

# Orange County Radio Amateurs

April 6, 1993

"Service Through Communications"

Volume 2, Number 4

## Remember the Boy Scout's Motto?

By Jeff Anderson, KD4JIA

November 23, 1992. 3:57 a.m.

The telephone rings. Yes, I said 3:57 a.m. Who in the heck would call at 3:57 a.m.? Probably a wrong number. Should I answer it?? Naah - couldn't be anyone I know at this hour. It rings again..... OK, OK already!

"Hello??" "Jeff - it's Steve, KZ1X. A tornado just touched down in Hillsborough. 147.225's not working. Here's who I've already called - I'm on the way to the EOC - see ya there."

First thought ... If this is an ARES drill, Steve and I need to have a little chat. A long little chat.

Second thought... not even Steve would call a drill at 4 a.m. ... OK - where's my phone list?

After several minutes of searching for my phone list, I call several hams on the sheet. After five calls, I get five different responses, which range from "I'll be right there" to "Are you nuts?!? - It's 4 a.m.!" - followed by a click.

Better get moving. Susan's already made coffee. Where's my HT? Think it's somewhere in the living room. Oh, good ... there it is. Is it charged?? I hope so. Extra battery? Well, I've been meaning to get one. OK - better find something to write with. And something to write on. Might need something to drink in case I'm there a while .... hmmm. I quickly rummage through the fridge and find some canned drinks. Guess I should get some extra coax and an outside antenna for the HT. I search the shack, and finally find one. (continued on page 8)

## Upcoming Hamfests

April 4 ..... Raleigh, NC  
April 23, 24, 25 ..... Dayton, OH  
May 23..... Durham, NC  
June 12 ..... Winston Salem, NC  
July 17..... Cary, NC  
July 24, 25..... Asheville, NC  
August 7, 8 ..... High Point, NC  
August 21 ..... Spruce Pine, NC  
September 4, 5 ..... Shelby, NC

## Lightning, Ohms Law, and the Radio Amateur

By Peter Hallenbeck, WA1YYN

### Lightning:

It's getting to be that time of year again. As you move lower in frequency, you hear more static. The first time or two you hear a thunder storm, you'd swear that the thunder was never louder.

For new hams, the first year you have your ticket brings on a whole new set of rules with each season. Propagation changes, the time of sunset (and hence more propagation changes) moves, and you discover just how much the weather affects your radio life.

Unfortunately, weather can also terminate your radio life. And we're not talking 50 ohm termination here, we're talking 10-0. Kaput. LEDs off. Ten toes up.

Of course by now you know I'm talking about the dangers of lightning. And the danger ranges from equipment damage to loss of property (as your house burns down) to a loss of life. Much has been written about this subject, and it is dealt with quite well in both the Radio Amateurs Handbook and the ARRL Antenna Book. The intent of this article is to make you aware of the problem.

(continued on page 2)

## OCJRA Corner

by Michael Severini, KC4NVS

OCJRA had its last meeting on March 16th. Rob, WA3ULH, gave us a very informative lecture on DX for new hams. Thank you Rob for your expert advice.

We are still trying to find a permanent location for our meetings. I have been talking to Nick Waters about maybe getting a permanent meeting place at the EMC. If that doesn't work out, we may have some other possibilities.

Field day is right around the corner, and we are working hard getting all the equipment that we need. Along with the 40/15 station, we will be also manning the 10 meter station. (continued on page 6)

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## **Lightning** - continued from page 1

### **Ohms Law:**

So where does ohms law come into the picture? As Ross Perot would say, "Stick with me here." One of the problems with lightning is that it is out of the realm of our everyday experiences. We work with 12 and 120 volts, not 100 million. Currents (and fuses) are 3, 8 or 25 amps, not 50 thousand. So while we may be overwhelmed by the size of lightning, ohms law is not. Ohms law tells us that the twenty foot long piece of number 12 wire we are using for a safety ground will have over 1500 volts on it if it takes a lightning strike. The power law tells us that the power dissipated in the wire (voltage x current = 1500 x 50,000) will be 75 megawatts. We don't need a law to tell us that that much power in a number 12 wire vaporizes it and burns down the house. The point here is to be very careful. Our everyday experiences don't extrapolate well into home brew lightning protection.

