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# Waves

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## ONE MODE DOWN, TWO TO GO!

With the advent of the ARRL's Triple Play Award <http://www.arrl.org/news/stories/2008/12/05/10490/>, on-air participation has reached a level of excitement not seen in recent years. This new, exciting award is available to all amateurs who confirm contacts with each of the 50 states using three modes for each state:

CW, phone and RTTY/digital. All 150 contacts must be made on or after the January 1, 2009 and must be confirmed via Logbook of The World (LoTW) <http://www.arrl.org/lotw/>. All bands -- with the exception of 60 meters -- may be used in pursuit of the Triple Play Award.

The ARRL RTTY Round Up, held January 3-4, was one of the first organized events eligible for the award. "If the amount of activity in the 2009 ARRL RTTY Round Up is any indicator, the Triple Play is off to a fantastic start," said ARRL Contest Branch Manager Sean Kutzko, KX9X.

"The RTTY Roundup was the first contest to take place since the award's inception. It ended only a few days ago, and we already have received almost 1100 logs. There's been a lot of chatter on the RTTY e-mail reflectors about getting the Triple Play completed, and I personally have seen numerous stations calling 'CQ Triple Play' on PSK31 since the first of the year. People already have their 'needed list' programmed into their PSK31 macros. There is no question that the new Triple Play award is causing a lot of buzz in the digital community. I'm happy that we have been able to come up with a new award that so many people are interested in right off the bat."

According to Norm Fusaro, W3IZ, Assistant Manager for the Membership and Volunteer Programs Department, hundreds of new LoTW certificates have been processed each day since the first of the year. "We are excited to see such an upswing in LoTW

participation," he said. "I know what a thrill it can be to upload my logs to LoTW right after a contest and see the QSOs appear almost instantaneously. That's the magic of Logbook of The World."

Those who participated in the RTTY Round Up were ecstatic over how easy it was to use LoTW. Jose Castillo, N1BAA, of Amherst, Massachusetts, said, "Just amazing! Just under 24 hours since I uploaded my ARRL RTTY Round Up log and now I have Worked All States confirmed via LoTW [from just the RTTY Round Up]. Gotta love LoTW!" Bob Garceau, W1EQ, of Putnam, Connecticut agreed: "I'm

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impressed with the response to my uploaded log to LoTW. I uploaded 728 QSOs and 50 hours after the contest closed, I have 336 QSLs. That's a 46 percent response. Impressive! I think that someone will get #1 Triple Play by the end of January."

Don't be too upset if you wanted to work one of the digital modes and didn't participate in the RTTY Round Up -- other digital modes, such as PSK31 and Hellschreiber are also eligible for the digital portion of the award. The first ever 24 hour Hellschreiber sprint takes place January 17. According to the Feld Hell Club's Web site, all modes of Hell on any band (with the exception of 17, 30 and 60 meters) are allowed in the sprint <http://sites.google.com/site/feldhellclub/Home/contests>. If you like operating digital modes and you missed the RTTY Round Up; why not give the Feld Hell sprint a try? According to QST Editor and digital guru Steve Ford, WB8IMY, free sound card software for Hellschreiber, such as Fldigi<http://www.wlhkj.com/Fldigi.html>>, MultiPSK (for PCs)[http://f6cte.free.fr/index\\_anglais.htm](http://f6cte.free.fr/index_anglais.htm) and cocoaModem (for Macintosh)<http://homepage.mac.com/chen/w7ay/cocoaModem/> can be found online.

For SSB and CW aficionados, the North American QSO Parties (NAQP) start January 10: The CW portion is 1800 UTC January 10-0600 UTC January 11, and the phone portion is 1800 UTC January 17-0600 UTC January 18 (the NAQP RTTY Contest is 1800 UTC February 28-0600 UTC March 1). Of course, you don't have to participate in a contest to chase the Triple Play Award. As long as you submit your logs to Logbook of The World, you're good! LoTW is set up to calculate your Triple Play QSOs separately from your other QSOs.

ARRL Chief Executive Officer David Sumner, K1ZZ, warned that it can be "addictive" once you begin making your contacts for the Triple Play Award, and that "there are many possible variations on the theme. You can try to be the first (or at least the first on your block) or you can set your own pace. Think it's too easy? Limit yourself to QRP while operating your favorite mode (or all three). Maybe you prefer to be the quarry; it will quickly emerge which states are the most difficult to find, offering opportunities to earn the gratitude of your mates by activating the ones you can get to with your portable or mobile rig."

