



WCARS.org  
March 2012

*The Official Publication of*  
The Western Carolina Amateur Radio Society, Inc

### President's Microphone

There will be a meeting of the executive committee at 6:45 PM for the- April 1 meeting same room please attend if you are on this committee you are needed.

Thanks,

Scott

**Meeting for April is on the 5th  
W. Asheville Library  
7:30 PM**

### INCLEMENT WEATHER NOTE

**Club meetings are subject to the following:**

**Should Buncombe County offices close due to inclement weather, the library will close. If that happens, our meeting will be canceled.**

### Meeting Minutes for March 1, 2012

The 1 March 2012 (monthly) meeting of the Western Carolina Amateur Radio Society was called to order at 1931 hours. by Scott McCabe W4IYS, WCARS Club President.

Scott then invited everyone to join in the reciting of the Pledge of Allegiance to the Flag.

Scott then invited everyone to introduce themselves giving their name, callsign (if any), and QTH.

50-50 tickets were sold prior to the meeting with 1/2 of the proceeds going as drawing prize and 50% into the club treasury.

The Treasurer's Report was given by Steve N4SET. There being no questions, a motion was made, seconded, and voted to accept the report with thanks.

### BC-ARES

By Carl Smith, N4AA, EC Buncombe County

The year is slipping past but we are making progress. The meeting on February 16th was very good with many good ideas coming from some of our newer members. A program of training has already begun and will continue both on-the-air and at our monthly face-to-face meetings. A number of names on the roster have not responded to requests for updates to the information in the files. If you wish to continue to be a member of the BC-ARES group, I need to have current information. If you don't wish to continue, please let me know so I can remove you from the list.

We will meet again at the Red Cross classroom on **Thursday, March 15th at 7-PM**. All interested parties are invited to attend. At this meeting we will be discussing "Formal Message Handling,"

## Meeting Minutes for March 1, 2012

Scott announced that Pat Kelsey WA4OLA's name and callsign was placed on the WCARS Outstanding Service Plaque (Pat passed away three years ago and was very supportive of WCARS and ham radio.).

Scott also presented to Roger KI4PFL and to Dean K2JB a plaque for their service to WCARS.

Randy KI4VLW said that volunteers are still needed for the hamfest and asked all to contact him via Internet.

Steve N4SET announced that a ham radio demonstration station is set for 0900 on May 5 in Black Mountain.

Dean K2JB described his and other's participation in the recent NC QSO Party as they made approximately 100 contacts on 20, 40, and 80 meters.

A motion was made and seconded and voted that surplus towers belonging to WCARS be priced by the Executive Committee and offered for sale to members and others. When a full inventory of other stored gear is completed, this list will be made and declared as surplus and priced by the Executive Committee for sale.

The Program was given by James McNichols KK4ETE about his balloon package with APRS launched as a school science project called CALVIN 1. His slide show with computer held everyone's attention! He explained the challenges encountered in doing this project. The flight was made on 31 January and traveled 150.25 miles from its launch site and reached an altitude of

## BC-ARES

By Carl Smith, N4AA, EC Buncombe County

and our relationship with other agencies locally and our "sister" groups in neighboring counties.

We will be participating in some Public Service Events this spring. I'm working on an exercise which will be conducted in the early summer period. We will continue to have quarterly meetings at the radio room at EOC. The next one will be in APRIL.

Thanks for the interest in the ARES program in Buncombe County and I look forward to seeing many of you at our meetings.

73,  
Carl, N4AA  
EC - Buncombe County

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See map on last page for location and directions.

## Technician Licensing Class

As the Technician Licensing Class concludes on **March 8th** there will be an **VEC Exam** at:

**6 PM at AB Tech,  
Victoria Road, Asheville  
Elm Building, Room 319**

For information & registration contact:

Norman Harrill  
N4NH@arrl.net  
828-253-1192

## Meeting Minutes for March 1, 2012

104,758 miles high with pictures sent back throughout the flight from the unit. He fielded questions at the end of his presentation and was greeted with applause. James McNichols was presented a membership in WCARS for a year and everyone applauded the motion.

The drawing for the 50-50 was made.

The next meeting of WCARS is set for April 5, 2011.

Scott asked if there were anymore question for Mr. McNichols or any more business for the Club. None were received.

A motion was made, seconded, and the meeting was adjourned at 2059 with an invitation for everyone to enjoy refreshments and fellowship following.

