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## A Message From Tony

There are a number of things I want to share with you on this page. First, as I mentioned in a recent *Aerogram*, the Membership Committee has been spearheading the Radio Club of America's effort to put together a new club brochure. By the time you read this article, we expect have to have them printed and available. What a great tool for you to use when explaining to new members what our club is all about! The new and exciting theme for the brochure is "Honoring the Past, and Committed to the Future." Many thanks to the committee for all its hard work and effort in bringing this project to completion, a project that will help ensure the future membership of our club.

Committed to the future? It's easy to associate the club with our rich and long history but to whom does that age-old message really appeal? Maybe it's history buffs, but the Radio Club of America is not just about the past. It's also about what is happening today and how wireless communications is changing the face of society and how we live. Some of our current members have an active hand in helping make that change happen. Martin Cooper, your newest board member, was instrumental in bringing portable cellular technology into the mainstream of today's culture, and he continues to guide smart-antenna technology into the future. William F. Baker, president of Thirteen/WNET, is helping to make sure that the newest and highest-quality HDTV programming available in the world is being delivered to millions of TV sets in the New York City area. Yes, these are your fellow members who are helping to create the future today.

The Radio Club of America, through its scholarship program, supports students who are studying for a career in the field of communications. Our scholarship program needs your ongoing financial support. It's one of the important ways our club enables you – its membership – to participate in the future of wireless communications. Please contact John Dettra ([jdet@erols.com](mailto:jdet@erols.com)), who chairs our Scholarship Committee, to see how you can have a hand in helping to educate a student. What a great investment in the future!

While I'm on the topic of the future, the club's 100th Anniversary is in 2009. The 100th Anniversary Committee has been formed, chaired by Debra Wayne, and is already beginning to plan for the club's biggest and best celebration ever. You will be receiving surveys from the committee soliciting your input on the upcoming celebration. Your opinions are important and they need your guidance in order to plan the greatest party in club history. Please take the time to fill them out and return them right away. The year 2009 might seem like it is a long way off in the distant future but it will be here a lot sooner than we think.

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# How Boeing Engineers and BEARS Brought Communications Technology to China

— By C. P. (Pat) West, W7EA, P.E.

*It's hard to believe that, fewer than 30 years ago, there were no wireless telephone communications available in The Peoples' Republic of China. It took a group of BEARS to help that country eventually get bullish on cellular technology.*

Spanning more than 25 years to the present, The Boeing Company's relationship with The Peoples' Republic of China (PRC) has brought more than Boeing airplanes into service for China. It also has brought amateur radio communications technology to a country that remained isolated from the rest of the world for 30 years following the Communist Cultural Revolution.

That silence began to break when, in 1981, four members of the Boeing Employees Amateur Radio Society (BEARS) carried two radio stations to Beijing and Shanghai. Our group – which included Bob Hudson (K7LAY), Henry Oman (K7HO), Bill Showers (KC7CF) and me – was the first and, I have no doubt, the most adventure-filled delegation of USA amateur radio enthusiasts to travel to China since the Cultural

Revolution. Our goal: To reintroduce the Chinese to amateur radio technology and the pleasures of “outside” communication.

The trip came about as a result of a visit to PRC that I made in 1980 with the Computer Society. While on that trip, I met Zhou Mengqi, deputy secretary general of the Chinese Institute of Electronics (CIE), and I convinced him that I should bring a group with radios to China in 1981. My primary contacts in China at that time were with Mr. Zhou and with Ning Yun-he, vice president of the China Radio Sport Association (CRSA). These gentlemen deserve much of the credit for getting the PRC back on track for amateur radio and for perhaps planting the seed that eventually got the PRC heavily involved in cellular telephony; today, China leads the world in the number of cellular telephone subscribers. Mr. Zhou and his leader, CIE President Sun Junren, were directly responsible for our 1981 expedition to China, which established amateur radio stations at radio clubs in Beijing and Shanghai.

Amateur radio repeaters are in place all over the United States, with some tied together by a radio link to increase range of coverage. For example, the Evergreen Intertie system connects a BEARS-sponsored repeater to other repeaters, allowing an amateur in the Seattle area to communicate with others in eastern Washington, in Oregon and in British Columbia. The amateur radio repeater system was copied by commercial entities and improved to provide multiple frequencies, duplex operation, digital encoding of voice signals, connection to the fixed telephone system and other improvements.

Current communications-technology manuals, purchased from the American Radio Relay League



This postcard-sized card was used as a handout during the BEARS 1981 visit to China. These cards, called QSL Cards, are used by radio amateurs to verify a contact with another station.

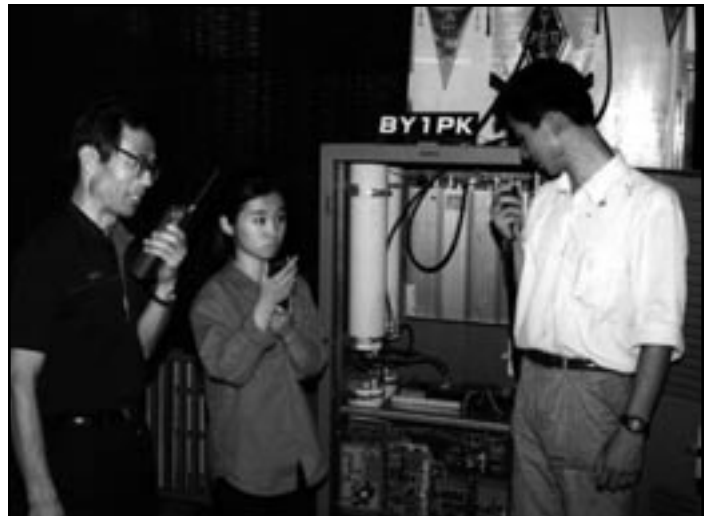
(ARRL), were delivered on a brand-new Boeing 707 aircraft flown from Seattle to Beijing along with a donated ARRL film we used in technical presentations. The radio stations themselves were carried with us as part of our luggage. From Beijing, we made a demonstration contact with the late Bill Bennet (W7PHO) in Seattle; this was the first contact of this type in more than 30 years. The Chinese also set up a station in Shanghai that communicated with the Beijing station.

### Installing China's First Repeater

As a result of our 1981 expedition, the Chinese invited the BEARS to bring the country's first repeater to China in 1988. We took advantage of the delivery of another brand new Boeing 707 airplane to transport the heavy repeater from Seattle to Beijing.

