

**Request for Zoning Determination
for
Multiple Amateur Radio Antenna Support Structures**

**Submitted to Melinda Artman
Zoning Administrator
County of Loudoun**

**Jack C. Hammett, Jr.
January 20, 2004**

January 20, 2004
40282 Doe Run Lane
Paeonian Springs, Va. 20129

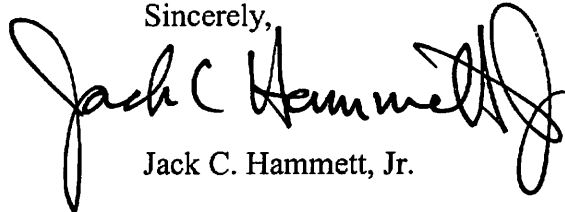
Ms. Melinda Artman
Zoning Administrator
County of Loudoun

Dear Ms. Artman,

Enclosed is a Request for Zoning Determination for the approval of multiple amateur radio antenna support structures.

I am available to meet with you or your staff if any further clarification or discussion might be helpful. You may reach me at k4vv@aol.com, (540) 882-3188 or (703) 201-3411.

Sincerely,

A handwritten signature in black ink that reads "Jack C. Hammett, Jr." The signature is written in a cursive style with a large, looping initial "J".

Jack C. Hammett, Jr.

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1. Introduction

This document is a Request for Zoning Determination as required by Ms. Melinda Artman, Zoning Administrator of Loudoun County. The Zoning Administrator has instructed me that this request is necessary for the processing of my building permit application for multiple amateur radio antenna support structures. The structures (sometimes called towers) are intended solely for amateur radio, and will be constructed solely for amateur radio purposes. I am willing to accept a condition that the structures may be used solely for amateur radio. Within amateur radio, the antenna systems will serve four purposes: (1) public service and emergency communications, (2) international communications, (3) experimentation, and (4) training. The configuration of the structures is detailed, and the visibility of the structures is addressed. The law of amateur radio antenna systems is addressed briefly. A commitment to no commercial use is discussed, followed by a short summary.

This request is for multiple amateur radio antenna support structures. Virginia law¹ prohibits a limitation on the number of support structures. Amateur radio antennas are an accessory use to a residential dwelling in the Loudoun County ordinance.

2. Applications for Building and Zoning Permits

Two applications have been submitted for a total of four antenna support structures for amateur radio application. The plat diagram of our property that shows the locations of the four support structures is provided at Enclosure 1. Applications were submitted on October 31, 2003 and November 4, 2003. The first application for one support structure (Tower 1) was approved on December 9, 2003 (Building/Zoning Permit # B30230550100). The second application for three structures was returned to me on November 24, 2003, after verbal notification on November 13, 2003 by Ms. Paula Markstrom, a zoning person, that my application would not be processed further until I submitted, and gained approval from Ms. Melinda Artman for this Request for Zoning Determination. This request is to obtain that approval.

¹ §15.2-2293.1. Placement of amateur radio antennas.

Any ordinance involving the **placement**, screening or **height** of antennas shall reasonably accommodate amateur radio antennas and shall impose the **minimum regulation necessary to accomplish the locality's legitimate purpose**. In **localities** having a population density of 120 persons or less per square mile according to the 1990 United States census, **no local ordinance shall** (i) restrict amateur radio antenna height to less than 200 feet above ground level as permitted by the Federal Communications Commission or (ii) **restrict the number of support structures**. In localities having a population density of more than 120 persons per square mile according to the 1990 United States census, **no local ordinance shall** (i) restrict amateur radio antenna height to less than 75 feet above ground level or (ii) **restrict the number of support structures**. **Reasonable and customary engineering practices shall be followed in the erection of amateur radio antennas**. This section shall not preclude any locality, by ordinance, from regulating amateur radio antennas with regard to **reasonable requirements relating to the use of screening, setback, placement, and health and safety requirements**. (Emphasis added.)

3. Purpose of the Structures

Amateur radio antennas support structures are an accessory use to a residential dwelling. My amateur radio license from the F.C.C. authorizes amateur radio activity from my home address and other mobile and temporary locations. My current F.C.C. license for my Paeonian Springs address is provided at Enclosure 2.

Radio amateurs are authorized by the Federal Communications Commission (F.C.C.) to use multiple frequency bands from 1.8 MHz through 1296 MHz, and above. Those bands of frequencies occur at: (1) 1.8 MHz, (2) 3.5 MHz, (3) 5.0 MHz, (4) 7.0 MHz, (5) 10 MHz, (6) 14 MHz, (7) 18 MHz, (8) 21 MHz, (9) 24 MHz, (10) 28 MHz, (11) 50 MHz, (12) 144 MHz, (13) 222 MHz, (14) 432 MHz, (15) 902 MHz, and (16) 1296 MHz. Of those sixteen frequency bands, I plan to equip the four structures with Yagi antennas (which look like television antennas in various sizes) on eleven of the bands (7 through 432 MHz), and with wire antennas on three of the bands (1.8 through 5 MHz). Some bands need more than one antenna, as discussed below.

In summary, I plan to use the four support structures to support amateur radio antennas on fourteen different frequency bands. Multiple support structures are needed for the antennas for multiple bands.

4. Public Service and Emergency Communications

My background and experience are important to understanding the depth and serious nature of my interests in amateur radio and emergency communications. I was first licensed as an amateur radio operator at the age of 12 in 1952. This hobby became an avocation and led me to join the National Guard in Arkansas in 1956, where I served for five years in a Signal Corps unit operating high frequency radios and supporting emergency activities. The combination of amateur radio and Signal Corps experience led me to pursue an Electrical Engineering degree and Advanced ROTC in college. I accepted a Regular Commission in the United States Army Signal Corps in 1961 and served on active duty until 1986, 25 years.

In the Army, I was privileged to command multiple Signal Corps Units: two platoons, one Company, two Battalions, and one Brigade. I earned two Masters degrees, and a Ph.D. in Electrical Engineering, attended the Army War College, and performed leadership functions to deploy the early Internet technology and to develop the concept and support the \$4.6 billion acquisition of a new generation of mobile communications systems for the Army.

Since leaving the Army, I have performed in leadership assignments at the Senior Vice President level in Science Applications International Corporation (SAIC), a six billion dollar, employee-owned company, with 60,000 employees, to lead the engineering and deployment of various military and commercial communications systems in many countries around the world.

