications capability & skill highly desirable



## IV. Individual Equipment Recommendations (cont.)

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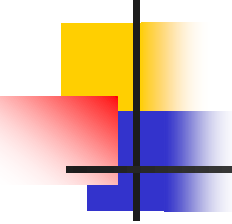
- When IS a Portable Unit (HT) is Best?
  - When taking public transportation
  - You are a minor who doesn't drive
  - You have impaired mobility or depend on others to conduct basic life activities
  - You are to act as a "shadow" for some person or official
  - When logistics inhibit transport/use of a mobile rig



## IV. Individual Equipment Recommendations (cont.)

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- HT User's Supplemental Equipment
  - 1/2 wave 'no-ground-plane' ant., unity gain
    - Equal to a 1/4 wave ant. with ground plane
    - 2.15dB gain if used with ground plane
    - Dual-band mobile antenna + Mag. Mount
    - Telescoping 1/2 wave whip, or...
      - Roll-up 300 Ohm twin-lead, or copper J-pole (works well in tree or on bike or wheelchair)
  - "Tigertail" HT counterpoise



## IV. Individual Equipment Recommendations (cont.)

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- HT User's Supplemental Equipment (cont.)
  - 5/8 wave mobile ant. + mag. mount, 3dB gain, with mast clamp & radial kit
  - If no ground plane, improvise
    - Metal vehicle, file cabinet, trash can, railing, etc.
  - Radial kit and mast clamp for your mobile ant.
  - TV/Speaker tripod and 16' of mast + mallet, stakes, and guys



## IV. Individual Equipment Recommendations (cont.)

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- HT User's Supplemental Equipment (cont.)
  - Dual Band "Gain" Base Antenna (~ 5' tall)  
(e.g. Jetstream JTB-3, Comet GP-3)
  - 16' Mast (+ mallet, stakes, guys)
  - Tripod (+ 3 sandbags)
  - 50' Coax (LMR 400 – Bury/Flex)
  - Jumper coax + adaptors (for HT & Antenna)