The repeater was designed and built by a group from Boeing led by Russ Kroeker (K7HE). The 10-member delivery delegation was led by the late Dick Mehnert (W0KPK), then president of the BEARS. Other delegation members and their wives included Hal Todd (W7ZXM), Bill Showers (KC7CF), Joy Showers, Mike Noren (NS7O), Bob Hudson (K7LAY), Joy Hudson, Nita Mehnert and me.

We set up the repeater at the CRSA station BY1PK building in Beijing, and we taught repeater technology to those who would operate it. The Chinese provided a satellite-telephone circuit from the repeater to the BEARS repeater in the Seattle area. Then, with our Chinese friends, the BEARS delegation proceeded to the Great Wall of China. Using handheld radios on



**Chinese amateurs** check out China's first repeater at the CRSA main station BY1PK (1988 photo).

the Great Wall, we were able to contact the repeater in Beijing, and our voice signals were exchanged with radio amateurs in Washington State, Oregon, Idaho, Montana and even with amateurs in British Columbia. By means of two-way simplex communications via satellite link, we even talked to a farmer in a tractor plowing a field in eastern Washington! To my knowledge, this was the first time any amateur radio communications had ever emanated from the Great Wall. After our visit, this operation was repeated several times by Pacific Northwest amateurs communicating with others in the Beijing area. As we had with previous radio stations, we left the repeater in China.

Nearly 20 years later, in February 2001, I received a message from Shanghai friends to whom we had delivered one of those stations:

“We old hams at BY4AOM wish to convey to our fellow hams of the BEARS Club how happy and thankful we are to have received your initiation and generous gift of a TR-7 transceiver almost 20 years ago. This seed that you planted to rekindle the amateur radio movement in China has now blossomed up that almost every school and college in Shanghai now has an amateur radio club station, and there are over 2,300 licensed amateur radio stations in peoples' homes all over China now. We would like to show our appreciation for the effort you brought forth and tell you of its consequential results after almost 20 years.”

The message was signed by members of the BY4AOM amateur radio club in Shanghai. CRSA information indicates nearly 18,000 licensed radio amateurs,



**Bill Hudson (K7LAY)** talks to the late Bill Bennet (W7PHO) in Seattle from an amateur radio station installed in a first-floor room in a Beijing hotel room on Sept. 6, 1981. The transceiver used was a Drake TR-7, the antenna was a Hygain dipole mounted on the hotel's 11th-floor balcony.



**The annual meeting of the Beijing Sport Association (BY1CIE) was chaired by President Ning Yunhe (right) and Vice President Zhou Mengqi (left). At the meeting, Zhou recalled the history of the relations and friendship between the Chinese amateurs and the BEARS in the United States (2004).**

including shortwave listeners, were operating in China in 2003. But it wasn't only amateur radio that traveled with us to China in 1981.

### **Amateur Interests Beget Cellular Networks**

U.S. amateur-radio enthusiasts were pioneers in the development of cellular-telephone technology. They set up unmanned stations, called repeaters, on top of high hills or mountains. Radio frequencies used were those that propagated signals like light or line-of-sight. One frequency -- the uplink -- would be used by a remote transmitter on the ground to transmit voice signals to the repeater. The repeater would convert the voice signals to a second frequency -- the downlink -- that then was transmitted in high power from the repeater. The retransmitted signal covered a line-of-sight radius of perhaps 50 miles or more from the repeater location.

Simplex communications, which allowed one operator at a time to speak by use of a push/release switch to send and receive, could be had with another station anywhere within the repeater coverage area. Duplex operation would have allowed both parties to talk simultaneously without pushing buttons.

A couple of years ago, I asked Zhou Mengqi, my longtime friend in Beijing, if the repeater we took over in 1988 was still in use. He said it is only fired up for special occasions because practically everyone now has cellular phones and so the repeater isn't needed. I didn't think too much about his response at that time, but in

the January 2005 issue of *Communications* magazine, there was an article covering the status of cellular-phone communications in China authored by Li Bo, a professor at Hong Kong University of Science and Technology, and others. In the article, the statement is that, in 2001, China cellular subscribers exceeded the number of U.S. subscribers. The number of users in China has increased at a rate of between 50 million and 60 million subscribers each year during the five years between 1998 and 2003, reaching a total 269 million in 2003 and exceeding the number of fixed telephones (263 million). The article also stated that the number of Chinese cellphone subscribers is expected to jump to more than 730 million by 2010, translating into one cellular telephone for every two persons in China.

Via e-mail, Professor Li told me there was zero activity on cellular communications when the BEARS were in China in 1988, though there may have been preliminary discussions about the possibilities. He added that cellular phones and online Internet gambling have seen unbelievable growth in China during the last decade. The current status of Chinese cellular phone activity certainly advises everyone in the world of the potential leadership of China in the world economy.

Boeing engineers played a significant role in getting China back into amateur radio, and may even have provided the spark that ignited the Chinese cellular-phone system. The BEARS also helped to create a bridge of friendship between China and the United States. As Zhou Mengqi wrote to me on Nov. 28, 1994: "There and then, you and me, you standing on the East bank and me standing on the West bank. Both of us were standing in the water of 16 degrees Celsius. We were building the two piers, one on your shoulder and one on mine, for the FRIENDSHIP BRIDGE. Now the bridge has been finished with the efforts devoted by many people, and I believe that people enjoy it. Today in the world, especially in the United States, people are talking and working for the Information Highway. Pat, don't you think the bridge we together with many people built will be linked with the network of the information highway for the hams (amateur radio operators), and the world? Confucius said that where there is a will, there is a way."

I am proud to have been there when a new era of East-West communication began.

— C. P. (Pat) West (F), who retired from his job as an engineer for Boeing in 1984, is a frequent contributor to the *Proceedings*. He received his amateur radio license in 1937.



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# Roundtable Round Up

– Transcribed and photographed by Don Bishop (F)

*The 2005 annual session wasn't a roundtable. And there was no exhibition — unless you counted the bottles of water and soda pop on the back table, one of the audience members joked. The session consisted of two speeches followed by questions and answers. Well, maybe that's a roundtable.*

In years gone by, the Radio Club of America hosted a “Technical Symposium” or “Communications Symposium” on the day of the banquet. Last year, the afternoon session was renamed “Roundtable & Exhibition” maybe to reflect a transition away using the time to present technical papers.