My technology work in the Army, and afterwards, was focused on data networks and radio and telephone systems to support military and national defense applications (including emergency communications). In the Army, my full time job was to lead the men and women who made military and emergency communications work in a field environment. In other assignments, I was responsible for development, engineering, fielding and operation of these systems. The research, engineering, development, fielding, and leadership of soldiers and civilians were all connected to my 50 years of amateur radio activity.

My experience over the years includes many public service and emergency communications activities both as an amateur radio operator and as a Signal Corps soldier and engineer. Examples of these activities include (1) providing "phone patches" for soldiers and others to their families from distant lands such as Okinawa, Viet Nam, and Antarctica; (2) supporting tornado, typhoon and hurricane operations including help on the initial emergency and running the "health and welfare" radio calls afterwards for families to communicate to loved ones; (3) providing communications for evacuation of soldiers by sea from a storm threatened island in the Pacific; (4) providing support communications for recovery of downed aircraft and wounded soldiers and airmen in Viet Nam; (5) leading a team to escort the movement of nuclear weapons while maintaining multiple means of emergency communications; (6) providing communications for fire fighting operations in Germany, and (7) leading multiple organizations in training for communication support for combat operations, including multiple means for emergency communications support.

I write about these activities to emphasize my background in Public Service and Emergency Communications.

For many decades while growing up in Arkansas, and later in the Army (moving frequently), I had little opportunity to erect effective radio antennas. We lived in small houses on small lots, sometimes overseas. After my Army service, when I moved to a subdivision in Vienna, Virginia, in Fairfax County, I was able to put up a support structure at 75 feet for one antenna in order to pursue my interest. My wife of 40 years passed away in 2000, after a prolonged battle with cancer.

I've recently remarried, and we purchased a 38.6-acre property in Paeonian Springs. We have done extensive remodeling of the home and improvements on the land, including significant garden, pond, driveway, and landscaping upgrades. We entered our land in the forestry program. We have invested more than \$1.7 million in the property, improvements, and support functions. Photographs are provided in Enclosure 3. This is our dream home, on wonderful land, for us to enjoy in our retirement years. We will both be fully retired within months.

I had a challenge with heart disease in 1997 that was moderated by angioplasty, and a threat from colon cancer in 2001 that was resolved with surgery. My wife and I intend to enjoy life together here, without postponing important life objectives for some

better day in the future. Our time is now. We are both focused with determination on living our dream now.

We chose this parcel of wooded land where we now live because of the remote and private nature of the property. It provides a very pleasant getaway for our nine grandchildren to visit and a place where my antennas and their support structures (towers) will not be visible to our neighbors. Using our diesel generator, I have already had the opportunity to provide comfort to several of our neighbors during power outages. Generator backup power and the expanding communications capabilities that will be implemented upon the approval of this application will insure that all of our neighbors will be able to communicate during emergency situations. Now that I am settled here in Loudoun County and nearing retirement from SAIC, I will have the time and other resources to pursue these interests. The proposed antenna support systems are vital components to that pursuit.

I am active in the Amateur Radio Emergency Service (ARES), an organization of volunteers sponsored by the Amateur Radio Relay League (ARRL). I have coordinated with Mr. Tom Dawson, WB3AKD, an electrical engineer by profession, who, as a volunteer, is ARES Coordinator for Loudoun County. Tom Dawson and others from the Loudoun Amateur Radio Group (LARG) have been active in emergency communications support to the County, most recently by amateur radio communications services in support of the County Emergency Action Center during Hurricane Isabel. Tom has suggested several priorities for emergency support from my station that I have had incorporated into my plan.

One recommended public service application is a special terminal on one support structure to measure wind and atmospheric conditions for input to the nationwide SKYWARN system to help alert local jurisdictions of dangerous weather conditions. The amateur radio community has formed a partnership with the United States SKYWARN Organization for this purpose.

The VHF and UHF frequency bands such as 50 MHz, 144 MHz, 222 MHz, and 432 MHz, are especially well suited for local communications in Loudoun County, and these bands require line-of-sight between radio antennas for reliable communications. I have allocated space at the top of each of the four support structures for antennas on these important bands. Antennas for three of these four bands will be positioned at or near the top of both structures 1 and 2, which rotate separately. My station will be capable of beaming in four directions and operating as many as four radios on four bands at the same time to provide emergency communications and relays. Line-of-sight visibility between the antennas at each end of a VHF or UHF link is important for successful communications, so the proposed support structures are necessary for effective support in local emergencies. The VHF/UHF capabilities provide the local communications within the County and the HF capabilities provide gateway connections to the regional and national levels.

I am committed to active participation in the public service and related emergency communications efforts here in Loudoun County. I will provide space on my structures for amateur radio capabilities that directly support public service and emergency communications. My four structures will be well equipped on four VHF/UHF bands to provide diverse beaming within the County. I have explained these capabilities in some detail so that you may appreciate the value of these resources in the public service. Note that the amateur radio community provides such capabilities, including the manpower, the stations, and the training, at no cost to the public.

Amateur radio operators have provided very substantial communications support to the United States (see Enclosure 4, from the American Red Cross), to Virginia (see Virginia H.J. Res 81(2000)²), and to Loudoun County. I intend to operate a station with

2

HOUSE JOINT RESOLUTION NO. 81

Commending the Amateur Radio Emergency Service (ARES) and the Radio Amateur Civil Emergency Service (RACES).

Agreed to by the House of Delegates, January 21, 2000

Agreed to by the Senate, January 27, 2000

WHEREAS, on September 16, 1999, Hurricane Floyd totally isolated the City of Franklin, and rising flood waters forced city officials to abandon their Emergency Operations Center; and

WHEREAS, the flooding caused all electrical power and communications into and out of Franklin to be cut off; and

WHEREAS, amateur radio operators from across the Commonwealth, trained to respond to civil emergencies, volunteered their communication skills; and

WHEREAS, with traditional lines of communication inoperable, the amateur radio operators, members of the Amateur Radio Emergency Service (ARES) and the Radio Amateur Civil Emergency Service (RACES), provided the only reliable communication throughout the flood-ravaged Franklin area; and

WHEREAS, in the widest geographical and longest-running ARES/RACES activation in Virginia's history, 147 Virginia ARES/RACES volunteers worked more than 9,500 hours to help coordinate emergency operations in Franklin; and

WHEREAS, ARES/RACES volunteers carried requests for emergency assistance, food, medicine, water, ice, sandbags, pumps, cots and all other supplies needed to sustain life and ease the suffering of Franklin residents; and

WHEREAS, amateur radio operators stayed in constant communication with local emergency management officials, firefighters, police officers, the National Guard, the State Police, the Virginia Forestry Department, and the National Weather Service; and

WHEREAS, due to the tireless efforts of these amateur radio volunteers, the tragic effects of Hurricane Floyd were mitigated, the lives of those in the flood zone safeguarded, and the suffering of Franklin's residents alleviated; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the General Assembly commend the Amateur Radio Emergency Service and the Radio Amateur Civil Emergency Service volunteers, whose vital communication links were instrumental in minimizing the impact of this disaster; and, be it

RESOLVED FURTHER, That the Clerk of the House of Delegates prepare a copy of this resolution for presentation to ARES/RACES as an expression of the General Assembly's admiration and gratitude for the vital contributions of Virginia's amateur radio operators.

very substantial capabilities for public service and emergency communications, and to make the station available to other amateur radio operators for such support.