So get on the air, make contacts and submit them via Logbook of The World. Before you know it, you'll have something new to hang up on your shack wall.

## **DXPEDITION TO DESECHEO GETS READY TO ROLL**

Six members of the February 2009 KP5 Desecheo DXpedition team <http://www.kp5.us/> met in Puerto Rico the week of December 17-21.

According to team co-leader Bob Allphin, K4UEE, the team visited US Fish and Wildlife Headquarters in Boqueron and met with the Chief Refuge Manager and law enforcement personnel in preparation for the DXpedition, set to start February 12.

Desecheo currently sits at number 7 on DX Magazine's Most Wanted list; the island is the second most-wanted DXCC entity in Asia and third most-wanted in Europe. Desecheo is a small uninhabited island in the Mona Passage, 14 miles off the western coast of Puerto Rico. It is part of the USFWS's national wildlife refuge system administered by the Caribbean National Wildlife Refuge Complex (CNWR) <http://www.fws.gov/caribbean/>.

"After an evening with local DXers and members of the Puerto Rico Amateur Radio League for dinner and a night of fellowship, DXpedition team members underwent UXO (unexploded ordnance) training," Allphin said. "On December 19, we accompanied US Fish and Wildlife law enforcement and UXO personnel to Desecheo Island. In the three hours we were there, the campsite and antenna fields were thoroughly swept for UXO and several areas were found suspicious. These areas were clearly marked, mapped by GPS and declared off limits for the DXpedition."

Allphin said that the USFWS will allow antennas on the ridge above the helicopter pad, providing a clear shot to Europe, North America and Japan. Other antennas will be located on the beach below the helicopter pad. While on Desecheo, the team conducted a test for the 2 meter link to Puerto Rico.

"Logistics and staging of equipment is ongoing and will be complete before the team arrives in Puerto Rico on February 7." Allphin said. "The team will transit to Desecheo on February 12 to begin the two week operation. Eight HF stations, plus 6 meters, will be operational. We have planned an incredible array of antennas. Transportation and logistics have been arranged for a fast deployment and quick appearance on the air. As soon as we land on Desecheo, two stations will be immediately activated. Stations will continue to operate until the final moments of departure on February 26."

Per USFWS rules, only 15 operators will be allowed on the island at one time. "We have arranged with USFWS to allow a shift change about half way through the DXpedition," Allphin told the ARRL. "This has allowed a number of hams on our waiting list an opportunity to participate in this DXpedition."

DXpedition co-leader Glenn Johnson, W0GJ, said the team will be running CW, SSB and RTTY on 160-6 meters. "We've had tremendous support from DX organizations all over the world and from numerous equipment and antenna manufacturers," he told the ARRL. "We are diligently working on the propagation studies to reach our hard-to-work areas of Asia and Europe. This plus our planned antennas, we should knock Desecheo off of the Most Wanted List for a long time to come."

## **What is SKYWARN™?**

SKYWARN™ is a concept developed in the early 1970s that was intended to promote a cooperative effort between the National Weather Service and communities. The emphasis of the effort is often focused on the storm spotter, an individual who takes a position near their community and reports wind gusts, hail size, rainfall, and cloud formations that could signal a developing tornado. Another part of SKYWARN™ is the receipt and effective distribution of National Weather Service information.

The organization of spotters and the distribution of warning information may lie with the National Weather Service or with an emergency management agency within the community. This agency could be a police or fire department, or often is an emergency management/service group (what people might still think of as civil defense groups). This varies across the country however, with local national weather service offices taking the lead in some locations, while emergency management takes the lead in other areas.

SKYWARN™ is not a club or organization, however, in some areas where Emergency Management programs do not perform the function, people have organized SKYWARN™ groups that work independent of a parent government agency and feed valuable information to the National Weather Service. While this provides the radar meteorologist with much needed input, the circuit is not complete if the information does not reach those who can activate sirens or local broadcast systems.

SKYWARN™ spotters are not by definition "Storm Chasers". While their functions and methods are similar, the spotter stays close to home and usually has ties to a local agency. Storm chasers often cover hundreds of miles a day. The term Storm Chaser covers a wide variety of people. Some are meteorologists doing specific research or are gathering basic information (like video) for training and comparison to radar data. Others chase storms to provide live information for the media, and others simply do it for the thrill.