The tradition of presenting technical papers at Radio Club meetings runs to the very roots of the organization. Founded in 1909, the Radio Club of America is the world's first radio communications society, but it wasn't alone for long. The Society of Wireless Telegraph Engineers and the Wireless Institute soon formed, and they helped to establish the Institute of Radio Engineers in 1912. The Institute of Radio Engineers and its successor (in a merger with the American Institute of Electrical Engineers), the Institute of Electrical and Electronics Engineers, offered a competing forum for technical presentations and a large, international membership.

The Radio Club was outdistanced by the Institute of Radio Engineers and then IEEE and the Society of Broadcast Engineers, for the most part, and by the American Radio Relay League (ARRL) and the Dayton Hamvention, to a certain degree, as a forum for technical presentations. The *Proceedings of the Radio Club of America* and the annual symposium continued to serve as unique media to publish occasional technical articles and for selected technical presentations.

This year, two Radio Club members spoke extemporaneously about public-safety communications and broadcasting. Listening to them was more interesting than hearing most people read from a technical paper — which often happens at industry



**Annual Roundtable** moderator Rich Reichler (director) (standing, far right) organized the 2005 session that took place prior to the annual awards dinner. *On the right side of the aisle, front row:* Marv Grossman, Cliff Bade and Ron Jakubowski. *Second row:* Ann Backys and Don Backys. *Third row:* An unidentified man, Scott McQueen, Pres Thomson and (hidden behind Don Backys) Patricia Thomson.



*On the left side of the aisle, front row:* Lloyd Roach, Bob Famiglio and Greg Ballentine. *Second row:* Mark Humphrey, Lew Wetzel, Larry Will, Jerry Minter and Louis Manno. *Third row:* Mal Gurian and an unidentified man. *Standing at the back of the room:* Andy Conte (with the video camera) and Vivian Carr.

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conferences. There *are* exceptions: I would listen to Leonard Kahn present a technical paper *any* day. The speakers included Lloyd Roach, president of Meetinghouse Media, and Greg Ballentine, president of the Association of Public-Safety Communications Officials - International and director of public safety and emergency services for the Mid America Regional Council in Kansas City, Mo.

Twenty people were in attendance as the session started and the session began with moderator Rich Reichler making the opening comments: “Welcome to the Roundtable & Symposium at the 96th Anniversary Annual Awards Banquet of Radio Club of America, held in conjunction with the educational mission of the Club. I’m happy to have you all here. We have two interesting speakers tonight to tell us about the radio world. One of the nice things is that it covers the entire radio community. We’ll hear about public safety with Greg Ballentine and broadcasting with Lloyd Roach.”

He continued, “Greg is president of the Association of Public-Safety Communications Officials – International (APCO). He’s putting in an extra six months as president. His local position in Middle America is as the director of public-safety and emergency services for the Mid America Regional Council.”

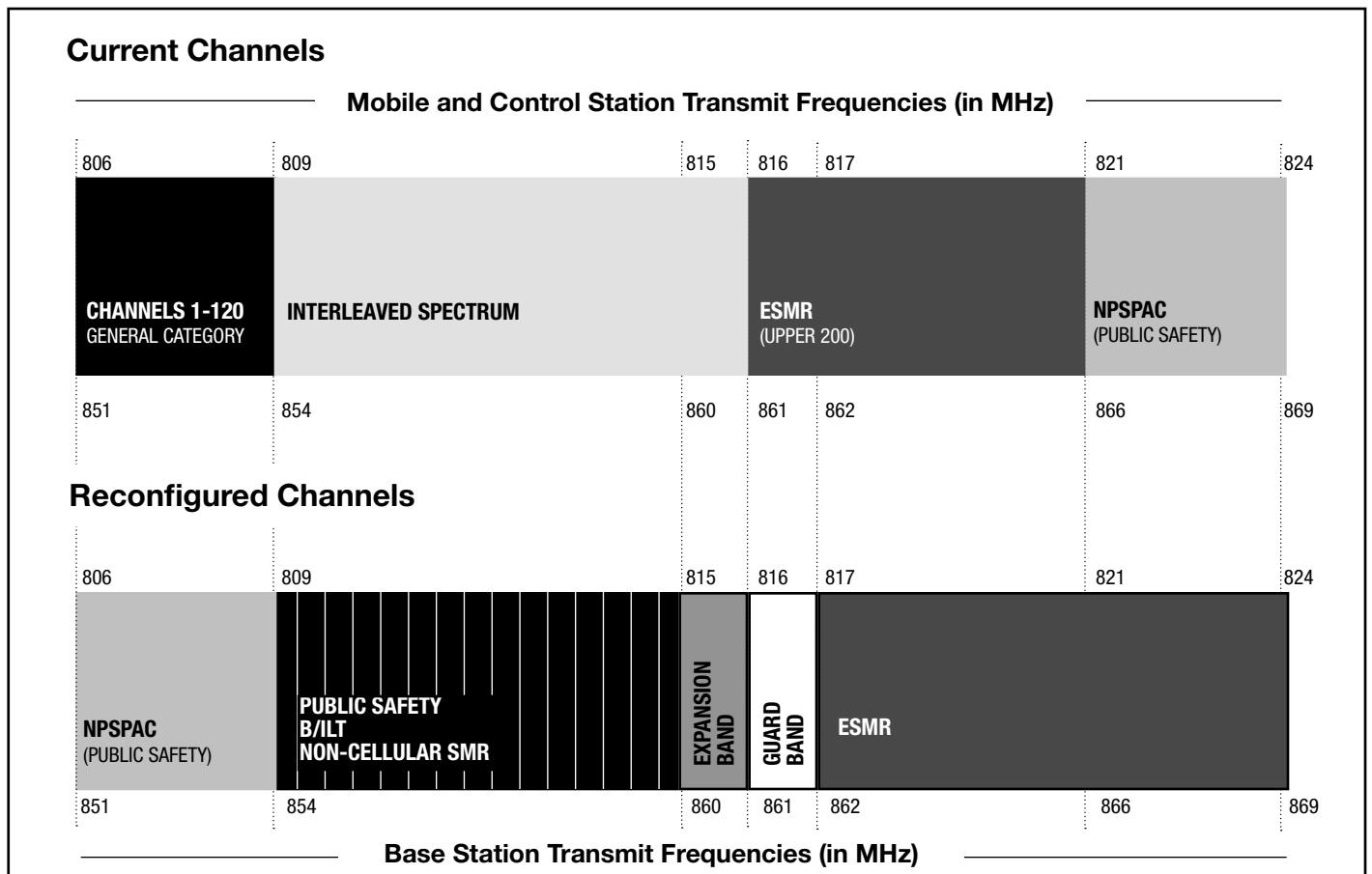


• **Greg Ballentine  
Talks Public Safety**

“I’m talking about public safety. This is my fifth year attending the Radio Club dinner. I may not have the opportunity to say so later this evening, so I would like to say that I appreciate the

opportunity to be here to receive the Fellowship. This is one of the highest honors of my career, and thank you for that. Many of you know what APCO is and what we do. We have about 17,000 members across the world. We focus on communications for police, fire and emergency medical services. I thought I would rapid-fire some of the activities we’re involved in, and then you have an opportunity for questions.