Emergency communications is recognized in the Basis and Purpose of Amateur Radio in the Federal Law: "Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications."³ [Note—Please read all of footnote 3, as these multiple items in the basis and purpose of the amateur radio service are discussed below.] I have multiple objectives for emergency communications that will be pursued using the four support structures.

5. International communications.

Many international communication events are conducted during 48 hour weekend periods every year. My station will host several local operators to participate in some of these events, operating on several frequency bands at the same time. During these weekend events, we make many hundreds, and sometimes thousands, of radio contacts with radio amateurs in other countries. Several operators active at the same time for emergency or international communications increases the need for multiple antennas and support structures.

For High Frequency (HF) international communications, my station will have antennas for 14, 21, and 28 MHz on Structures 1 and 2. Each structure is a rotating monopole, so all of the antennas on each pole rotate together. Typically one structure may be pointed towards Europe, the other toward Japan, to permit two operators to make contacts in different parts of the world at the same time on different frequency bands. (Note that this flexibility is also of value in supporting emergency communications, providing the ability to beam towards two different locations in the County or the Nation.) As propagation conditions change, antennas may be shifted to other directions such as Africa, South America, Australia, or Southwest Asia. The separation of 180 feet between the antenna systems is designed for isolation between the transmitted signals on the two bands, to avoid blocking each other's receive capability. Structures 1 and 2 will

Source: <http://leg1.state.va.us/cgi-bin/legp504.exe?001+ful+HJ81ER>

³ 47 CFR § 97.1 Basis and purpose.

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- (a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.
- (b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- (c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.
- (d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.
- (e) Continuation and extension of the amateur's unique ability to enhance international goodwill.

also support wire antennas for 1.8 and 3.5 MHz, bands that are useful for international communications during the hours of darkness.

Structure 3 is 100 feet in height. It will support HF band Yagi antennas for 10, 18 and 24 MHz, wire antennas for 1.8, 3.5, and 5.0 MHz, a VHF Yagi for 222 MHz.

Structures 1, 2, and 3 are all monopole and self-supporting, sleek and simple in appearance, spaced 180 feet apart between the trees in the upper meadow on the south portion of our property. The monopoles are not large like cell towers, but are 14 to 16 inches in diameter at the base, tapering to 3.3 to 3.5 inches at the top.

Structure 4 is a 100' triangular, lattice-type self-supporting structure positioned in a wooded area to support one 7 MHz Yagi antenna, wire antennas for 1.8 and 3.5 MHz, and one UHF Yagi antenna for 432 MHz. This structure is spaced 200 feet from Structure 3, amidst the trees. No living tree will be sacrificed to do the modest clearing of underbrush and two dead trees needed to make an open space for the tower.

I am fully committed to assembling a personal amateur radio station for international communications and public service that will deliver very high performance on multiple frequency bands, both HF and VHF/UHF. The objective will require extensive personal equipment, including radios, computers, antennas, radio transmission cables, switching equipment, and support structures. I have invested more than \$60,000 in this pursuit already, including the purchase of four support structures (towers) and extensive professional engineering services. Though purely personal and non-commercial, this is a serious public service activity.

One additional aspect of my personal involvement and commitment to amateur radio is that I am the current President of the Potomac Valley Radio Club (PVRC), an organization of more than 800 members which covers a 175 mile radius, and includes the six states centered in Virginia, including Delaware, Maryland and portions of North Carolina, West Virginia, and Pennsylvania. There are more than 25 active PVRC members in Loudoun County. If it is of any reassurance to the County, I would like to convey that my proposed construction does not present the threat of a coming onslaught of amateur radio antenna construction. I know of no other amateur planning such a station in Loudoun County. It is also relevant that the hundreds of members of PVRC are serious participants in international communications, with the equipment, knowledge, and reputation for public service and emergency communications in our region.

International Communications is recognized in the Basis and Purpose of Amateur Radio in the Federal Law: "Continuation and extension of the amateur's unique ability to enhance international goodwill." I have multiple objectives for international communications that will be pursued using the four support structures.

6. Experimentation

One of my amateur radio activities is experimentation. As a young man I did the design and construction of a VHF amplifier and other devices. I have designed and tested many antennas over the years. My career activities include research and experimentation. My Ph.D. thesis was a design of a new approach for processing voice signals to enable security on normal phone lines. The design was demonstrated in an experimental model. My current interest is experimentation with antennas.

Two experimental antenna systems are included in my plan for use of the four antenna support structures that are the subject of this document. One such system is an effort to achieve a high performance antenna array for beaming Europe on 80 meters by using four single wire dipole elements, one supported by each of the structures. The wire elements will be oriented perpendicular to the direct line from each support structure towards Europe. This experimental plan of using dipoles in echelon is fashioned after a published design that was demonstrated in one experimental installation. This antenna will employ the four structures to provide one antenna system.

A related application is to install a wire antenna of one wavelength (540 feet) on 160 Meters (supported at the 100 foot level) on the four support structures to provide a special pattern of emphasis. The pattern that is characteristic of a one-wavelength antenna oriented on the particular azimuth of my support structures is to focus the pattern towards Europe, South Africa, Australia, and Japan. There are two experimental aspects of this installation: (1) Will the modest height above ground (less than 1/4 wavelength on 160 Meters) provide a take-off angle low enough to achieve successful international communications? (2) Will the one wavelength antenna on 160 Meters cause damaging impact due to mutual coupling on the performance of the Yagi antennas for other harmonically related bands nearby? This antenna will also employ the four structures to achieve one antenna system.