# IV. Individual Equipment Recommendations (cont.)

## "Mighty Duck"

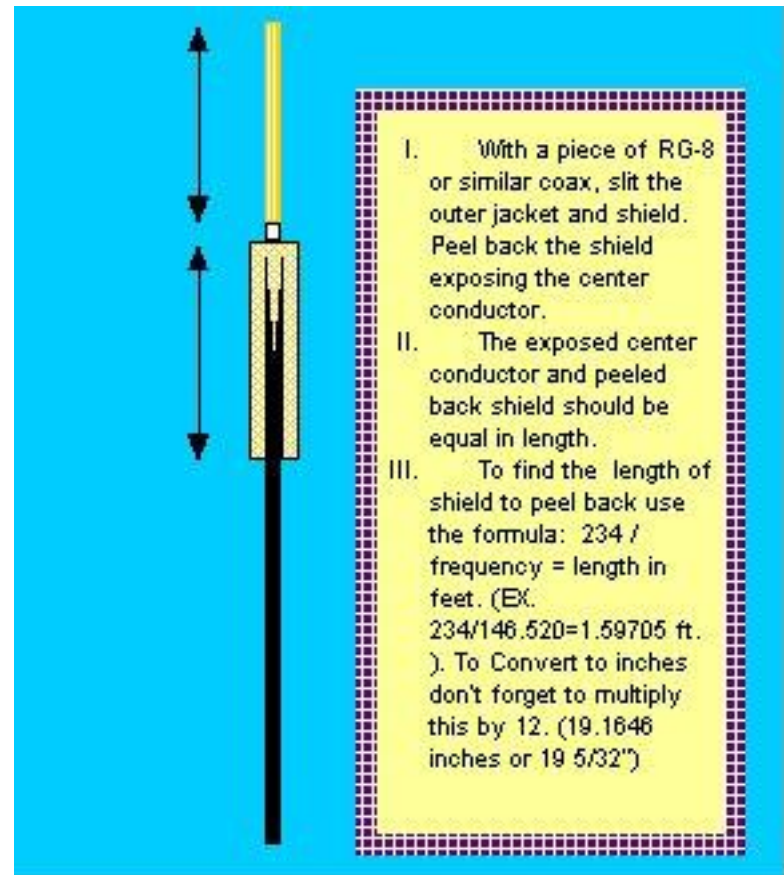
July 2003 QST Hints & Kinks Section

By K1GAX



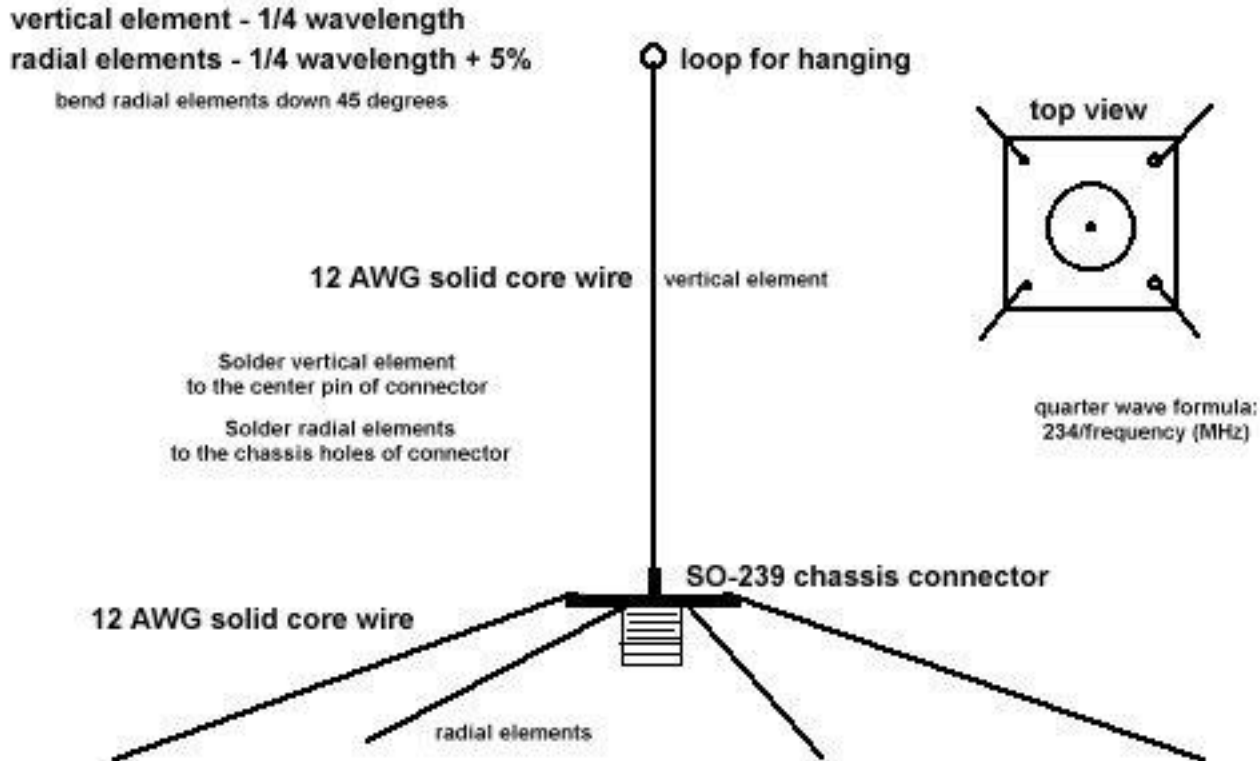
## IV. Individual Equipment Recommendations (cont.)