“I brought some brochures for an overview of the areas we’re involved in. The smallest one is 800 MHz rebanding. We’ve been working on that for years. It’s a project to clear interference from public safety systems caused by a mismatch between cellular and public safety systems. It’s controversial at times because of the deal put together through the Federal Communications Commission with Nextel, now Sprint Nextel. Now we’re focused on implementing the order.



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“I planned to talk about the enormous bureaucracy and the shortfall and pitfalls ahead of us. Instead, because we’re on camera, I’ll say that we’re confident rebanding will occur. I’m *not* confident it will occur within the time frame set out. We’ve had trouble with the pre-planning.

“APCO is also involved in Voice over Internet Protocol (VoIP) regulation and regulation primarily as it relates to telephones. Since this isn’t the ‘Telephone Club of America,’ I won’t spend a lot of time on it. We want to make sure VoIP customers have access to 911.

“An area we’ve worked on for years is 9-1-1 deployment for wireless devices. That *is* radio, so maybe I can talk about that more. We’ve had success in deploying enhanced 911 systems across the country. The most recent issue is wireless accuracy, and there is a debate among wireless industry and public safety as to what is the correct standard. We met in Washington, D.C., and talked about how the accuracy standard was adopted in 1994. Someone illustrated how the standard was arrived at by taking a coin out of a pocket and flipping it. There were discussions about what the standard should be. APCO’s position is that it should be measured at the local level, the public safety answering point (PSAP).

“A cornerstone of APCO is public-safety spectrum management and interoperability. Through a number of occurrences and disasters, we have become familiar with all the facets of interoperability.



The ACU-1000 is an example of a “gateway-type” of interoperability unit that allows otherwise incompatible radios to communicate with each other.

“It wouldn’t matter what systems were in place in New Orleans when the city flooded in Hurricane Katrina. All the spectrum in the world wouldn’t have helped. All the ACU-1000s banded together wouldn’t have helped. What was missing was an adequate plan for survivability of systems. I’m not criticizing New Orleans, but we’ve talked about flooding in New Orleans and about a Category 3 hurricane, but a number of systems were not in a location to ensure survivability if that occurred.

“Another problem was so many agencies coming into the area and not having systems and planning about whom to talk to under what conditions. I heard a story

about one system that stayed on the air at first, and all of sudden went off. As police went to check, they found someone had disconnected their antenna and put theirs in place. The other antenna was Federal Emergency Management Agency (FEMA). FEMA had placed their own system on the air and taken the police system off the air, and that may not have been wrong *if it were coordinated*. They may have been in a better place to provide communications.”

## Questions And Answers

Following Ballentine’s speech, a question was asked by Don Backys, who was set to be inducted as a Fellow later in the day and to present the Fellows’ Response: “I worked 30 years for Motorola as an engineer, and I worked with APCO and public-safety systems. Now as a consulting engineer, I see ‘interoperability.’ What is it? It is a new digital APCO trunking system to solve the problems. Some agency leaders are saying maybe it needs to be redefined, and to have a look at an Incident Command System. Is there something we’re doing to redefine interoperability besides ‘Equipment solves all the problems?’”

Answered Ballentine, “I hope so. APCO has led the discussion to say interoperability is only about 10 percent of the communications problem. It’s 90-percent collaboration, planning and working out the issues. As an APCO spokesperson, I would *like* to say that P-25 is the answer. It *isn’t* the answer. [P-25 is a standard for digital radio communications equipment.] A string of gateway devices is not the answer. In Kansas City, when the first homeland-security dollars started to flow and for the first time in years we had federal dollars, a lot of agencies went out and bought ACU-1000s. I’ve joked that we have more of them than portables. They don’t know how to use them. They don’t have the frequencies programmed in. If there is a disaster or a terrorist attack, four or five of those will be fired up without a plan.”

He continued, “We want to shine light on the discussions to make *planning* more important than the *new technology*. I don’t know if that’s an answer that Motorola would like to hear because technology is important, and Motorola can’t minimize the technology and spectrum issues. Congress has allocated more spectrum for public safety that currently is held by broadcasters. We don’t want to draw a line in the sand and fight them, but what better place than at RCA to have a dialogue and a forum to work out those

issues.”

Backys then asked Ballentine, “Have you seen a change in the APCO membership during the past five to 10 years?”

“It seems there is a cycle in APCO membership. You have several years where our activity is focused on technical and spectrum management. Then we focus more on operational, telecommunicator staffing, VoIP and 9-11 operational, and then APCO training,” Ballentine answered. “Right now we are more focused on the operational side of public safety than we were 10 years ago. That’s not a bad thing; it’s just where we are.”

He continued, “Also over the last six or eight years, we’ve seen forums such as NPSTC [National Public Safety Telecommunications Council] where APCO is a partner with 12 other public safety agencies. Through that forum, you see a lot of APCO leadership. Rather than have four or five organizations working on the same issues, we have formed partnerships to allow them to be addressed outside the APCO umbrella.”

Ballentine then was asked by Bob Famiglio, “What is your take on the root cause for the 800 MHz problem? I’ve heard lots of reasons. What really was the root problem?”

“Would it be fair to just say ‘yes?’ There isn’t any one factor,” said Ballentine. “There are many issues. In my opinion, there were some regulatory mistakes made. Some licenses issued that shouldn’t have been. I don’t want to accuse Nextel or Sprint of operating illegally. There were operating according to their licenses. There were some technology issues, some technological failures that resulted in interference that wasn’t anticipated. Some say maybe it was. I don’t believe that was the case. It’s difficult to say there is any one issue.”