Storm Spotting and Storm Chasing is dangerous and should not be done without proper training, experience and equipment.

The National Weather Service conducts spotter training classes across the United States, and your local National Weather Service office should be consulted as to when the next class will be held.

# Definitions and Terminology

Severe local storms occur in all parts of the continental United States in an average year. As part of their training, storm spotters should be aware of severe storm definitions and terminology used by the National Weather Service.

**Watch** — Conditions are favorable for the severe weather event in or near the watch area. Watches are issued for tornadoes, severe thunderstorms, and flash floods.

**Warning** — The severe weather event is imminent or occurring in the warned area. Warnings are issued for tornadoes, severe thunderstorms, flash floods, and river flooding.

**Severe Thunderstorm** — A storm that produces hail 3/4 inch in diameter or larger and/or wind gusts of 58 mph or more.

**Tornado** — A violently rotating column of air attached to a thunderstorm and in contact with the ground.

**Funnel Cloud** — A rotating, funnel-shaped cloud extending downward from a thunderstorm base.

**Downburst** — A strong downdraft with an outrush of damaging wind on or near the ground.

**Flash Flood** — A rapid rise in water, usually within 12 hours of a period of heavy rain or other causative agent (i.e., dam break).

# Severe Weather Reporting Criteria

Many types of weather information are needed from storm spotters; however, some types of information are much more important than others. Strict adherence to the reporting criteria allows vital information to be communicated as soon as possible. Also, some of the reporting criteria should receive higher priority communication than others. You should report the following weather events.

## Urgent Priority

Tornado  
Funnel cloud  
Rotating wall cloud  
Flash flooding

## High Priority

Hail 3/4-inch diameter or larger  
Wind speed greater than 58 mph  
Persistent non-rotating wall cloud  
Rainfall 1 inch or more per hour

## Lower Priority

Hail 1/2-inch diameter or larger  
Wind speed greater than 40 mph  
Cloud features suggesting storm organization  
Other locally-defined criteria

**NOTE:** When reporting 1/2-inch diameter hail, do not use the term “**marble**” since marbles can come in a variety of sizes. In areas prone to severe weather, some offices may not need reports of 1/2-inch hail. Contact your local NWS office for specific adjustments to the criteria suggested above.

# Thunderstorm Life Cycle

All thunderstorms, whether they become severe or not, proceed through a 3-stage life cycle.

a. *Cumulus Stage* (figure 4) — Occurs when thunderstorm development begins. At this stage, the storm consists only of updrafts (upward-moving air currents). These updrafts reach heights of around 20,000 feet above the ground. In the western United States, the development stage may begin as higher based altocumulus clouds. As moisture becomes more plentiful, the base of the storm may lower.

b. *Mature Stage* (figure 5) — This is the strongest and most dangerous stage of the storm’s life cycle. At this stage, the storm contains both upward and downward moving air currents (updrafts and downdrafts) with precipitation in the downdraft area. The downdraft results from precipitation evaporating, which causes cooling. To a lesser extent, the falling precipitation itself creates downward drag. When the cool downdraft hits the ground, it spreads out and forms a gust front, which may include damaging winds called a downburst. At the top of the storm, the updraft rapidly decelerates and clouds spread out and form an anvil. If the updraft is strong, a “bubble” of cloud, called an “overshooting top,” will be pushed above the anvil. Spotters should pay particular attention to a storm with an overshooting top since the area beneath the top is a preferred area for severe weather formation.

c. *Dissipating Stage* (figure 6) — Eventually, excessive precipitation and downdraft will weaken the updraft. Downdrafts dominate the storm and any overshooting top disappears. At the surface, the gust front will move away from the storm and cut off the inflow of energy into the storm. This is indicative of the dissipating stage.

# Spotter Reporting Procedures

- From radio or cellular phone-equipped vehicles, report severe weather observations to a central collection point and request them to relay the report to the National Weather Service.
- Law enforcement and Emergency Management spotters—report to your dispatcher or net controller via NAWAS, radio, cellular phone, or other direct communications links as prescribed by your Emergency Operations Plan.
- When the telephone is your only communications method, call your primary or alternate contact, and ask him or her to relay your report to the National Weather Service. If the call is long distance, you can make it collect. Report promptly as the storm may interrupt communications.