### **The Radio Amateur:**

We radio amateurs are in a world of control. We control our rigs, have computers under our control control our rigs. We can event rig our rigs to control our computers. One thing we can not control is lightning.

Imagine a charge/voltage so large that it can jump an air gap of a few miles. Imagine the discharge of this charge: Millions of volts, at tens of thousands of amps streaking through the sky until it finds your antennae. Now here is the amazing part. Some Hams think that if they unplug the coax from their rig, that the lightning will streak across the sky dissipating millions of watts of energy, find their antennae, come screaming down the coax (vaporizing it as it goes), get the PL-259 connector at the end, and then say ""Gosh, there is three feet between me and that rig (or wall outlet or person). Boy, there is no connection here. Guess I'll go back up into the sky and try again. Darn."

If you think that just unplugging the coax will stop lightning, here is another relevant safety tip. Don't ever try to stop a speeding freight train with a wall of tissue paper. I know this is an absurd analogy. From an energy point of view, you would have better luck stopping the train than getting the lightning to go back up the coax. So the point here is that you can't apply your common sense to lightning, and you are dealing with a lot of energy here. Don't taunt something that can hit a pine tree and in twenty thousands of a second heat up the interior of the tree so much that all the water turns to high pressure steam and explodes the tree.

### **Now that I have your attention...**

What you can do is to read up on the subject. A brief summary of things you can do is presented here, but you really must read the real stuff and not go totally by this text (there, my lawyer is happy now). There is one thing that can tame lightning. You can't own it, but you have one. It's too big to carry, but it is in your back yard. It is called the Earth (you know, third planet on the left as you leave the solar system). The Earth is massive enough that it can suck up a lightning bolt and not get an upset stomach. It is the only thing you have access to that is on a scale with lightning.

We already know you can't control lightning. What you can do is remember that even lightning must obey Ohms law. Also, remember that lightning is a part of nature and thus takes the path of least resistance. So the goal is: "Give lightning a chance to visit the Earth before it visits the inside of your house."

Lightning goes to a lot of trouble to reach the Earth. It creates an arc over thousands of feet of air to reach it. The question "where does an 800 pound gorilla sit" (answer: anywhere it wants) provides the answer as to what to do with lightning. Any natural phenomenon that can generate whatever juice it takes to arc over miles of air is not to be trifled with. If it wants to go to ground, don't argue. Even if it's a tie, you lose.

Take the feedline going into your house and drop it to ground first. Make sure the outside of the coax connects with a ground rod. Then, after the ground rod, bring the coax back up and into the house. In doing so, you create a "lightning dilemma." Once the bolt finds ground (and remember what extremes it went to do so), it will be less likely to go back up and into your shack. Note the wording there. "LESS LIKELY." If only a tenth of the power comes back up into your shack, now you only have 7,500,000 watts to deal with. If the voltage has come down to only 50,000 volts or so, that three foot gap between the coax and the rig is now a bit more daunting.

If you still are a bit nervous about having 50,000 volts and 7.5 megawatts in your house, good. This is why you really need to worry about this stuff. More ground rods, heavy connecting wire, and a loop of coax AFTER the ground rods on the ground can all improve your odds.

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## Top Ten Reasons Why People Don't Do Lightning Protection:

- 10) I probably won't get struck. (Someone has to.)
- 9) I don't have time. (Death cuts into your free time)
- 8) It's too expensive. Here is the cost:

Ground Rods	\$10.00
Extra Coax (per foot)	.20
4 Gauge Wire (per foot)	.50
<b>Approx. cost of Protection:</b>	<b>\$ 45.00</b>
- 7) The extra coax will give me too much signal loss.  
(You can't send QSL cards from Heaven)
- 6) The barrel connector at the ground rods will bring up my SWR and degrade my signal.  
(See number 7)
- 5) It's too much work to drive in the ground rods.  
(Poor Baby! Find someone to help you. All you have to do is ask.)
- 4) How do I know it will work?  
(Let me give you a sheet of tissue and tell you when the Kansas City Super Chief comes through)
- 3) The trees will protect me.  
(Wrong! Remember - they exploded twenty thousands of a second into this ordeal.)
- 2) God will protect me. (God only watches over fools and Irishmen. See number 1)

And finally,

- 1) **I AM AN IDIOT AND DON'T CARE.**  
(Darwin says that lighting can be a natural selection mechanism.)