### Coaxial $\frac{1}{4}$ Wave



# IV. Individual Equipment Recommendations (cont.)

## 1/4 Wave Vertical



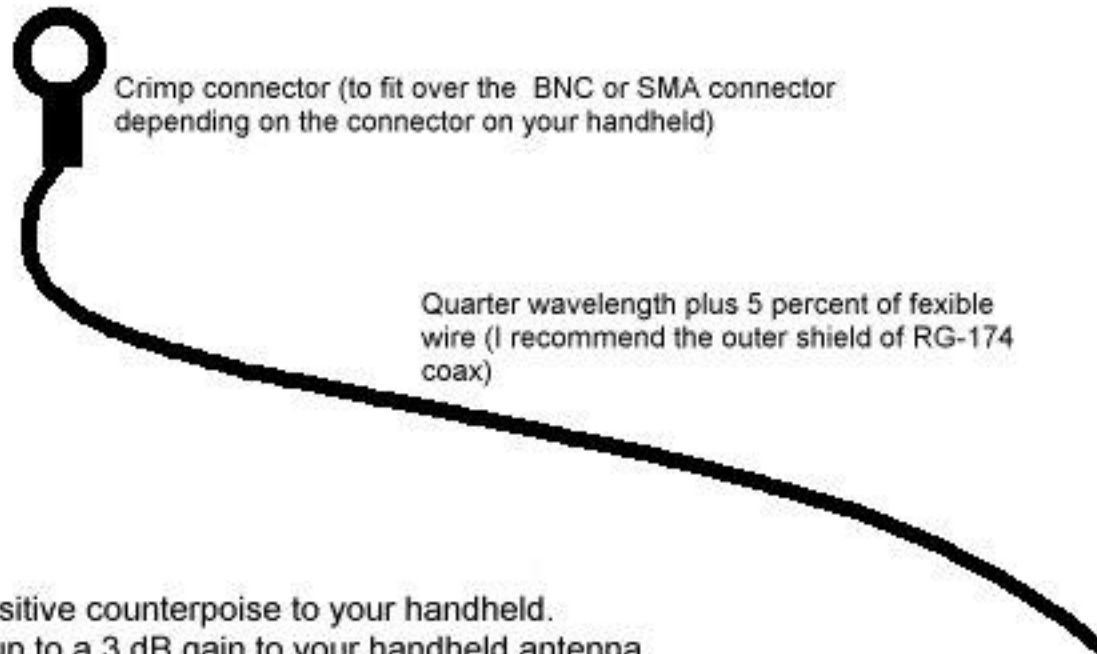


# IV. Individual Equipment Recommendations (cont.)

## Tigertail

quarter wave formula:  $234/f$  (MHz)