## Report Briefly:

**What** you have seen: tornado, funnel cloud, wall cloud, waterspout, flash flooding, etc.

**Where** you saw it: the direction and distance from a known location, i.e., 3 miles south of Beltsville. To avoid confusion, make sure you report the event location and not your location.

**When** you saw it: make sure you note the time of your observation.

**What** it was doing: describe the storm’s direction and speed of travel, size and intensity, and destructiveness.

Include any amount of uncertainty as needed, i.e., “funnel cloud; no debris visible at the surface, but too far away to be certain it is not on the ground.”

**Identify** yourself and your location. Give spotter code number if you have one.

## Report:

1. Tornado, funnel cloud, waterspout, or wall cloud.
2. Large hail, as defined by your local NWS office.
3. Damaging winds (usually greater than 50 mph).
4. Flash flooding.
5. Other criteria as defined by your local NWS office.

### Hail Size Estimates

Pea .....	25	Penny .....	0.75
Quarter .....	1.00	Half Dollar .....	1.25
Golf ball .....	1.75	Tennis Ball .....	2.50
Baseball .....	2.75	Grapefruit .....	4.00

### Wind Speed Estimates

#### Speed (MPH) Effects

- |        |  |
|--------|--|
| 25-31  | Large branches in motion; whistling in telephone wires                                   |
| 32-38  | Whole trees in motion  |
| 39-54  | Twigs break off of trees; wind impedes walking   |
| 55-72  | Damage to chimneys and TV antennas; pushes over shallow rooted trees                     |
| 73-112 | Peels surface off roofs; windows broken; trailer houses overturned                       |
| 113+   | Roofs torn off houses; weak buildings and trailer houses destroyed; large trees uprooted |

# THE TORNADO

## Life Cycle

Figure 31 illustrates the life cycle of a tornado. Although not all tornadoes form from mesocyclones, most of the larger and stronger tornadoes are spawned from supercell storms with mesocyclones. Recall that a supercell’s environment usually contains strong, veering winds in the lowest mile or so of the atmosphere. These strong, veering winds produce horizontal vorticity (“rolls”) in the lower few thousand feet of the atmosphere. The thunderstorm’s updraft then tilts these horizontal “rolls” into vertically-oriented rotation and allows the mesocyclone to form. The tornado circulation develops at mid levels (about 20,000 feet) in the storm where the storm’s updraft and mesocyclone are strongest. The circulation gradually builds down (and up) within the storm. At about the same time, a downdraft develops at mid levels near the back edge of the storm. This **rear flank downdraft** (RFD) descends to the ground along with the tornado circulation. Rapidly lowering barometric pressure near the ground is believed to be the primary means of drawing the tornado circulation and RFD down toward the ground. The RFD may reveal itself as a “clear slot” or

“bright slot” just to the rear (southwest) of the wall cloud. Sometimes, a small shelf cloud will form along this clear slot. Eventually, the tornado and RFD will reach the ground within a few minutes of each other (Figure 31a). After the tornado touches down, an ample inflow of warm, moist air continues into the tornado/mesocyclone. The RFD, though, will begin to wrap around the tornado/mesocyclone after the RFD impacts the ground. The RFD will actually cut off the inflow to the tornado as it wraps around the tornado/ mesocyclone. Wind damage may result from the RFD’s gust front as it progresses around the mesocyclone. When the RFD completely wraps around the tornado/mesocyclone, the inflow to the tornado/mesocyclone will be completely cut off. The tornado will gradually lose intensity. The condensation funnel will decrease in size, the tornado will tilt with height, and the tornado will eventually take on a contorted, rope-like appearance before it completely dissipates.

## Tornado Classification

Dr. Theodore Fujita, a renowned severe weather researcher at the University of Chicago, developed a scheme for rating tornadoes based on their intensity. His scale, called the **F scale**, gives tornadoes a numerical rating from F0 to F5. F0 and F1 tornadoes are considered “weak” tornadoes, F2 and F3 tornadoes are classified as “strong” tornadoes, and F4 and F5 tornadoes are categorized as “violent” tornadoes. Table 4 summarizes the Fujita scale.

The F scale is based on tornado damage (primarily to buildings), so there is ambiguity in the scale. For example, a tornado which moves over open country will tend to receive a lower rating than a tornado that strikes a populated area. Since buildings have a wide variation in age, quality of design, and quality of building materials, more uncertainties are thrown into the mix. Tornadoes over open country probably encounter varying types of vegetation, leading to uncertainties in these cases. Still, the Fujita scale provides a good baseline for classifying tornadoes according to their intensities.