So there you have it. The creationist and evolutionary view of lightning protection.  
Note that both schools lead to the same conclusion:

## **YOU MUST HAVE A LIGHTNING PROTECTION PLAN.**

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*OCRA exchanges newsletters with several other Amateur Radio organizations around the country. This has been an excellent opportunity for us to pick up new ideas not only for our own newsletter, but also new ideas which relate to other facets of the Club.  
I would like to take this opportunity to say "thank you " to the newsletter editors around the Country who send their newsletters each month. I hope this process is as helpful to your club as it is to OCRA.  
Here are some off the groups with whom we exchange newsletters:*

**Durham FM Association - Durham, NC**  
**Raleigh Amateur Radio Society - Raleigh, NC**  
**Azalea Coast Amateur Radio Club - Wilmington, NC**  
**Oregon Tualatin Valley Amateur Radio Club - Aloha, Oregon**  
**Cochise County Amateur Radio Association - Sierra Vista, AZ**

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## **Some suggestions for your emergency "go kit"**

As hams we should all work toward being able to respond quickly when we are asked to respond in the event of an emergency. The last two disasters Orange County ARES members have been asked to respond to should serve as an indicators that when we are needed, we are needed quickly, regardless of whether or not it's "convenient".

Hams in general, and especially hams that have volunteered for ARES, should be prepared to move out quickly when called upon. Having a "go kit" already packed is one way to get out the door faster, and reduces the chance of getting there without the things you need to do your job.

Here is a list of things you may want to have handy. This list is based on the one from "The ARRL Handbook", and is therefore rather complete, so use you own good judgement as to what you need in your own kit.

- 1) **ARES ID Card/Parking Pass**
  - 2) **A copy of your Ham License**
  - 3) **Radio Gear**
    - a) HT or other radio
    - b) microphone or Speaker Mic
    - c) headphones or Earphone
    - d) extra Battery
    - e) power Supply
    - f) antennas with mounts
    - g) spare fuses
    - h) patch cords/adaptors
    - i) SWR meter
    - j) extra coax
  - 4) **Writing Gear**
    - a) pens/pencils/paper
    - b) clipboard
    - c) message forms
    - d) logbook
    - e) note paper
  - 5) **Personal Gear (short term)**
    - a) snacks
    - b) liquid refreshments
    - c) medicine/throat lozenges
    - d) aspirin
    - e) extra prescription glasses
  - 6) **Personal Gear (long term)**
    - a) foul weather gear
    - b) 3 day supply of drinking water
    - c) cooler with 3 day supply of food
    - d) mess kit with cleaning supplies
    - e) first aid kit
    - f) sleeping bag
    - g) toilet kit
    - h) battery or mechanical alarm clock
    - i) flashlight with extra batteries
    - j) candles
    - k) waterproof matches
  - 7) **Tool Box**
    - a) pliers
    - b) screwdrivers
    - c) socket wrenches
    - d) electrical tape
    - e) 12/120 V/butane soldering iron
    - f) solder
    - g) volt/ohm meter
  - 8) **Other**
    - a) hatchet/ax
    - b) saw
    - c) pick
    - d) shovel
    - e) jumper cables
    - f) rope
    - g) highway flares
    - h) extra gasoline and oil
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# Afraid of Traffic?

Passing your first piece of formal traffic can be just as intimidating as making your first contact on the air. A number of OCRA members have indicated that one of the reasons that they haven't yet signed up to be a Net Control Station is that they don't understand how to file a Net report with the Net Manager. Well, here is how to do it in a nutshell.

\*\*\* Disclaimer \*\*\*

This is not intended to be a complete set of instructions on traffic handling, rather an aid to the ham who has never passed formal traffic before, and just needs a little help getting started.

When reading or sending traffic over the air, one would read the traffic as follows after getting the "ready to copy" indication from the receiving station.