Tiger Tail

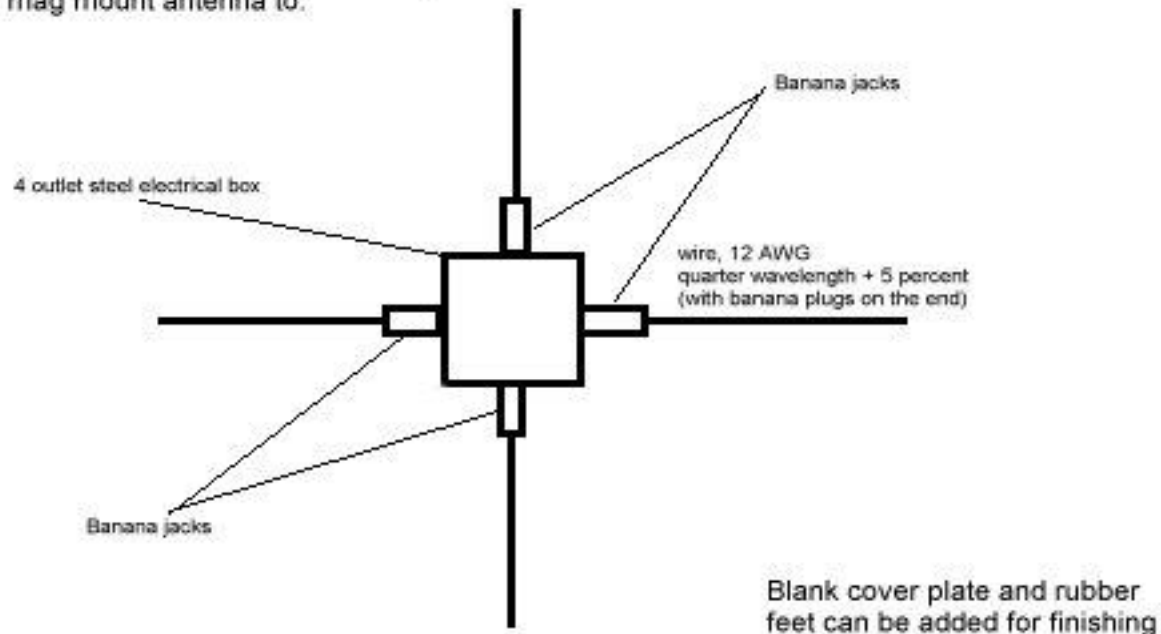


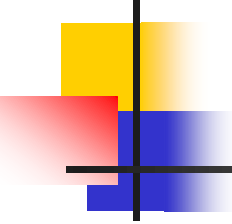
# IV. Individual Equipment Recommendations (cont.)

## Mag Mount Counterpoise

### Mag mount counterpoise

For those times when you have no metal object to attach your mag mount antenna to.

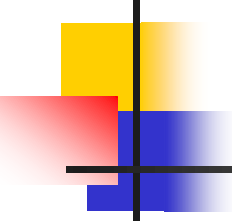




## IV. Individual Equipment Recommendations (cont.)

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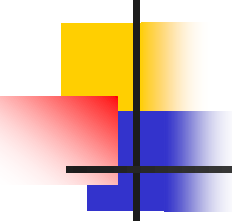
- For 146.5 MHz, TV Twin-Lead J-Pole and 2M Omnidirectional  $\frac{1}{2}$  Wave Colinear Antennas



## IV. Individual Equipment Recommendations (cont.)

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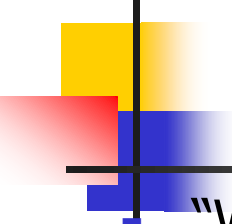
- HT User's Supplemental Equipment (cont.)
  - Auxiliary power cord – power rig from vehicle battery or external gel cell battery
  - Gel cell or AGM battery able to power rig at 5W for 24 hours.



## IV. Individual Equipment Recommendations (cont.)

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- “Walkabout” – Portable HT Battery Recommendations
  - ***Minimum:*** NiCd/NiMH + AA auxiliary power source
    - Large capacity (1000mAh) NiCd/NiMH packs – two minimum
    - + AA case
    - TWO spare sets of AA alkaline batteries
  - **Consider using AA battery power initially**

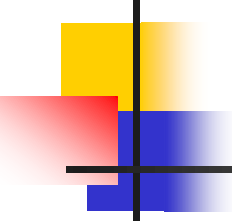


## IV. Individual Equipment Recommendations (cont.)

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■ “Walkabout” – Portable HT Battery Recommendations (cont.)

- ***Highly Recommended:*** Auxiliary power source in addition to above, such as:
  - SLA (Sealed Lead Acid) battery of 7 Ah capacity
  - External adaptor cord to run HT from battery or auto cigarette lighter/auxiliary plug
  - Anderson Power Poles for DC Power Connectors



## IV. Individual Equipment Recommendations (cont.)

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- **How do we Keep Going?**
  - **CONSERVE** batteries by using:
    - MINIMUM reliable transmit power
    - SHORTEST run of low loss feed line
    - Most EFFICIENT practical antenna
  - Do NOT run car engine to charge batteries
    - Wastes gasoline in real emergency
    - Equip vehicle with dual batteries
      - Isolator diodes or solenoid and means of external charging, entirely “off the grid”

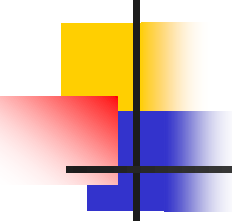


## IV. Individual Equipment Recommendations (cont.)

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- What is “Emergency Power?”
  - **“The ability to sustain continuous communications for as long as required, fully independent of AC mains”**
  - Batteries are “auxiliary”
    - not “emergency” power
    - Finite capacity, limited depth of discharge
    - Require regular load testing & recharging

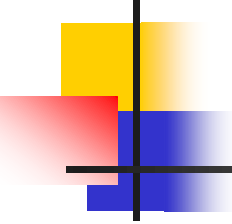




## IV. Individual Equipment Recommendations (cont.)

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- **What is “Emergency Power?”** (cont.)
  - All ARES operators should be ready power for 24 hours MINIMUM (48+ hours for certain personnel).
  - How would you operate for a week?