SUBMITTED BY BOB DOCKERY - WD4CNZ,  
WCARS SECRETARY

## Recognition

Congratulations on the award Dean - K2JB and Roger - KI4FPC and thank you for all the work you both do for WCARS and Amateur Radio!

## WCARS / VEC Exam Schedule

**Asheville** - AB-TECH, Rm 134, Elm Bldg

**9:00 AM on the THIRD SATURDAY of:  
January, April, July and October**

VE Team Leader: Bob Helton - KS4FX  
Phone: 828-684-0249

**2:00 PM on the THIRD SUNDAY of:  
February, May, August and November**

VE Team Leader: Steve Lankford - AG4BY  
Phone: 828-768-2141

**Burnsville** - Yancey County Library

Contact:

VE Team Leader: David McCarty - W4TDM  
Phone: 828-657-1044

**Marion**

Contact:

VE Team Leader: Harriet Fullbright - K4ICU  
Phone: 828-291-7521

**Rutherfordton** - Isothermal College

Contact:

VE Team Leader: Bruce Tessineer - AD4OJ  
Phone: 828-657-5464

**Waynesville**

Contact:

VE Team Leader: Al Sanders - WD4A  
Phone: 828-926-8244

**Weaverville** - Reems Creek FD

**9:00 AM on the First Saturday of:  
April, July, October and December**

VE Team Leader: Harley Bullman - AJ4PI  
Phone: 828-645-0889

**For other locations contact:  
Norman Harrill  
N4NH@arrl.net / 828-253-1192**

## QSO Party Results

NC QSO Party results.

SUMMARY SHEET - 2012 NC QSO PARTY

CALL: W4MOE

NAME: Jimmy Dean Blair

ADDRESS LINE 1: 20 Coffey Place

ADDRESS LINE 2: Asheville, NC 28806

NC COUNTY: BUNCOMBE

ENTRY CATEGORY: CLUB / IN STATE

QSO POINTS:

NUMBER OF PHONE QSOs: 133 X 2 POINTS = 266

NUMBER OF CW QSOs: 0 X 3 POINTS = 0

NUMBER OF MOBILE QSOs: 0 X 3 POINTS = 0

NOTE: Do not claim credit for both a phone/cw AND mobile if working a mobile.

All mobiles are worth 3 points.

TOTAL QSO POINTS = 266

QSO BY BAND BREAKDOWN: 80P: 33 80C: 0 40P: 61 40C: 0 20P: 37 20C: 0

15P: 2 15C: 0 10P: 0 10C: 0

MULTIPLIER TOTALS:

TOTAL NUMBER OF COUNTIES WORKED: 33

TOTAL NUMBER OF STATES/CAN PROVINCES/COUNTRY WORKED: 32

(NC STATIONS ONLY)

TOTAL MULTIPLIERS: 65

BONUS POINTS:

ADD 50 POINTS FOR WORKING DARE COUNTY;

ADD 50 POINTS FOR WORKING CHEROKEE COUNTY;

OR ADD 150 POINTS FOR WORKING BOTH: 150

ADD 50 POINTS FOR WORKING W4NC;

ADD 50 POINTS FOR WORKING W4WS;

OR ADD 150 POINTS FOR WORKING BOTH: 50

TOTAL NC COUNTIES WORKED FROM MOBILE: 0 X 100 = 0

TOTAL BONUS POINTS: 200

FINAL SCORE: 17490

## Field Day 2012

By Carl Smith, N4AA, EC Buncombe County

I have reserved the Buncombe County Fireman Training Center again for the last weekend of June for Field Day. This is the same location as last year. If you wish to be a part of this operation, I need to know as soon as possible what you want to do. I have already received confirmation from operators for 40 meters, 20 meters and another who will operate SSB on whichever HF bands are not being used. If you wish to operate one of the bands, let me know.

I would like for us to have an active GOTA station this year, if someone would step forward to handle this project. Remember that if you agree to be a "band captain" you are responsible for everything to do with that band... equipment, antenna(s), shelter, etc. I would prefer everyone use a computer logging program to simplify the reporting process. If you have a preference, I need to know which program you want to use. If you have no preference, I can provide the well known N1MM logging program. I have been using this FREE program for some time and have found it to be very easy to learn to use, simple to use on the air and it will do virtually anything for you... key the radio for CW, allow RTTY/PSK with an add-on program (which I can provide), etc. I have used it for contests on CW/SSB and RTTY without a single case of failure.