Another area of experimentation is for antennas and radio propagation on the four frequencies recently authorized for use in the United States. The newest band is 5 MHz, opened to radio amateurs within the last year. The other three recent additions were the 10, 18, and 24 MHz bands, added for world-wide use about ten years ago following an international conference on the use of the radio frequency spectrum.

Experimentation is yet again recognized in the Basis and Purpose of Amateur Radio in the Federal Law: "Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art." I have multiple objectives for experimentation that will be pursued using the four support structures.

7. Training

During periods when my amateur radio station and antennas are not engaged in international communications, public service, or emergency communications, I will do casual operating as an individual on the various bands, and be involved in the support and training of others. The training will focus on how to operate the international communications and the emergency communications functions of my station, helping to prepare others for these activities.

Training of others is also recognized in the Basis and Purpose of Amateur Radio in the Federal Law: "Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts." I have multiple objectives for training that will be pursued using the four support structures.

8. Configuration of the Antenna Systems

The positioning of the structures on the property is detailed on the plat diagram provided at Enclosure 1.

Structure 1 is a monopole that is 120 feet in height, located in the Southeast corner of the property with setbacks of 140 feet, 150 feet, 820 feet and 1150 feet. This structure will support Yagi antennas for the HF bands: 14 MHz (20m), 21 MHz (15m), and 28 MHz (10m), and for the VHF/UHF bands: 50 MHz (6m), 144 MHz (2m), and 432 MHz (70cm), and wire antennas for 1.8 and 3.5 MHz.

Structure 2 is a monopole that is 120 feet in height, located 180 feet west of structure 1, with setbacks of 159 feet, 320 feet, 650 feet, and 1180 feet. This structure will support Yagi antennas for the HF bands: 14 MHz (20m), 21 MHz (15m), and 28 MHz (10m), and for the VHF/UHF bands: 50 MHz (6m), 144 MHz (2m), and 432 MHz (70cm), and wire antennas for 1.8 and 3.5 MHz. (Note that the wire antennas require all four support structures, the wires acting as one antenna system held in the air by the four support structures.) Structures 1 and 2 are independently rotatable to permit beaming in two separate directions for use by two operators.

Structure 3 is a monopole that is 100 feet in height, located 180 feet West of Structure 2 with setbacks of 168 feet, 470 feet, 500 feet, and 835 feet. It will support wire antennas for 1.8, 3.5, and 5.0 MHz, Yagi antennas for the HF bands 10 MHz (30m), 18 MHz (17m), and 24 MHz (12m), and for the UHF band 222 MHz (1.25m).

Structure 4 is a triangular lattice structure that is 100 feet in height, located 200 feet West of Tower 3 with setbacks of 178 feet, 270 feet, 700 feet and 855 feet. This structure has three vertical legs that are 2.5 inches wide spaced 5 feet apart at the base, tapering to 10 inches apart at the top, and employs 1.5 inch wide cross-members. The structure will

support Yagi antennas for one HF band, 7 MHz (40m), and for the UHF band at 432 MHz (70 cm), as well as wire antennas for 1.8 and 3.5 MHz.

9. Visibility

The antenna support structures that I have selected for installation are rather sleek and small in visual impact. Towers 1 and 2 are cylindrical monopoles that are 14 inches in diameter at ground level, tapering down to 3.5 inches in diameter at the top (120 feet). Tower 3 is a cylindrical monopole that is 16 inches in diameter at ground level, tapering down to 3.2 inches in diameter at the top (100 feet). These three monopoles are very small in profile, unlike the very large cell towers. The size of these towers is comparable to small tree trunks. Tower 4, which will be positioned in a forested area, is a triangular lattice-type tower with three legs of 2.5 inch width that are spaced 5 feet apart at ground level, tapering down to 10 inches apart at the top (100 foot level). The three legs are held in place by 1.5 inch wide diagonal cross-members. All four structures are self supporting, so that no guy cables or anchor points are needed.

The one nearby family that will have a view of my antennas from their land is the Kalitka family (Pete and Pat). They have a 40.3 acre tract that has open spaces for their many animals, including goats, sheep, and llamas. The Kalitkas are our neighbors to the east. The Kalitka's barns are very close to our property, with a view of the antenna systems. The Kalitka home is positioned about 940 feet (0.18 mile) east of the nearest structure, screened by multiple trees that limit the view of the antenna systems. The Kalitkas are very supportive of my amateur radio plans. See the letter of support from the Pete Kalitka family, attached as Enclosure 5.

The view looking east from the Tower 1 location is shown in Photo 1 of Enclosure 3. The driveway, the fence, and the Kalitka's barns (just across the property line) are visible. These photos are recent, taken in January 2004, so the trees are bare, without foliage. Photo 2 of Enclosure 3 is the view to the northeast, which shows the moderately open terrain, which provides grazing areas for the Kalitka's animals.

The property to our south is owned by Christopher D. and Laura DiCarlo. Their land has no structure on it and is heavily wooded. It is used for hunting.

There are three homeowner neighbors to our South on Doe Run Lane, all 977 feet (0.185 miles) or more distant from the nearest support structures and screened by thick forest. One of these neighbor families, Walter and Brenda Day, are friends who are often in our home and have taken advantage of our generator power hospitality on several occasions. They are very supportive of my amateur radio tower project. A letter of support from the Walter Day Family is provided at Enclosure 6.

Photo 3 in Enclosure 3 shows the view from the Tower 1 location looking south.

There are four homeowners to the West of our property who live on Clarks Gap Road. They are 1050 feet (0.2 miles) or more distant from the nearest structures, and screened by a very thick forest.

Photo 4 in Enclosure 3 shows the view to the West from the Tower 2 location. The stake in the left foreground is the Tower 3 location.

There are three homeowners to the North of our property who live on Spectacular Run Lane, all who live 1428 feet (0.27 miles) or more away from the antennas. Views from these homes are screened by multiple trees.

Photo 5 of Enclosure 3 shows the view from the Tower 1 location to the northwest. Photo 6 shows the view from the Tower 1 location to the north. Note that our barn and house are visible through the trees in the foreground.

Our property is rather remote. Our driveway from Doe Run Lane is more than 1/10th of a mile long, through heavy forest, before it enters the upper meadow along the Southern edge of our property and continues another 1/5th mile past the four antenna support structure locations to the house. Only one of our neighbors, Mr. Pete Kalitka, will have a view of the antennas, and this would be from his barns and animal fenced areas, not from his residence, that is 940 feet away from the nearest support structure with some screening trees (that are visible in the aerial view of Photo 7). All of our other neighbors are screened by trees and heavy forest, and separated from the structures by distances from 977 feet to 1578 feet. Our property is 38.6 acres that is in the forestry program.