**"FOLLOWS MY NUMBER ONE** (message number that you assign) **ROUTINE, KD4JIA** (use your own call here), **TWELVE**, (The number of words or groups in the TEXT of the message) **MEBANE, NC**" (Your own city & state)

**April Figure 03, 1993"** (Date of Message, expressed as a number)

**"WD4LOO, break"** (The call sign of the station receiving the traffic) (After saying "break", wait for the receiving station to acknowledge receipt of preamble & addressee)

**"OCRA ARES NET SATURDAY FEBRUARY FIGURES 27** (the date) **QNI FIGURES 26** (number of check ins) **QTC FIGURE ONE/SLANT BAR FIGURE ONE** (Pieces of Traffic Listed/Pieces of Traffic Passed) **QND FIGURES 30** (Net Duration in Minutes) **BREAK"** (After saying "break", wait for the receiving station to acknowledge receipt of text)

**"JEFF. (your name) END. NO MORE"** (indicates end of message)

NUMBER <b>1</b>	PRECEDENCE <b>R</b>	HX	STATION OF ORIGIN <b>KD4JIA</b>	CHECK <b>12</b>	PLACE OF ORIGIN <b>MEBANE, NC</b>	TIME FILED	DATE <b>APR 3, 93</b>
TO <b>WD4LOO</b>						THIS RADIO MESSAGE WAS RECEIVED AT	
						AMATEUR STATION	PHONE
						NAME	
						STREET ADDRESS	
						CITY AND STATE	
TELEPHONE NUMBER							
<b>OCRA</b>	<b>ARES</b>	<b>NET</b>	<b>SATURDAY</b>	<b>FEBRUARY</b>			
<b>27</b>	<b>QNI</b>	<b>26</b>	<b>QTC</b>	<b>1/1</b>			
<b>QND</b>	<b>30</b>						
<b>JEFF</b>							
REC'D	FROM	DATE	TIME	SENT	TO	DATE	TIME
THIS MESSAGE WAS HANDLED FREE OF CHARGE BY A LICENSED AMATEUR RADIO OPERATOR WHOSE ADDRESS IS SHOWN IN THE BOX AT RIGHT ABOVE AS SUCH MESSAGES ARE HANDLED SOLELY FOR THE PLEASURE OF OPERATING NO COMPENSATION CAN BE ACCEPTED BY A "HAM" OPERATOR A RETURN MESSAGE MAY BE FILED WITH THE "HAM" DELIVERING THIS MESSAGE TO YOU FURTHER INFORMATION ON AMATEUR RADIO MAY BE OBTAINED FROM A.R.R.L. HEADQUARTERS 225 MAIN STREET, NEWINGTON CONN. 06111				THE AMERICAN RADIO RELAY LEAGUE INC IS THE NATIONAL MEMBERSHIP SOCIETY OF LICENSED RADIO AMATEURS AND THE PUBLISHER OF QST MAGAZINE ONE OF ITS FUNCTIONS IS PROMOTION OF PUBLIC SERVICE COMMUNICATIONS AMONG AMATEUR OPERATORS TO THAT END THE LEAGUE HAS ORGANIZED THE NATIONAL TRAFFIC SYSTEM FOR DAILY NATION WIDE MESSAGE HANDLING			
				PRINTED IN U.S.A.			

April 1993

# Orange County Radio Amateurs

Sun      Mon      Tue      Wed      Thu      Fri      Sat

				<b>1</b>	<b>2</b>	<b>3</b> 9:30 AM Orange County ARES Net 147.225 + Net Control N0RXK
<b>4</b> RAleigh ARS Hamfest	<b>5</b> Orange County EOC 7:00 PM OCRA Club Meeting	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b> 9:30 AM Orange County ARES Net 147.225 + Net Control KD4SLD
<b>11</b>	<b>12</b> 8 PM 10 Meter Net 28.360 USB	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b> 9:30 AM Orange County ARES Net 147.225 + Net Control WA1YYN
<b>18</b>	<b>19</b> 8 PM 10 Meter Net 28.360 USB	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b> Dayton, OH Hamfest 23rd - 25th	<b>24</b> 9:30 AM Orange County ARES Net 147.225 + Net Control KD4OFG
<b>25</b> Dayton, OH Hamfest 23rd - 25th	<b>26</b> 8 PM 10 Meter Net 28.360 USB	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	