He added, “It’s technology, regulatory failures, and frankly I don’t know whether we landed on the right solution, but it’s a solution that works for public safety. It’s expensive for some parties but thankfully not for public safety. That remains to be seen. It’s a vitally important issue and it’s an issue we’ve gotten wrapped up in windfall for Nextel for the spectrum they’re given in exchange. APCO has a responsibility to keep the spotlight on clearing the interference for public safety responders.”

Famiglio asked one more question: “What’s your

observation about the success of APCO’s digital standard? From your perspective, how is that working out?” Ballentine answered, “It’s a project that’s been in the works for a while. It hasn’t progressed as fast as we would like. The standard to be adopted soon will achieve all the objectives. A digital standard has become more crucial for interoperability and hurricanes and 9/11 attacks. I almost asked for a rebuttal on the Wall Street question. I get calls from vendors every day who say they have found a “magic bullet” for interoperability. The real magic bullet is *open architecture* to allow anyone to communicate across jurisdictional boundaries.”

This part of the roundtable then concluded with Rich Reichler saying, “One thing we have seen tonight is that solutions are needed. Life has a need to better our world. The people who are members of RCA or affiliated with it are a lot of solutions-oriented people. Let’s turn from public safety to broadcasting. There is an overlap; broadcasting is in a position to help us in emergencies and getting the word out. Lloyd Roach will talk about when AM expanded to FM and IBOC and – I know enough to be dangerous – but from the antenna world, commingling on a shared site.”



### • Lloyd Roach Talks Broadcasting

Lloyd Roach is president of Meetinghouse Media, which owns a dozen radio stations in New York and Pennsylvania. “I’m from Philly, and that’s part of my story. This whole thing started with children,” he began. “It’s the

spring of 1921, and this kid, 15 years old, just got his 3AWF license. He’s on his Ford spark coil transmitter, listening for a contact and calling CQ all afternoon with no answer. All of sudden, *wham*, a huge carrier comes on this loose coupler, and he doesn’t know what to make of it.”

He continued, “It was the first test authority for WIP. It would only air in 1921, and with that station and dozens, and hundreds, within a year, AM and the broadcast industry was born. What about the impact of that first station? In 1921 and by 1922 there were four stations in Philly: WOO, Wanamaker’s; WIP, Gimbel’s; WLIT, Lit Brothers; and WFI, Strawbridge & Clothier, operating from rooftops in Philly, all at Eighth and Market Streets on their roofs. When the

announcer said, 'We're going off the air,' they really were—they all were on 360 meters all at once. Some guy would be on the roof and pull the big switch."



**Take note of the two radio towers** atop Wanamaker's store in this 1903 view of the Philadelphia landmark. Wires strung between them served a wireless telegraph station then and maybe the same towers and wires later served WOO when it was built in 1922.

"By 1930, the stations had transmitters with crystal oscillators, and they no longer were all on 360 meters. They were broadcasting 'Amos and Andy,' 'Fibber McGee and Molly' and 'Jack Benny,'" Roach said. "In 1935, Jack Benny, for doing 30 minutes and originally 15 minutes, on the network, made \$55,000 at the height of the Depression. That was *real money*. \$55,000 a week. If you think these ballplayers were making a lot of money, think about Jack Benny talking about Jell-O. In his book, he said, 'How many boxes of Jell-O do you have to sell at 11 cents a box to pay me \$55,000 a week?'"

He continued, "We left the Golden Age of radio – it was only 19 years, from 1930 to 1949 or 1950 – and then we entered the World of Television. The AM broadcasters said, 'FM is coming.' But in 1949 or 1950, they were really worried that TV was going to clean their clocks. Todd Storz and Gordon McLendon, AM radio-station owners, met in Omaha, Neb. They saw that their revenues were down. As a network, CBS had moved its radio programs to TV. Jack Benny went to TV. There was Uncle Miltie. And radio was *hurting*. They asked, 'What are we going to do?'"

"At a diner, they watched as a waitress put dimes in a jukebox. They drank coffee and commiserated. The waitress kept putting dimes in the jukebox. They noticed that she played the same song, 'How Much Is That Doggie In the Window?' over and over. They stopped her and asked, 'What are you doing?' 'I like the song,' she answered," Roach said. "They visited the

jukebox company and asked how many records were put in their jukeboxes? 'Forty,' they were told. They asked, 'How do you know what to play?' 'We count the dimes,' was the answer. Gordon McLendon said, 'If we can find out how many dimes are in the jukebox, we can find out what to play on our stations.' And Top 40 was born. That's what they did."



**The Radio Hall of Fame** credits Gordon McLendon (left) with making KLIF one of the first Top 40 stations in the early 1950s. It also credits McLendon with creating the "beautiful music" format in 1959 and with starting the first "all news" station in the early 1960s. Todd Storz (right), owner of a chain of radio stations in the 1960s, reportedly invented the Top 40.

"Today, when you listen to WINS in New York, KNX in Los Angeles or KYW in Philly, you're listening to 'Top 40 News.' They rotate the news the way we used to rotate the records. They play the hits. That's the way it works," Roach said. "Later, people said AM radio is getting boring. 'We need more variety,' they said. We had the FM stations. I was in FM in the early days. We had 'head' stations: Play music by Phil Ochs, smoke a joint and listen to the radio in stereo. We would sit in our dorm rooms and listen to WBCN-FM, Boston; WNEW-FM, New York; and WMMR-FM, Philadelphia. On WPAT in New York or WDVR in Philly, you could listen to Mantovani. That was going to wipe out AM radio."

He continued, "None of these technologies wipes out anyone. TV didn't wipe out radio. FM didn't wipe out AM. Today, we're on the eve of having AM, FM, XM, Sirius, Internet, iPod and podcasting. 'Where will it all end?' you might ask. It's like in 1921, when you had that 15-year-old with the ham license. Today's hams are playing with computers. That cuts my heart out, but that's the way it is. Think of the way the electronic mass media has affected the world. Don't bemoan the death of AM, FM, TV or over-the-air broadcasting. Think of IBOC [In-band, On-channel]. My engineering friends say it won't work at all in AM. I figure next Thursday



by 3 p.m. we will have a new technology, anyway.”