Photo 7 of Enclosure 3 is an aerial view of our neighborhood taken in March 2003. Our property is outlined, our house location is circled, and the Tower 1-4 locations are shown as dots (from east to west). All of the nearby homes are circled (and connected by a dotted line) to show the distances that the neighbors homes are away from the nearest towers. Note that only from the Kalitka land to our east (with house at 940' distance) will the towers be visible. Homes to the south and west are screened by heavy forest. Homes to the north are 1428 feet (0.27 miles) or more away, and have screening forest.

The six parcels in our immediate neighborhood total 178.5 acres, with four families as our Doe Run Lane neighbors to our east and south. The four antenna support structures are positioned approximately in the center of the 178.5 acres, giving a maximum distance of separation from the neighbors in all directions.

10. The Law

The aspects of the law that apply to the situation presented in this Request for Zoning Determination are discussed in Enclosure 7, provided by Attorney Fred Hopengarten, Volunteer Counsel of the American Radio Relay League (the national association for radio amateurs). Virginia law¹ prohibits a limitation on the number of support structures.

The Loudoun County Ordinance has no limit on the height or number of amateur radio antennas or antenna support structures.

My antenna systems will be solely for amateur radio, and are accessory to my residence. No commercial telecommunications use is intended. This request meets the requirements of the County Ordinance in all aspects.

More than just meeting the requirements of the County Ordinance, my proposed activities are in the honored authorization under federal law, and in the best traditions of the Commonwealth of Virginia.

11. No Commercial use

I intend no commercial use of my amateur radio antenna systems or support structures (and, for that matter, no commercial use of my property of any sort). My objectives are limited to amateur radio and related public service applications. I would be happy to commit to this limitation as a condition of the approval of my towers.

12. Summary

This Application for a Zoning Determination describes the proposed uses of the four antenna support structures. Each structure meets the setback requirements, and is an accessory use to a residential dwelling. I ask that this request be approved and that the building permits for the additional support structures be accepted and processed in a timely manner.

PEACOCK DIVISION

MICHAEL F & MARGARET MOSCHETTO
N. 02° 59' 15" E.

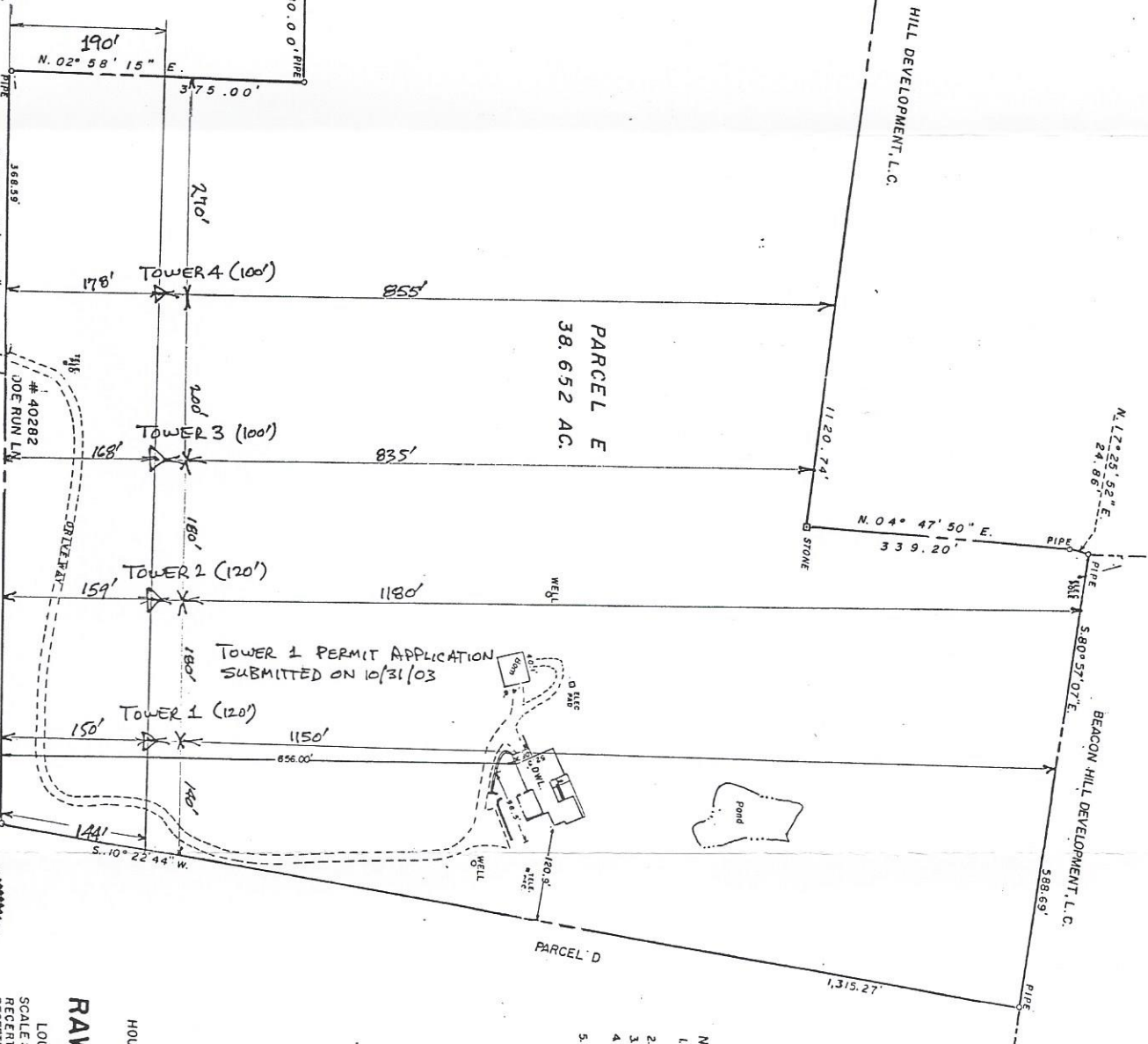
LOT 12
JOHN W. & TONYA J. CROSS

FRANCES O. & VIRGINIA G. PEACOCK

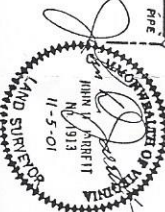
OLD WATERFORD ROAD (ABANDONED)

769.64'

BEACON HILL DEVELOPMENT, L.C.