## Hamfest 2012

Update by Randy - KI4VLW

Vendors that are confirmed to attend the Hamfest are:

AC/DC Electronics  
DEBCO  
DBJ Electronics  
TAW Electronics  
Ham World  
The Wireman  
Satellite Sam

We still need volunteers to help out with the Hamfest, please contact Randy - KI4VLW at 828-298-6685 or e-mail [rtsp71@aol.com](mailto:rtsp71@aol.com).

## Meals on Wheels Relay

The Meals of Wheels Relay is coming up on May 12th.

Dick - K8SKX will be net control this year, volunteers are needed. More information will be available next month.

## From the Editor

I would like to thank everyone for the positive feedback I have received for Smoke Test, your feedback helps make your newsletter better!

This issue is a little light after last month's extra large edition, this happens to work out good as I am going to be taking the test to upgrade to General on March 8th and need the extra time to study and do the practice tests.

However for April it would be nice to see some more membership generated content. Especially any radio projects or contests that you have done recently.

Just a reminder to WCARS members that the WCARS information net is held every Monday at 9 PM all are welcomed to call into the net.

And on Wednesday nights at 9 PM BCARES net is held, members are encouraged to call in and participate. If you are monitoring and the net is not called after a couple of minutes have passed with no one starting the net; you are encouraged to call the net and make a log of call ins. This is good practice in case there is a real emergency where the usual operators are not able to call the net.

If you have something you would like to send to Smoke Test please send it to [kk4brd@gmail.com](mailto:kk4brd@gmail.com).

## Membership List

Here is the current WCARS membership list. If you are not on this list and are a current member or there is an error please contact Steve - N4SET [n4set.wnc@gmail.com](mailto:n4set.wnc@gmail.com) 828-658-0261 (After 4-PM weekdays), so this can be corrected.

KD7DGN	Lewis Alisan
K2JB	Dean Blair
KK4BQX	David Brown
KJ4KEU	Eric Broyles
N4ZTP	Clarence Burrell
K4WWC	Wendell Cisco
KD4OQU	Linda Cisco
K4CHD	Hank Davis
W3WZN	Charles De Court
W3WDD	Daniel De Court
N4SET	Steve Emory
K4PAF	Paul Fetcho
KC4EZN	Harry Frick
KF4CCN	Thomas Freck
KF4MRH	Keith Galyean
KG4RPY	Doris Galyean
AD8J	John Getz
KD4OKU	Norma Grafing
WD4IJT	Jack Grafing
KI4FPC	Roger Grindstaff
N4NH	Norman Harrill
KI4VLW	Randy Harris
KJ4CRL	Linda Harris
KS4FX	Bob Helton
KX4A	Bob Hughes
KB4QDQ	Lee Johnston

## Membership List

WW4AJ	Allen Johnston
KJ4CRO	Tony Jones
KF4PYX	Tommie Justice
N4HAL	Bill Kelly
AC4JK	John Kintz
KK4FFE	Tony Knight
KK4BRB	Ronald Krantz
N4DWM	Bernice Lance
NC4N	Garland Lance
KR4L	Tom Leeder
KC4PNF	Walt Lewis
N4GMR	Carther Liverman III
KD4CJF	Richard Marlowe
KI4NXS	Ethel McCabe
W4IYS	Scott McCabe
WB4YQD	James McCain
WA4MTY	Lewis McCracken
KK4ETE	James McNichols
KN4ST	Elwood Miles
KJ4KFA	Yale Mooers
K4BNP	Tommy Queen
WA4NUO	Ralph Roberts
NC4R	Hallie Shaver
N4AA	Carl Smith
W4ZQV	Dick Smith
KK4BRD	Paul Tilley
KJ4TEI	Jeff Weller
WA4BVW	Ken Woodward
KI4NXU	Grady Worley

## Regional Hamfests

2012 Charlotte Hamfest will be March 10 - 12

Saturday 8:30 AM to 5:00 PM  
Sunday 9:00 AM to 1:00 PM

At the Cabarrus Arena & Events Center.