F0 Gale Tornado	weak	40-72 mph
F1 Moderate Tornado	weak	73-112 mph
F2 Significant Tornado	strong	113-157 mph
F3 Severe Tornado	strong	158-206 mph
F4 Devastating Tornado	violent	207-318 mph
F5 Incredible Tornado	violent	261-318 mph



## SAFETY TIPS

Safety should be first and foremost on the mind of a spotter.

Remember, the NWS values your safety more than we do your observations. It is essential that spotters proceed into the field armed not only with knowledge of the storms but also with an understanding of the dangers posed by thunderstorms. When spotting, travel in pairs if at all possible. When moving, this will allow the driver to remain focused on the chore of driving while the passenger keeps an eye on the sky and handles any communication with the dispatcher. When stopped, two sets of eyes are available for observation. Keep aware of the local environment at all times. When in the vicinity of a thunderstorm, keep a 2-mile “buffer zone” between you and the storm. Frequently check the sky overhead and behind to ensure no unexpected events (such as a new tornado) are developing.

Always have an escape route available, in case threatening weather approaches or if you get within the 2-mile “buffer zone.” Lightning is the number one killer among weather phenomena. During atypical year, lightning kills more people than hurricanes, tornadoes, and winter storms combined. The two main threats posed by lightning are the intense heat (about 15,000 degrees Celsius) and the extreme current associated with the stroke, estimated at 30,000 amperes (less than 1 ampere can be fatal). Lightning is also the biggest weather hazard facing the spotter. When in the field, the spotter will usually be in a preferred lightning strike area (in the open, on a hilltop, etc.). Whenever possible, remain in your spotting vehicle to minimize the chance of being struck by lightning. If you must leave your vehicle, crouch as low as possible to make yourself a less-favorable target. Hail is usually not a direct threat to life, but hailstorms are the costliest weather element to affect the United States. Each year, hailstorms cause over \$1 billion in damage primarily to crops, livestock, and roofs. Giant hailstones (2 inches or more in diameter) can reach speeds of 100 miles an hour as they fall to earth. If such a stone strikes someone, the results can be fatal. There have been only

two documented hail-related deaths in the United States, but a hailstorm in China killed over 100 people in 1976. A vehicle will usually offer adequate protection from moderate-sized hailstones. Hail larger than golf ball size may damage windshields, so avoid large hailshafts if at all possible. Downbursts are underrated thunderstorm threats. A downburst is defined as a strong downdraft with an outrush of damaging winds on or near the earth's surface. Downbursts are responsible for the "wind shear" which has caused a number of airliner accidents in the 1970s and early 1980s. When people experience property damage from a downburst, they often do not believe that "just wind" could have caused the damage, and they assume that they were struck by a tornado. In fact, the strongest downbursts have wind gusts to near 130 miles an hour and are capable of the same damage as a medium-sized tornado.

January 8, 2009

Meeting started at 7:10

Officers present: Mark Rose, Bill Dobbs, Jim Knight & Susan Miller

Board of Directors present: Tom Morgan, Tom Wolfe, Tom Cash, Susan Miller, Ben Timmerman

Mark started the meeting by saying that he will bring all questions and ideas he receives to the board. He thanked last year's officers for a job well done.

He had been looking at the news letter and wanted to leave slots for other clubs such as ARIES and ICS to put notes and announcements.

Mark suggested more dinner meetings to draw more members to meetings.

Feb. 6 meeting is Sky Warn class.

The next Board meeting is Jan. 15 at 6:00 at Ryan's on Hixson Pike.

Upgrade Classes are the third Tuesday of each month at 6:00 at Memorial Hospital. The first class is Jan 20, 2009. followed by :

Feb 17	Aug 18
April 21	Sept 15
May 19	Oct 20
June 16	Nov 17
July 21	Dec 15

Mark brought up the need of an alternate location for W4AM equipment, should the Red Cross building not be available because of low funding. If you want to contribute to the Red Cross, be sure to designate to Greater Chattanooga Red Cross so that the donation goes to our local chapter.

Bill Dobbs has been doing net control on Sunday nights for a year now and wants someone to take over for awhile. If you would like to do this for a few Sundays, contact Bill. Also a reminder, please check in to the Sunday Night net.