50' OUTLET EASEMENT
CHRISTOPHER D & LAURA J. DICARLO
LOT 1 EDWARD DIV.
#40282
JOE RUN L.L.



JARRETT SURVEYS, INC.
P.O. Box 9051 McLEAN, VA 22102-0051
Ph: 703-938-7706 Fax: 703-938-7709

HOUSE LOCATION SURVEY ON
PARCEL E
RAWLS DIVISION
CATOCTIN DISTRICT
LOUDDOWN COUNTY, VIRGINIA
SCALE: 1" = 100'
RECEIVED: MARCH 23, 1999
RECEIVED: MARCH 27, 1980
RECEIVED: NOVEMBER 5, 2001

- NOTES
1. Tax Map Reference: 38 (13) 5 New: 306-27-9916
 2. Current Zoning: A-3
 3. No Title Report Furnished
 4. Current Owner: Yvaki Woodruff D.B. 1654, Pg. 1910
 5. The property delineated hereon is located in flood hazard zone "C" on area of minimal flood hazard as defined by F.E.M.A.



ENCLOSURE 1



**UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
AMATEUR RADIO LICENSE**



K4VV

HAMMETT JR, JACK C
40282 DOE RUN LANE
PAEONIAN SPRINGS VA 20129

FCC Registration Number (FRN) 0009993809

Special Conditions/Endorsements

NONE

Grant Date	Effective Date	Print Date	Expiration Date
03-01-1996	12-09-2003	12-10-2003	07-27-2004
File Number	Operator Privileges	Station Privileges	
0001540330	Amateur Extra	PRIMARY	

THIS LICENSE IS NOT TRANSFERABLE

(Licensee's Signature)

FCC 660

April 2002

Enclosure 2 - Amateur Radio License for Jack C. Hammett Jr., issued by the Federal Communications Commission.

ENCLOSURE 2



Photo 1, taken January 4, 2004, is the view to the East from the Tower 1 location, showing the driveway, the fence line, and the Kalitka's barns. The Kalitka's home is 940 feet (0.18 miles) away.



Photo 2, taken January 4, 2004, is the view to the Northeast from the Tower 1 location, showing the fence line and the grazing area on the Kalitka's property.



Photo 3, taken January 4, 2004, is the view to the South from the Tower 2 location. The nearest home in this direction is 977 feet (0.185 miles) away through heavy forest.



Photo 4, taken January 4, 2004, is the view to the West from the Tower 2 location. The stake in the left center of the photo is the location for Tower 3. The nearest homes in this direction are 1050 feet (0.2 miles) away through heavy forest.

ENCLOSURE 3



Photo 5, taken January 4, 2004, is the view to the Northwest from the Tower 1 location.



Photo 6, taken January 4, 2004, is the view to the North from the Tower 1 location, showing the barn and our home in the foreground. The nearest neighbors homes in this direction are 1428 feet away (0.27 miles).

ENCLOSURE 3



Photo 7 is a Loudoun County aerial view (taken 03/27/03) with the Hammett property outlined. The dots are Towers 1-4. Distances from the towers to nearby homes are shown.



National Headquarters
8111 Gatehouse Road
Falls Church, VA 22042

September 11, 2002

President Jim Haynie
The American Radio Relay League
225 Main Street
Newington, CT 06111-1494

Dear President Jim Haynie:

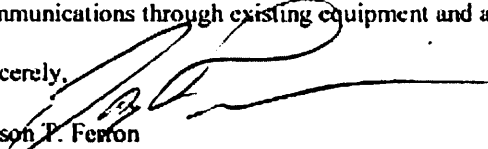
Each year, on average, the American Red Cross provides services in over 62,000 emergencies in various places around the United States. Whether flood, fires, earthquakes, hurricanes, or man made disasters, the American Red Cross is there to respond. As our corporate slogan states "Together, we can save a life". When the Red Cross asks for help from America's radio hams we get it. Every time we ask, radio hams volunteer the use of their stations, including antennas, and they volunteer their time. For this, and for the results they achieve for victims of tragedies, we are grateful. Your membership helps us at the disaster scene or from their home running emergency communications.

Even in an era of cell phones and satellite communications, amateur radio continues to provide crucial links in disaster stricken areas. When the emergency arises, it is too late to build or transport communications systems equivalent to those available in the existing stock of amateur radio stations.

We understand that in emergency communications the one of the key issues is to have trained emergency communicators who have equipment and antennas set up for fast response. For this reason, we supported the American Radio Relay League when it sought preemption of zoning and other local regulations that, either as written or as applied, act to inhibit effective communications. We applauded when the Federal Communications Commission recognized an obvious fact of physics -- that effective communications is often a function of height.

For these reasons, the American Red Cross strongly supports amateur radio, and the construction of station antenna systems to provide effective local and long distance communications. We have done so through Memoranda of Understanding with the American Radio Relay League dating back before World War II, and still current today. We encourage municipalities and Home Owner Associations to employ their regulations so they will not impinge on the needs of amateur radio operators. In emergencies, the American Red Cross, and the people we serve in your area, need what radio amateurs provide -- effective communications through existing equipment and antenna systems.

Sincerely,



Jayson P. Fenton
Disaster Telecommunications Partner
Disaster Services

Together, we can save a life

ENCLOSURE 4

Peter Kalitka
P.O. Box 305
Waterford, VA 20197
January 2, 2004

Ms. Melinda Artman
Zoning Administrator
County of Loudoun

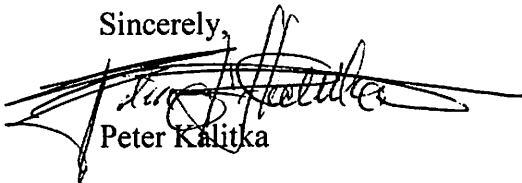
Ms. Artman,

My wife Pat and I are friends and neighbors of Sharon and Jack Hammett. We share a property line that is 1300 feet long, and have views of their land from several places on our property. Pat and I have known the Hammetts since they moved to Paeonian Springs in May of 2002.

We are familiar with Jack's plan for the four amateur radio antenna support structures. We have seen three of the towers being prepared for installation. While these structures will be visible from parts of our land near the barns, we have no objection whatever to the structures. We know that Jack will do his best to keep us in contact with the outside world if an emergency situation interrupts our electrical power and communications.