March 1993

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

May 1993

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

May 1993

# Orange County Radio Amateurs

Sun      Mon      Tue      Wed      Thu      Fri      Sat

						<b>1</b> 9:30 AM Orange County ARES Net 147.225 + Net Control KD4YJZ	
<b>2</b>	<b>3</b> Orange County EOC 7:30 PM OCRA Club Meeting	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b> 9:30 AM Orange County ARES Net 147.225 + Net Control KD4GWH	
<b>9</b>	<b>10</b> 8 PM 10 Meter Net 28.360 USB	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b> 9:30 AM Orange County ARES Net 147.225 + Net Control KD4JIA	
<b>16</b>	<b>17</b> 8 PM 10 Meter Net 28.360 USB	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b> 9:30 AM Orange County ARES Net 147.225 + Net Control WD4LOO	
<b>23</b>	<b>24</b> 8 PM 10 Meter Net 28.360 USB	<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b> 9:30 AM Orange County ARES Net 147.225 +	
<b>30</b>	<b>31</b> 8 PM 10 Meter Net 28.360 USB	April 1993 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30					June 1993 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

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## **GO Kit** (continued from page 1)

I could go on, but I think you get the idea. It was that morning that I learned that maybe I need to put together a "go kit" with all this stuff already packed and ready to go.

It's not practical to put the whole shack in there. You probably don't have an extra HT lying around to keep in your go kit. But you can keep a couple of Cokes and a topo map and some coax and all the other stuff you's probably forget while trying to rush out the door while half asleep.

After checking out "The ARRL Handbook" and asking some other hams what they have in their go kits I put together the list on page two. I hope you find the list useful in assembling your own emergency go kit.

Maybe I'm over - stating the need to be prepared here. After all, you may say - the tornado was just a freak disaster. That kind of thing probably won't happen again for years.

Well, think back a month before that to the fires in Chapel Hill, when we were called to provide communications for the Red Cross. Or think back three weeks to that pretty little snowfall we had.....many of us came very close to spending the evening helping with County fire communications. That tallies up to three call-outs our first year as a group. The should give you about 90 days to have your go kit ready.....If we're lucky.

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## **OCJRA** (continued from page 1)

It will be a very good experience for all the new hams. if you have any questions about OCJRA, please contact Ryan McGinnis, KD4URA, or Michael Severini, KC4NVS. Thanks.

## **Next Meeting - Skywarn!**

At the May 3rd meeting, Ron Gonsky of the National Weather Service will provide OCRA members an opportunity to get their Skywarn certification.

## **Swap Shop**

**For Sale:** Icom R71A General Coverage Receiver. 0-30MHZ continuous digital readout. Mint Condition Asking \$700.00. Also, a hand held ACE Communications AR1000 XLT 1000 channel programmable scanner. Covers 500Khz through 1300 MHz continuous. Asking \$300.00. For more information, please contact Paul Leboeuf, N2JBI at 968-8740.

## **Oops!**

I goofed on a couple of the new call signs from the OCRA novice/Technician class in the March newsletter. Here are the correct calls:

Bill Earhart	KD4WNZ
Mike Campbell's	KD4WFS
Erin Burck	KD4YJR

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## **Orange County Radio Amateurs**

P. O. Box 297, Hillsborough, NC 27278

**Monthly Meetings:** First Monday of each Month at 7:30 PM  
Orange County Emergency Operations Center  
New Hope Church Road, Hillsborough, NC

**Nets:**

**2 Meter Net:** Saturdays 9:30 a.m. 147.225 + WA4WTX Repeater  
Net Manager: Ed Lappi, WD4LOO Autodial \*13 on 147.225

**10 Meter Net:** Mondays 28.360 USB 8 p.m. (No net on meeting nights)  
Net Manager: Bill Hutchins, KM4UO (919) 968 4292

**Newsletter:** Published monthly for the members of OCRA  
Edited by Jeff Anderson, KD4JIA

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President:	John Hughes	(919) 732 5020	Vice President:	Steve Jackson	(919) 968 4203
Treasurer:	Terry Bubar	(919) 933 9352	Secretary:	Jeff Anderson	(919) 578 1692

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