Talk-in on: 146.655 (-600) no tone  
Backup: 146.94 (-600) 118.8 CTCSS Tone

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40th Annual RARSFest will be April 7

Saturday 8:00 AM to 4:00 PM

At the Jim Graham Building - NC State  
Fairgrounds 1025 Blue Ridge Road, Raleigh.

## Notable Keys

Frank Gunther - W2ALS

Is one of the communications and FM pioneers, in the mid 1920s while working for Radio Engineering Laboratories in Long Island City, NY he built and operated experimental stations and was among the first shortwave broadcasting systems.

In 1931 he took part in the first public broadcast from an aircraft and also installed one of the first airborne two-way radio in 1932.

Also in 1932 he is responsible for establishing the first mobile two-way police communications system in 1932, opening up VHF mobile spectrum.





## The ARRL Letter

Materials in the ARRL Letter are taken from The ARRL Letter online, full credit is given to The ARRL Letter and the American Radio Relay League, as per republication guidelines require.

<http://www.arrl.org/arrlletter>

### *NASA Selects AMSAT Fox Satellite to Join Program—02/11/2012*

**Project ELaNa**, NASA's "Educational Launch of NanoSat" managed by the Launch Services Program at the Kennedy Space Center, announced on February 10 that the AMSAT **Fox-1** CubeSat has been selected to join the program.

NASA will work with AMSAT in a collaborative agreement where NASA will cover the integration and launch costs of satellites deemed to have merit in support of their strategic and educational goals.

AMSAT teamed with the ARRL to write and deliver the 159 page educational proposal to NASA. Letters documenting the importance of AMSAT's satellites in the education programs at the ARRL and also at the Clay Center for Science and Technology at the Dexter and Southfield schools in Brookline, MA, were important parts of the proposal.

AMSAT President Barry Baines, WD4ASW said, "The ELaNA Launch opportunity marks AMSAT's return to space after the conclusion of the successful ARISSat-1/KEDR flight. We need to get the flight Fox-1, along with an operational flight backup satellite, built, integrated, tested, and delivered. Our ability to provide a spacecraft and get it launched is dependent upon the active support of our donors who wish to see Fox-1 fly."

AMSAT Vice-President of Engineering, Tony Monteiro, AA2TX noted this will provide a launch opportunity for AMSAT's next generation of FM repeater satellites with features and operation beyond the experience of AO-51. AMSAT's Fox-1 Engineering Team is making progress developing the advanced satellite that will provide these features:

+ Fox-1 is designed to operate in sunlight without batteries once the battery system fails. This applies lessons learned from AO-51 and ARISSat-1 operations.

+ In case of IHU failure Fox-1 will continue to operate its FM repeater in a basic, 'zombie sat' mode, so that the repeater remains on-the-air.

+ Fox-1 is designed as the immediate replacement for AO-51. Its UHF/VHF transponder will make it even easier to work with modest equipment.





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+ From the ground user's perspective, the same FM amateur radio equipment used for AO-51 may be used for Fox-1.

+ Extending the design, Fox-2 will benefit from the development work of Fox-1 by adding more sophisticated power management and Software Defined Transponder (SDX) communications systems.

--AMSAT News Service

### *On the Air: ARRL Publishes New Guidelines for 60 Meters - 03/01/2012*

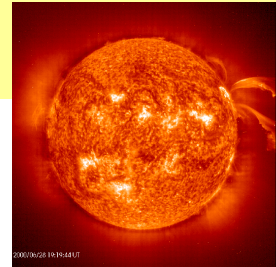
Thanks to the FCC's *Report and Order* issued November 18, 2011, radio amateurs will enjoy a number of new privileges on the 60 meter band, beginning at midnight (EST) March 5. These new privileges include a boost in effective radiated power from 50 to 100 W, as well as the ability to use CW and certain digital modes.

Late last year, the ARRL HF Band Planning Committee surveyed 60 meter operators to gather opinions about how to best use the new privileges. On the subject of creating a specific band plan, the survey results indicated little consensus beyond the fact that 5403.5 kHz should retain its status as a *de facto* "DX channel." On the other hand, survey respondents made a number of suggestions for general operating practices.

Based on the survey results and subsequent research, the committee declined to propose a specific band plan for 60 meters at this time. Instead, the committee created a "Recommended Practices" document. The 60 meter pages on the ARRL website have been updated to reflect the changes brought about by the *Report and Order*.