It was mentioned that DX association's standing meeting is second Thursday of each month and we need to not schedule meetings and events on that day.

We are trying to find the best day for everyone to attend our monthly meetings. Please let us know your opinion on this. Would you rather meet on the first Thursday of each month or the first Friday of each month and would 7:00 or 7:30 be best for you. Please call Mark Rose at 544-5857 and vote. Mark will keep a tally. Please get votes in by February meeting. If no one calls to "vote" on this, the meetings will remain on Thursdays at 7:00 at the Red Cross Bldg.

Testing will continue to be on the first Friday of the month at the Red Cross Building.

Tour de Cure is May 9th. It starts at the Colonnade off of Hwy 2A in Ft. Oglethorpe.

Jim Knight gave the treasurers report.

CL account	\$8,582.28
HF account	9683.94
PO account	<u>135.09</u>
total	\$18,401.81

Yearly club dues are due now. \$18.00 full membership, \$9.00 family membership, \$12.00 associate membership. If you wish to renew your AARL membership thru the club, the club receives \$2. Jim Knight will handle this for you.

If you joined the club in October or later and paid your yearly membership, no dues are due at this time.

Tom Cash pointed out that Mark Rose needed to appoint a financial committee. Mark appointed Jack Green, Tom Wolfe and Mike Sabin to the committee. This committee is headed by Jim Knight. Mark Rose asked this committee for a new budget.

Jack Green volunteered to do a new roster for the members.

Tom Cash pointed out that the constitution and by-laws will soon be on the website.

Bill Dobbs is going to inventory the equipment at the Red Cross Bldg.

Mark adjourned the meeting at 7:50.

Post meeting Tom Morgan gave an informative talk on the upcoming conversion of all television signals to digital signals.

Respectfully submitted,  
Susan Miller  
KI4RZJ  
C.A.R.C. Recording Secretary

## CALENDAR OF EVENTS

28 Feb 2009

Dalton Hamfest #27

Dalton ARC

<http://www.w4drc.com>

**Talk-In:** 145.230(-) no tone

21 Mar 2009

Middle Tennessee Amateur Radio Society

<http://www.qsl.net/mtars/>

**Talk-In:** 146.700 (PL 114.8)

REELFOOT AMATEUR RADIO CLUB

[HTTP://WWW.REELFOOTARC.COM/](http://www.reelfootarc.com/)

**TALK-IN:** 146.10/.70

KENNEHOCHEE AMATEUR RADIO CLUB

[HTTP://WWW.W4BTL.ORG](http://www.w4btl.org)

**TALK-IN:** 146.880 - OFFSET (PL100)

**Membership Application**  
**Chattanooga Amateur Radio Club**  
**P.O. Box 23121**  
**Chattanooga, TN 37422-3121**

Name: \_\_\_\_\_ Call Sign: \_\_\_\_\_ Class: \_\_\_\_\_

Street or PO Box: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip+4: \_\_\_\_\_

Phone No: \_\_\_\_\_ Email: \_\_\_\_\_

Are you and ARRL Member? Yes or No Circle choice.

Spouse: \_\_\_\_\_ Call Sign: \_\_\_\_\_ Class: \_\_\_\_\_

Circle All Applicable:

New member Renewal Associate\* Family\*\*

New or Renewal Member \$ 18:00 \_\_\_\_\_

Associate Member\* \$12:00 \_\_\_\_\_

Family Member\*\*\$9:00 \_\_\_\_\_

ARRL Membership (New or Renewal)\*\*\* \_\_\_\_\_

**TOTAL** \_\_\_\_\_

**NOTES:**

\* **Associate Membership** is available for unlicensed persons or licensed operators living 25 miles or more from meeting location.

\*\***Family Membership** is available for licensed operators living at the same address as Member.

\*\*\***ARRL** membership is available through the club as new member or membership renewal. Simply send your application or renewal notice along with this application and your check. Your check should be made payable to the **Chattanooga Amateur Radio Club**. We will send it to the ARRL. (The club gets a handling fee from the ARRL.)

I / we agree to abide by the club's Rules and Regulations.

Signature / s \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ Date: \_\_\_\_\_

Chattanooga Amateur Radio Club  
P.O.Box 23121  
Chattanooga TN 37421

BULK RATE  
US POSTAGE PAID  
CHATTANOOGA TN  
PERMIT NO. 804

ADDRESS CORRECTION REQUESTED

**Time for 2009 dues**