“One thing to cover with you tonight is the notion that everyone has a favorite radio station, but no one has a favorite TV station,” Roach added. “And I don’t think anyone has a favorite Internet site. They listen to a favorite radio station because of some kind of isolated programming. My friends Bob Famiglio and Larry Will have XM radios in their cars. We were at a conference last week. They have 164 channels and there are no commercials...yet. Remember what the cable TV guys told us? ‘No commercials.’ If you look to the future of broadcasting and mass media, the Internet is not a media, it is a delivery device. That’s what XM is. I’d be looking for another Jack Benny or Elvis Presley or Wolfman Jack who causes enough impact to make programming worth listening to on the media we invented.”

Roach commented, “Way back to the Thirties or Twenties, one of you New Yorkers could tell me, the first radio commercial was in New York City for an apartment building. Is it the commercial medium we will see on these new technologies or will we use the Internet to invade our automobiles? I know this: If we have compelling programming delivered over this new technology, it will be successful. Yesterday, I got junk mail from Verizon. It said, ‘Now you can download tunes into your telephone.’ Not another one! Now I have the *telephone* to deal with. I’m enthusiastic about the broadcast medium and its role in public safety because it has the ability to reach all of you at one time.”

Following Roach’s presentation, moderator Reichler said, “We want to recognize excellence. I’ll take a detour myself for observations I’ve made, thinking about what Greg mentioned in New Orleans. In Los Angeles we had shuttle launches and landings and the Democratic Party’s national convention. The broadcast community converges on the site and does an all-out test of all the frequencies and makes sure they won’t interfere with one another. It is a challenge. We’ve come a long ways from the days when only one station could be on the air. I’m reminded of Fred Link. My understanding is that early in his career, he was making sure the telephone poles — they are the infrastructure for telephones and electricity — there was a day they couldn’t cohabit. Now there is cable TV and Internet access on the cables along with telephones and electricity. RCA members solve those issues and make them better.”

*(Editor’s Note: In past years, copies of video recorded during the Radio Club of America annual roundtable sessions have been available from Andy Conte. Call 800/710-8804 or e-mail to a2dj@aol.com to inquire.)*

## O’Brien Sends FCC A ‘Cyren Call’ For Public-Safety Action

A new venture headed by wireless industry veteran and Nextel co-founder Morgan O’Brien is backing the creation of a nationwide, seamless, next-generation network for improved public-safety communications.

In a recent filing to the Federal Communications Commission, O’Brien’s new Cyren Call Communications Corp., urged the agency to establish a “Public Safety Broadband Trust” to hold the license for a key segment of spectrum in the 700 MHz band. The commission also is being asked to structure “innovative arrangements” for its use, thus placing public-safety needs first but requiring commercial usage secondarily.

“This spectrum represents America’s best opportunity to foster state-of-the-art public safety communications,” says O’Brien. “If this spectrum is auctioned to the private sector, the nation forever loses its best shot at fixing this issue once and for all.”

The proposal “paves the way to a workable, self-sustaining business model for public-safety communications. The proposal also takes advantage of a unique, historic opportunity arising from the long-planned clearance of some of the nation’s most useful frequencies, which broadcasters will vacate by 2009. Specifically, a 30-megahertz block of spectrum in the 700 MHz band – presently allocated for commercial use and scheduled to be auctioned in 2008 – is ideally suited for a nationwide, next-generation public safety network because of its distinctive physical properties.”

Compared with higher frequency bands, Cyren Call says signals transmitted in the 700 MHz range can travel farther, can penetrate walls and outdoor foliage better, and can be sent and received without direct line of sight. In addition, operations in the 700 MHz band “would enable future compatibility with already allocated public-safety spectrum,” the new company says. The proposal is the result of a December 2005 FCC report that said, in part, that “public safety officials at the federal, state, local and regional levels commented that, ‘even considering the actions the Commission has taken to date, the need for allocation of additional public safety spectrum in the 700 MHz band remains.’”

As such, the Cyren Call proposal specifically calls for establishing the previously mentioned Public Safety Broadband Trust; strengthening the private sector’s role in the design and construction of the next-generation public-safety network (with the promise that such entities would be able to sell excess capacity); setting incentives for a robust, competitive network, including rules and technical standards; and a satellite-based component to help ensure redundancy; and creating self-sustaining financing, with funding coming from private companies that are given incentives to build and maintain a national network “and to provide the best services to public safety at the best prices.”

“There is enormous, bipartisan political support for giving America’s first responders more robust, interoperable communications tools but, until now, we have not had the means,” says O’Brien. “The public sector has not had the necessary funding or spectrum to make it happen, and the private sector has not had the incentives. Under this proposal, it will no longer be a question of whether we have the means to enact change, but whether we have the will.”

# NTT DoCoMo's Ono Details The Wireless Industry's Present, Future

*As the president and CEO of NTT DoCoMo USA Inc., Nobuharu Ono is in the unique position of being able to look at his country's progress in the cellular industry and to compare it to what is happening in the United States. There are business lessons to be learned.*



It's a great honor to be here today to share my thoughts on the telecom industry and, in particular, the wireless business. Although most of my career has been spent in Japan, I've also had the opportunity to work on both coasts of the USA, in the Silicon Valley in the 1990s and, more recently, for the past four years in New York as president & CEO of NTT DoCoMo USA.

For those of you who are not familiar with my company, we are Japan's largest mobile-communications provider with over 50 million subscribers. i-mode is DoCoMo's mobile Internet access service that has enjoyed tremendous growth in Japan since its introduction in 1999, and FOMA is our 3G – third generation – network.

i-mode service, introduced in 1999, really pushed the remarkable growth in DoCoMo's subscriber base. Of 50 million cellphone subscribers, over 90 percent of them – 45 million people – chose to add i-mode service to their basic voice service plan. For DoCoMo, that translates to about 25 percent of our \$40 billion annual revenue coming from i-mode packet transmission charges. i-mode service enables people to use mobile phones to access an Internet platform to read news, check the weather, make airline reservations, play games and send e-mails to anyone in the world. All from a cellphone!

It's amazing to think that i-mode almost did not become a reality for DoCoMo back in 1999. Top management was skeptical about the potential of i-mode, especially because of the small black/white screens on the cellphones and the slow transmission speed of 9.6 KB.