The April issue of *QST* will also include an article by ARRL Regulatory Information Manager Dan Henderson, N1ND, offering a detailed discussion of the new 60 meter privileges and recommended operating practices.

# Solar Weather



NOAA Solar Forecasts

**Sunspot Number: 105**

Updated at: 2012 March 05 2200 UTC

**Spotless Days**

Flare	0-24 hr	24-48 hr
Class M	75%	70%
Class X	30%	30%

Current Stretch: 0 days  
 2012 total: 0 days (0%)  
 2011 total: 2 days (<1%)  
 2010 total: 51 days (14%)  
 2009 total: 260 days (71%)

Geomagnetic Storms

Since 2004: 821 days  
 Typical Solar Min: 486 days  
 Updated 05 March 2012

Mid-latitudes	0-24 hr	24-48 hr
Active	20%	30%
Minor	10%	01%
Severe	01%	01%

**Interplanetary Magnetic Field**

$B_{total}$ : 5.3 nT       $B_z$ : 4.1nT south

High-latitudes	0-24 hr	24-48 hr
Active	15%	15%
Minor	25%	35%
Severe	30%	40%

**The Radio Sun**

10.7 cm flux: 132 sfu

HF Conditions	Day	Night
80 m - 40 m	Fair	Good
30 m - 20 m	Good	Good
17 m - 15 m	Good	Good
12 m - 10 m	Fair	Poor
VHF Conditions	Day	Night
Aurora	Band Closed	Band Closed
6 m EsEU	Band Closed	Band Closed
4 m EsEU	Band Closed	Band Closed
2 m EsEU	Band Closed	Band Closed
2 m EsNA	Band Closed	Band Closed
EME Deg	Good	

# ***SMOKETEST***

*Official publication of the*

## **Western Carolina Amateur Radio Society, Inc.**

**PO Box 1488, Asheville, NC 28802**

**www.wcars.org**

**W 4 M O E**

**Repeater: 146.91 (PL-91.5)**

**Spivey Mountain, Asheville, NC**

### **2012 OFFICERS**

<b>President</b>	<b>Scott McCabe</b>	<b>W4IYS</b>	<b>252-0583</b>	<b>esmccabe@charter.net</b>
<b>Vice President</b>	<b>Russ Oder</b>	<b>N4KOX</b>	<b>683-4251</b>	<b>oderr@bellsouth.net</b>
<b>Secretary, Awards Chairman &amp; Public Information</b>	<b>Bob Dockery</b>	<b>WD4CNZ</b>	<b>254-0513</b>	<b>wd4cnz@charter.net</b>
<b>Treasurer</b>	<b>Steve Emory</b>	<b>N4SET</b>	<b>658-0261</b>	<b>n4set@arrl.net</b>
<b>Executive Committee</b>	<b>Randy Harris</b>	<b>KI4VLW</b>	<b>298-6685</b>	<b>rtsp71@aol.com</b>
<b>Executive Committee</b>	<b>Dean Blair</b>	<b>K2JB</b>	<b>665-1830</b>	<b>k2jb@bellsouth.net</b>
<b>Executive Committee</b>	<b>Linda Harris</b>	<b>KJ4CRL</b>	<b>298-6685</b>	<b>rtsp71@aol.com</b>
<b>Trustee - W4MOE</b>	<b>Norman Harrill</b>	<b>N4NH</b>	<b>253-1192</b>	<b>nharrill@bellsouth.net</b>
<b>Quartermaster &amp; Webmaster</b>	<b>Lee Johnson</b>	<b>KB4QDQ</b>	<b>242-1630</b>	<b>leejohnsonster@gmail.com</b>
<b>Hamfest Chairman - 2012</b>	<b>Randy Harris</b>	<b>KI4VLW</b>	<b>298-6685</b>	<b>rtsp71@aol.com</b>
<b>Smoke Test Editor</b>	<b>Paul Tilley</b>	<b>KK4BRD</b>	<b>712-0477</b>	<b>kk4brd@gmail.com</b>