I served in the United States Army for decades, and Pat served the United States Government on many overseas assignments. We both appreciate the value of good communications with backup power in our neighborhood. Pat and I are completely supportive of the implementation of the four antenna support structures and urge that these be approved.

Sincerely,



Peter Kalitka

ENCLOSURE 5

Walter & Brenda Day Daybreak Farm

40213 Doe Run Lane
P. O. Box 157
Paeonian Springs, VA 20129

Phone: 540-882-3716
Fax: 540-882-3716 (call first)
Email: daydaybreakfarm@aol.com

December 30, 2003

Ms. Melinda Artman
Zoning Administrator
County of Loudoun

Ms. Artman

My wife Brenda and I live at 40213 Doe Run Lane, near Jack and Sharon Hammett's home. Our house is one of the closest to the Hammetts on Doe Run Lane. Brenda and I have known Jack and Sharon for 20 months as neighbors. We have been in their home many times, and followed the planning for radio antennas.

We are very supportive of Jack's plans to install four amateur radio antenna support structures on their property. We have seen the towers and know the planned locations, and I have read his document requesting approval for the four towers. We are fully supportive. The structures will be useful to Jack in his amateur radio activities and provide very welcome capabilities for emergency communications that may one day be very important to the families who live in our community.

Sincerely,



Walter Day

ENCLOSURE 6

Ham Radio Antennas: What Does the Law Require of Localities or Municipalities?

By
Fred Hopengarten¹

A series of materials instruct states, localities and municipalities (hereafter “localities”) as to what the law requires when a radio ham applies for an antenna permit. This challenge of localities is that they must meet each and every element of these requirements. This paper is designed to be helpful to localities in drafting an ordinance, by offering a series of questions, with the answer that is necessary for the ordinance to withstand a court challenge.

FCC Materials

PRB-1. The full text of the FCC’s seminal 1985 Order, known as PRB-1, may be found at <http://www.fcc.gov/wtb/amateur/prb-1.html>. While characterized as a “Memorandum Opinion and Order”, it has the full force of a Federal regulation or statute, and may preempt state or local law. *Fidelity Federal Savings & Loan Ass'n v. de la Cuesta*, 458 U.S. 141 (1982).

Localities must take heed of several provisions of PRB-1:

24. . . . [T]here is . . . a strong federal interest in promoting amateur communications.
25. Because amateur station communications are only as effective as the antennas employed, antenna height restrictions directly affect the effectiveness of amateur communications. Some amateur antenna configurations require more substantial installations than others if they are to provide the amateur operator with the communications that he/she desires to engage in. . . . [L]ocal regulations which involve placement, screening, or height of antennas based on health, safety, or aesthetic considerations must be crafted to accommodate reasonably amateur communications, and to represent the minimum practicable regulation to accomplish the local authority's legitimate purpose.

Thus, the locality must answer “yes” to each of the following questions:

- Is the ordinance crafted to reasonably accommodate amateur communications? [Note: If the ordinance was crafted to restrict antenna systems in ways that prevent or inhibit amateur communications, presenting unusual hurdles to amateur radio applications not present in similar accessory uses, the answer would be no.]
- Does the ordinance represent the minimum practicable regulation to accomplish the authority’s legitimate purpose? [Note: If the ordinance is not the minimum necessary, the answer would be no.]

¹ Mr. Hopengarten is an attorney whose principal practice is antenna law. He has been a licensed radio amateur (K1VR) since 1956, and an attorney since 1972. He may be reached at hopengarten@post.harvard.edu, or through www.antennazoning.com.

47 CFR §97.15(b). Subsequent to the issuance of the FCC’s Order, the essence of PRB-1 was issued as a Federal regulation. The text of 47 CFR §97.15 may be found at: <http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi?TITLE=47&PART=97&SECTION=15&YEAR=1999&TYPE=TEXT>, but is short enough to be included here:

Sec. 97.15 Station antenna structures.

(a) Owners of certain antenna structures more than 60.96 meters (200 feet) above ground level at the site or located near or at a public use airport must notify the Federal Aviation Administration and register with the Commission as required by part 17 of this chapter.

(b) Except as otherwise provided herein, a station antenna structure may be erected at heights and dimensions sufficient to accommodate amateur service communications. (State and local regulation of a station antenna structure must not preclude amateur service communications. Rather, it must reasonably accommodate such communications and must constitute the minimum practicable regulation to accomplish the state or local authority's legitimate purpose. See PRB-1, 101 FCC 2d 952 (1985) for details.)

[64 FR 53242, Oct. 1, 1999]

Thus, the locality must answer “yes” to this additional question:

- Does the ordinance permit “heights and dimensions” sufficient to accommodate amateur service communications? [Note: Restrictions on height and dimensions are subject to this scrutiny.]

DA 99-2569. An additional FCC order was issued in 1999, stating the FCC position on two items which some localities and courts had found confusing. DA 99-2569 rejects balancing tests (“it is clear that a “balancing of interests” approach is not appropriate”). The local authority may not balance the interests of the community against those of the amateur, as the FCC has already done the balancing and issued a Federal rule.

The FCC further ordered that “the very least regulation necessary for the welfare of the community must be the aim of its regulations so that such regulations will not impinge on the needs of amateur operators to engage in amateur communications.”

This Order may be found at

<http://www.fcc.gov/Bureaus/Wireless/Orders/1999/da992569.txt>.

Thus, the locality must answer “no” to these questions:

- Does the ordinance permit a “balancing of interests” approach to the application for a permit?
- Does the ordinance “impinge on the needs of amateur operators to engage in amateur communications”?

Court Decisions

As with many statutes and rules, the Courts have been required to resolve controversies in which a locality acted badly. Here follows a discussion of those cases, detailing further requirements of the law of amateur radio antennas.

An Open Mind.

When Andy Bodony sought to erect an 86' tall antenna system in a town with a maximum height of 25', the Court found that the town had not approached the application with an open mind. In that case, the town sought out advice from counsel in advance of a hearing on just what would be necessary to deny a permit. *Bodony v. Sands Point, NY*, 681 F. Supp. 1009 (E.D. NY 1987). In what was effectively a substantive due process case, it may interest local government officials that the amateur was awarded \$60,000 in damages.

No Fixed or Unvarying Height Limit.