If you were in a meeting between the i-mode pitch team and DoCoMo's top management, it went something like this:

**Management:** 'What type of applications would be available on i-mode?'

**i-mode team:** 'We think that downloadable ring tones would be a great new service for the youth market.'

**Management:** 'Well, that would not appeal to us. What else do you have in mind?'

**i-mode team:** 'How about popular cartoon characters as screen savers?'

**Management:** 'That isn't attractive to the business market.'

This story shows a key point in the tremendous success of i-mode. It cultivated the untapped young consumer market in Japan. Until then, cellphones were marketed mainly to business users who used their cellphones for calls outside the office. Voice was king. A businessman would not use a small black-and-white screen and a slow wireless connection. But because of the vision of a small group of talented people, i-mode did get the green light, and the rest is history:

- One million i-mode subscribers in the first 6 months,
- 4 million in the first year, and
- Currently over 45 million subscribers.

One in three people in Japan use a DoCoMo i-mode handset to access the wireless Internet and email. For

DoCoMo, tapping into the young consumer market represents roughly \$10 billion in annual revenues.

As you can imagine, many people over the past four years in the USA have asked me ‘why isn’t i-mode available here?’ Some people simply believe that an ‘i-mode-like service’ only ‘works’ in Japan, a ‘unique’ country whose culture is different. But think about it. Isn’t it true that people in both countries enjoy many of the same things like entertainment, music, sports and video games – all popular categories via i-mode? Others say that Americans don’t want to type on tiny keypads, but if you look around you, even here tonight, you’ll find someone typing away on a BlackBerry or text messaging.

And i-mode is already a successful business model outside of Japan. As of September 2005, there are over 5 million i-mode subscribers outside Japan through strategic agreements with 14 other providers in Europe and Asia. There are plans to launch in seven other countries in the near future. Bouygues Telecom in France, with over 1.2 million i-mode subscribers, is a great example of how they have marketed services to their customer base, especially downloadable ring tones and gaming. In the USA, it might be more about timing. Very recently, in the past year or two, there are more providers that have ring tone-, music- and video-download services. And BlackBerry service has taken off in recent years. Revenue from data is a growing part of the bottom-line of U.S. providers, and they are focusing on it more than ever.

### **The Move To W-CDMA**

DoCoMo’s i-mode business model could be an example to American providers of how to successfully grow data revenue with a wireless Internet service.

A key to the success of the i-mode business model is the win-win relationship between DoCoMo, content providers and subscribers.

The relative ease in creating an i-mode-compatible Website, using a subset of HTML, brought the first content providers to i-mode. This enabled DoCoMo to attract its initial subscribers with a ‘cheap’ monthly subscription fee of about \$3. The more subscribers that were added, the more content providers signed up to offer i-mode sites. It was a true snowball effect as the number of subscribers and content providers quickly grew and continue to grow today. Currently, there are about 90 thousand i-mode websites.

And, of course, those original black-and-white screens

on the handsets have been replaced by high-resolution color screens that make for a richer experience. Even though i-mode was introduced and became hugely popular in a 2G-network environment, DoCoMo didn’t stop there. We strongly believed that, to continue to expand and cultivate the data revenue stream, it was vital to upgrade our nationwide network to a faster 3G network. And for DoCoMo, this meant building a completely new network from the ground up. DoCoMo’s choice was the 3G global standard: wideband CDMA (W-CDMA). Even with the huge capital investment needed, it made sense for DoCoMo. Our i-mode subscribers needed faster connections to the i-mode network and the ability to access richer content. If our subscriber base had been only voice-centric, there would have been less urgency to springboard to 3G. However, the pace of growth of i-mode subscribers and data usage was very robust, so migration to a 3G network was the logical way.



**Key To Success:** When asked why his company, NTT DoCoMo, is so successful, President and CEO Nobuharo Ono says, “My answer is always very simple: We can provide better service, with a better price to our customers by introducing new technology.” He receives a plaque of appreciation from Radio Club President Emeritus Mal Gurian.

In the fall of 2001, we introduced the world’s first commercial W-CDMA 3G network, and started the migration of subscribers from 2G to 3G. DoCoMo’s 3G network is called FOMA, which stands for ‘Freedom of Mobile Multimedia Access.’ It is a W-CDMA network that DoCoMo believes will be the most widely used 3G technology throughout the world. However, it was a somewhat rocky start when we

introduced our FOMA network four years ago. I'd like to share with you the lessons we learned.

When FOMA service was first launched in October 2001, it was not well-received by our customers. Mainly, this was due to its shortcomings when subscribers compared FOMA to the 2G service. We pinpointed three main issues:

- Limited network coverage area – Initially, the FOMA network covered about 20 percent of the Japanese population and was not nationwide.
- Short battery life – The original 3G handsets had a standby time of about 50 hours, roughly one-fifth of a 2G handset.
- Bulky and costly handsets – Not only was the handset heavier, but much higher in price than a typical 2G handset.

We moved quickly to address these issues, and the main problems were fixed in 2003. Currently, FOMA's outdoor coverage area is over 99 percent of the Japanese population. The battery life of a typical FOMA handset is more than 200 hours – no different than a 2G handset. Finally, FOMA handset prices and weight are comparable to those of high-end 2G handsets and include more features like video communications.

In 2003, we really saw migration from 2G to 3G, and we have seen a steady increase since. Currently, over 17 million of our subscribers, roughly 33 percent, have migrated to FOMA. We forecast that, by the end of our fiscal year in March 2006, there will be 23.5 million FOMA users, which represent about half of our subscriber base.

I'm often bombarded with questions about DoCoMo's aggressive implementation of our 3G network. My answer is always very simple: We can provide better service, with a better price to our customers by introducing new technology. Also, in the fiercely competitive wireless market and particularly in Japan where customers are sensitive to innovative products, new technology and services must be introduced in order to retain a competitive advantage.

### **DoCoMo's Three Stages Of Growth**

DoCoMo doesn't believe that the evolution of mobile communications has stopped with i-mode or the introduction of high-speed 3G service. Up to now, we have experienced three stages in the growth of

our cell phone business. The First Stage was voice-centric. In the Second Stage, we saw the growing penetration of the mobile Internet. We are currently entering the "Third Stage" – the so-called "Lifestyle Infrastructure" Stage where cellphones will be linked with brick-and-mortar services. DoCoMo has started to offer services that are useful for people's lives and businesses by connecting the virtual world with the real world. To enable this linkage, we are utilizing barcodes, contactless IC chips and other external interface technologies embedded in cellphones.

An example of this linkage to the "brick-and-mortar" world is DoCoMo's "Mobile Wallet" service launched in July of 2004. The basic concept of our "Mobile Wallet" service is to replace all of the physical cards in one's wallet with a single handset. As a result, a handset becomes a mobile tool for convenient new uses, serving as e-money, a credit card, a ticket or even one's house key. As of September 2005, there are approximately 6.5 million DoCoMo handsets with this "Mobile Wallet" functionality. DoCoMo continues to work on increasing the convenience of our mobile phone as a lifestyle infrastructure and strengthening the DoCoMo brand.