HF/VHF/UHF Net Information				
NET NAME	Freq offset / PL	Day	Local time	Notes
6600	145.190 +	Saturday	9-PM	Many check-ins-Wide area coverage
Blue Ridge Traffic	146.610 -	Nightly	9-PM	ARES/Skywarn in bad weather
BRARC	146.640 - 91.5	Sunday	9-PM	
Buncombe Cty Emerg. Mgt.	146.910 - 91.5	Wednesday	9-PM	Directed net, ARES/RACES
Carolinas Net - Early	3.573	Daily	7-PM	CW Traffic
Carolinas Net - Late	3.573	Daily	10-PM	CW - 15-18 WPM Traffic
Carolinas Net - Slow	3.571	Daily	8-PM	Slow CW - 8 to 10 WPM Traffic
Franklin, NC - Winesprings Bald	147.240 + / 151.4	Daily	9-PM	
Good Morning	146.760 -	M-W-F	9-AM	Informal, Everyone welcome
Haywood County Roundtable	147.390 + 94.8	Monday	8-PM	Informal, Everyone welcome
K4UUQ Morning	7.228	Daily	7-AM	Ragchew
Madison Cty-AmRadComTeam	224.660 100	Tuesday	9-PM	Madison County Emergency Comm
Mount Mitchell 220	224.540	Monday	8-PM	Informal, Everyone welcome
Mount Mitchell Ragchew	442.225 + 107.2	Monday	9-PM	Directed, Everyone welcome
Mount Mitchell Sunrise Net	442.225 + 107.2	Thursday	9-AM	Informal - Everyone welcome
Mount Pisgah 220	224.260	Sunday	9-PM	Informal, Everyone welcome
NC Evening Traffic	3.923	Daily	6:30-PM	SSB
NC Morning Traffic	3.927	Daily	7:45-AM	SSB
Oasis Shrine Radio Corp.	145.190 +	Sunday	9-PM	
SATERN	14.265	Daily	3-PM	Salvation Army Team-Emergency
Tarheel Emergency Net	3.923	Daily	7:30-PM	Directed, NC Emerg. Mgt - Traffic
Volunteer	147.180 + 136.5	Friday	9-PM	Info, News and Swap
WCARS Information	146.910 - 91.5	Monday	9-PM	Informal, Everyone welcome
???	224.600			WB4PLA on Spivey Mtn. ???
W4YK	53.630 - 100	Friday	9-PM	???
Traders Net	147.05 - 91.5	Tuesday	9-PM	
Skywarn	145.27 - 91.5	As Needed		
SC Hearts / NC Hears / SW VA Net	444.250 - 91.5	Daily	8-PM	
NC Hears	444.250 - 91.5	Daily	9:30 PM	
K4MFD Greenville - 440	444.200 + 173.8			Located on Bald Mtn. N. of Asheville
K4MFD Greenville - 6 Meter	53.400			Located on Bald Mtn. N. of Asheville Linked to N2GE 224.660 & KI4DNY 224.600 fulltime
Blue Ridge Weather Watch	145.190 +	T-T	9-PM	Directed net, Skywarn, everyone welcomed

<b>Regional Repeater List</b>		
<b>Frequency / offset / PL</b>	<b>Location</b>	<b>Notes</b>
145.190 -	Mt. Mitchell	
146.520 Simplex	National Calling Frequency	
146.910 - 91.5	WCARS	
146.640 - 91.5	Hendersonville	IRLP
146.610 -	Greenville, SC	
147.105 + 91.5	Hendersonville	
145.270 - 91.5	Hendersonville	
145.370 - 91.5	Greenville, SC	
147.390 + 94.8	Waynesville	
147.315 + 123	Spartanburg	
147.060 + 123	Greenville, TN	
145.410 - 127.3	Greenville, TN	
145.390 - 186.2	Greenville, TN	
146.760 -	Mt. Pisgah	
146.880 -	Shelby	
147.135 +	Brevard	
147.285 +	Tryon	
145.330 -	Tryon	
146.790 -	Anderson, SC	
442.225 + 107.2	Mt. Mitchell	
442.450 +	Hendersonville	
442.850 +	Brevard	
444.875 + 131.8	Waynesville	IRLP
224.520 - 91.5	Mt. Spivey	
224.600 - 94.8	Asheville	
224.240 -	Hendersonville	
224.960 -	Hendersonville	
224.540 -	Mt. Mitchell	
224.260 -	Mt. Pisgah	
224.200 -	Shelby	
224.460 -	Shelby	
224.360 -	Marshall	
224.660 - 100	Madison County	
53.630 - 100	Mt. Mitchell	
53.130 - 100	Hendersonville	
53.410 - 131.8	Greenville, SC	

# Map to Red Cross Building