The *Bodony* case, above, also stands for the proposition that an arbitrarily chosen height limitation, without the consideration of the applicant's need for height, is preempted. ("We base our ruling on PRB-1, in preempting the right of the Zoning Board to arbitrarily fix a limitation on the height of an antenna to 25 feet.")²

Similarly, *Izzo v. River Edge, NJ*, 843 F.2d 765 (3d Cir. 1988), upholds the preemptive effect of PRB-1 to a 35' height limitation: "The effectiveness of radio communication depends on the height of antennas." At p. 768. The Court awarded fees of \$10,000.

See also *Howard v. Burlingame, CA*, 937 F.2d 1376 (9th Cir. 1991), (a case in which the bylaw required special permit for heights over 25'): "[T]hose [ordinances] which establish absolute limitations on antenna height . . . are . . . facially inconsistent with PRB-1."

Furthermore, see *Brower v. Indian River County Code Enforcement Board, FL*, No. 91-0456 CA-25 (June 23, 1993), 1993 WL 228785 (Fla.Cir.Ct.). (This case involved an antenna support structure of 68.88 feet, plus antennas to total of 95.6 feet; 72.4 feet from neighbor's property line.) The ordinance had an absolute prohibition on towers over 70'. The ordinance was held facially void as an unvarying maximum height: "We agree with the *Evans* court's adoption of prior rulings in that case which concluded that flat

² "One factor in determining the range and effectiveness of radio communication is the height of the antenna. Measurement from the ground tells us little. A 25 foot antenna in a valley surrounded by hills might be useless, while that equipment on a mountain top might give optimum results. An antenna rising above the obstacles that interfere with radio signals obviously gives a greater range and better reception than an antenna of a lesser height."

prohibitions of this nature are not permitted, *Evans*, at 976.” [Refers to *Evans I*, the Federal District Court case in *Evans v. Boulder, CO*, 994 F2d 755 (10th Cir. 1993)].

In *Pentel v. Mendota Heights, MN*, 13 F3d 1261 (8th Cir., 1994), an absolute 25' height limit was preempted. In *Palmer v. Saratoga Springs, NY*, 180 F. Supp. 2d 379 (N.D.N.Y. 2001), <http://www.nysd.uscourts.gov/courtweb/pdf/D02NYNC/01-12259.pdf>, an absolute height limit of 20' was preempted. “[A]n unvarying height restriction on amateur radio antennas would be facially invalid in light of PRB-1.” (Citing *Pentel* and *Evans*.)

In other words, if a variance is required to go over a certain height, the ordinance is pre-empted.

Effective Communications and Reasonable Accommodation is Found in the Specifics of the Application, and from the Ham’s Perspective.

In *Marchand v. Town of Hudson, NH*, 788 A.2d 250 (N.H. 2001), a case involving three antenna systems, each totaling 100' tall, in addition to ruling that balancing of interests is not appropriate, the Court held that: “[T]o “reasonably accommodate” amateur radio communications . . . the ZBA may consider whether **the particular height and number of towers are necessary to accommodate the particular ham operator’s communication objectives.** (Emphasis added.)

Similarly, in *Snook v. Missouri City, TX*, No. 03-cv-243, Slip Copy, 2003 U.S. Dist. LEXIS 27256, 2003 WL 25258302 (S.D. Tex. Aug. 27, 2003, Hittner, J.) (the Order, Slip Opinion, 63 pp.). See also the Final Judgment, 2 pp. (USDC, SCTX, 2003), the Court held:

“To conduct effective emergency communications, Snook must be able to achieve at least a 75 to 90 percent successful signal under the changing variables that impact emergency or other amateur radio communications.” At ¶9.

“PRB-1 requires a site-specific, antenna-specific, array-specific, operations-specific, ordinance-specific, and city action-specific analysis. PRB-1 at p. 7.” At ¶16.

An Attempt to Negotiate a Satisfactory Compromise.

Finally, localities should realize that saying no is never enough. *Howard v. Burlingame, CA* (*id.*), requires that the city “consider the application, make factual findings, and attempt to negotiate a satisfactory compromise with the applicant.” At 1380.

Similarly, *Pentel* (*id.*) quotes with favor the Howard case, saying that reasonable accommodation requires an attempt to negotiate a satisfactory compromise.

No Consideration of Radio Frequency Interference.

The simplest restriction on a locality is that it cannot consider the potential of interference to home electronic equipment, public service communications, and so forth. The interference preemption cases are quite plain.

Broyde v. Gotham Tower, 13 F.3d 994, 997 (6th Cir. 1994), (FL. Affirmed dismissal of nuisance suit regarding interference with home electronic equipment because interference falls within the FCC's exclusive jurisdiction over radio transmission technical matters).

Southwestern Bell Wireless Inc. v. Johnson County Board Of County Commissioners, 199 F.3d 1185, 1193 (10th Cir. 1999), cert. denied, 2000 WL 343599 (2000), U.S. S. Ct. Dkt. No. 99-1575, 529 U.S. ____ (2000), (KS. Allowing local zoning authorities to condition construction and use permits on any requirement to eliminate or remedy interference "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.")

Freeman v. Burlington Broadcasters, 204 F. 3d 311 (2d Cir. 2000), cert. denied, 531 U.S. 917 (2000) (VT. Found that "given the FCC's pervasive regulation in this area", allowing local zoning authorities to condition construction and use permits on any requirement to eliminate or remedy RF interference to public service communications 'stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress'")

For a review of the field, see "The Ghost in the Computer: Radio Frequency Interference and the Doctrine of Federal Preemption", Brock, Computer Law Review and Technology Journal (1999), pp. 17-36.

Summary

Pity the drafters of a local ordinance. The task is not simple when the meaning of "reasonable accommodation" is not plain. Nonetheless, it can be done.

Questions to the Locality

A locality must answer "yes" to each of the following questions:

- Is the ordinance crafted to reasonably accommodate amateur communications?
- Does the ordinance represent the minimum practicable regulation to accomplish the authority's legitimate purpose?
- Will the permit granting authority approach each application with an open mind?
- Will the permit granting authority consider the amateur's need for effective communications from the amateur's perspective, and work to reasonably accommodate effective communications?

The locality must answer “**no**” to these questions:

- Does the ordinance permit a “balancing of interests” approach to the application for a permit?
- Does the ordinance “impinge on the needs of amateur operators to engage in amateur communications”?
- Is there a fixed or unvarying height limit, after which the only possible way to get a permit is by variance?
- Has the permit granting authority considered radio frequency interference (RFI) or television interference (TVI)?