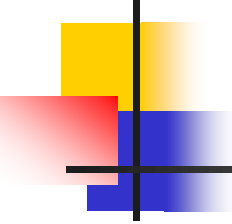


## IV. Individual Equipment Recommendations (cont.)

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### ■ **Summing Up**

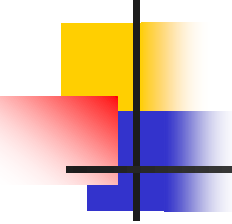
- 24 hrs. of battery capacity for EVERYONE
  - One Ah for each watt of transmitter output
- Inspect/test batteries and equipment weekly
- Use local Simplex nets for equipment checks
- Do regular operator training “On The Air”



## IV. Individual Equipment Recommendations (cont.)

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- **Summing Up** (cont.)
  - Gain antennas, outside whenever possible
    - As high up as you can get them
    - Low loss feed line
    - High place to operate, away from power lines
  - **GOAL:** Highest ERP (Effective Radiated Power) for station efficiency



## IV. Individual Equipment Recommendations (cont.)

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- **Summing Up (cont.)**
  - **Get your message through the first time**
    - Don't waste others' batteries repeating fills and relays because you have a weak station
  - **When everyone is adequately trained and equipped**
    - ARES can provide effective and efficient emergency communications independent of repeater infrastructure



# V. "Go Box" - "Go Kit" - "Go Bag"

Foundation - Support - Sustain

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## **"Go Box"**

- A portable radio station in a "Grab & Go" box.

## **"Go Kit"**

- Supplies needed to support the radio station
- (Batteries, Antenna, Coax, Adapters, VOM, Tape, Soldering iron, Tools, etc.)

## **"Go Bag"**

- A backpack/case capable of sustaining you for 3 days (i.e. Clothing, Shelter, Sleeping bag, Food, Cook Stove, etc.)



# VI. Walkabout Gear

## Three Levels Which Build on Each Other

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- **Level I** – Carried at all times; suggestions
  - Cell phone or pager (if used for alerting)
  - Driver's license
  - Cash (Stores, vending machines, etc.)
  - HT & FCC license copy
  - Small flashlight (AA Mini MagLite, Lithium LED Inova X5, etc.)
  - Utility pocketknife
  - Lighter or matches
  - Eyeglasses (if needed for close work)



# VI. Walkabout Gear

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- **Level II** – Equip., Comfort & Safety items
  - HT (if not carried at Level I) w/accessories
  - ARES Materials (Info., Forms, Field Manual Note Book, pens/pencils, etc.)
  - AA battery case for HT & spare batteries
  - Personal first aid kit
  - Personal medications
  - Water bottle & snacks for one day



## VI. Walkabout Gear (cont.)

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- **Level II** (continued)
  - City/County road maps
  - USGS 7.5 min. topographical map
  - Water, 1 qt. Min. and one meal
  - Rain gear
  - Extra “warmth” layer
  - Sunglasses, sunscreen





## VI. Walkabout Gear

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- **Level III** – PPE (Personal Protection Equip.)
  - Hardhat
  - Reflective vest
  - Safety glasses
  - Dust mask (N-95 recommended)
  - Work boots with ankle support
  - Leather work gloves
  - Medical exam gloves
  - Larger 4AA primary flashlight & extra batteries



## VI. Walkabout Gear (cont.)

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- **Level III** (continued)
  - First aid kit
  - Compass
  - Food – 2 meals
  - Signaling materials
  - Foul Weather Gear
  - Knife &/or multi-tool
  - Map(s)
  - Emergency shelter (Poncho, garbage bag)

# Personal and Family Preparedness Adapted liberally from...