### **Why The United States Lags Behind**

As you can see, DoCoMo has embraced 3G technology and the opportunities it provides to create new services for our subscribers in Japan. Since DoCoMo is often referred to as an industry leader, you're probably wondering: "How does the U.S. cellphone market compare?" In my past role as a board member of AT&T Wireless, I spent a lot of time reviewing the landscape of the U.S. wireless market. Though difficult, the reality is, when compared to the highly competitive markets in Asia and Europe, the U.S. market is about 3 years behind. Why?

This is a good question, especially when you realize that the elements of cellphone technology are mostly from the United States. I recently returned from a business trip to Japan, where I visited the i-mode control center – a \$1 billion cutting-edge tech facility. There, I noticed that almost all the hardware was of U.S. origin: HP and Sun Microsystem servers, Cisco routers and EMC information-storage units. And the software that ran this system? Oracle.

Why is it that DoCoMo's crown jewel – our i-mode service – is powered by American technology, but this technology has not been utilized to its fullest potential here in the United States? It can be reasoned that

there has been excessive competition among too many operators in the U.S. market. Since 1983, when cellphone service became commercially available, no operator has been able to turn a profit in the span of 20-plus years. In that environment, serious long-term capital investment in future networks has not been possible. However, the competitive landscape started to change just recently with the onset of consolidation. From 2004 and through 2005, we've seen mergers reduce the number of wireless operators from six major players to four, with AT&T Wireless merging with Cingular, and Sprint with Nextel. With these mergers, true nationwide coverage is available, and spectrum is being utilized more effectively. Large-scale economics also provide an opportunity for better investing in networks.

Already, though on a limited basis, 3G services have been introduced by Verizon Wireless, Cingular and Sprint in specific markets. With the higher speed of the network, data revenue should increase as new services, like music downloads, are offered to subscribers. It will be interesting to see how quickly 3G services take off here in the USA, especially when offered on a

nationwide network.

The United States continues to lead in the development of new wireless technologies, two examples are Wi-Fi and WiMAX. How these technologies will be used to create new opportunities in the cellphone industry is still up for debate, but I believe the stage is set for the USA, once again, to be a leader in the wireless technology industry.

Thank you for the opportunity to speak here this evening.

*About the speaker: Nobuharu Ono is president & CEO of NTT DoCoMo USA, Inc., a subsidiary of Japan's leading mobile telecommunications carrier, NTT DoCoMo. He has held a variety of executive positions relating to transmission and global business at both NTT and at DoCoMo after the mobile arm was spun off from its parent company in 1992. Mr. Ono served on the board of Directors of AT&T Wireless from July 2001 through the completion of the Cingular-AT&T Wireless merger in October 2004.*

## NTT DoCoMo In The News

### ● NTT DoCoMo Claims 4G Record

NTT DoCoMo has claimed a landmark achievement in the eventual evolution of the wireless industry to 4G technology - a successful 2.5 Gb/s downlink packet transmission while moving at 20 kilometers per hour.

The carrier says what it calls a "radio access field experiment" took place in Yokosuka, Kanagawa Prefecture in December 2005. It didn't discuss why it waited until today to disclose the experiment - which represents world-record performance for wireless data sent to a moving vehicle. NTT DoCoMo also notes that, in a similar field experiment on May 9, 2005, it had achieved speeds as fast as 1 Gb/s.

NTT DoCoMo has been at the forefront of 4G development for more than half a decade. According to the carrier, it achieved its record 2.5 Gb/s speed (which it notes is faster than the International Telecommunication Union Radiocommunication Sector's (ITU-R)'s proposed standard for 4G) by increasing the number of Multiple-Input Multiple-Output (MIMO) transmission antennae from four to six and by using 64- Quadrature Amplitude Modulation (QAM). With those techniques, data volume per transmission was increased from four bits to six bits.

At one point, back in 2001 (the year NTT DoCoMo launched the world's first 3G mobile service based on W-CDMA), the cellco even thought that it might begin 4G deployments sometime this year. Of course, back then, the industry's estimates of the speed at which 3G would be deployed were grossly wrong; the way folks were talking back then, 3G should have blanketed the world by now.

### ● NTT DoCoMo Keeps It Real

NTT DoCoMo, hoping to take its video services for the tiny screen to the next level, inked a partnership pact - its second major tie-up in the video area fewer than two weeks - with RealNetworks to deploy mobile video-streaming software.

The two companies have signed a memorandum of understanding (MoU) as a first step to jointly deploying RealNetworks' Mobile Streaming Server software to facilitate new capabilities NTT DoCoMo will add to its existing "V-Live" service. The enhanced V-Live service will create an open environment to enable content providers to use their own multi-format, cross- platform, Helix Mobile servers to stream video content over the Internet to NTT DoCoMo's FOMA handsets. The theory behind the whole thing is that by making it easier for content providers, the entire content market will be energized, thus leading to greater consumer bandwidth demand - which, of course, the carrier will gladly sell them.

The RealNetworks deal is the second major announcement that NTT DoCoMo has made in the last week regarding its mobile TV/video strategy. Last week, the operator disclosed a tie-up with the Nippon Television Network (NTT) to develop content and related services that combine mobile communications and conventional TV programming. The two companies are forming a seven-year limited liability partnership, to be called D.N. dream partners LLP, with NTT DoCoMo and NTT each investing \$42.4 million in the deal. The plan is both to acquire and to develop content. The partnership start operating April 3.



RADIO CLUB OF AMERICA  
96th ANNIVERSARY DINNER  
AND  
AWARDS PRESENTATION  
NOVEMBER 18, 2005



# The 96th Radio Club of America Banquet & Awards in Pictures



For his more than 35 years of outstanding and significant contributions to the wireless communications industry, and for his dedicated service as a long-time director of the Radio Club of America, a **Special Recognition Award** was given to **Emmett B. "Jay" Kitchen** (left) by **Mal Gurian** (right). Kitchen's career also includes stints as head of the National Association of Business and Educational Radio (NABER) and as head of the Personal Communications Industry Association (PCIA).



For his substantial contributions to the advancement and development of land mobile radio communications, the **Fred M. Link Award** was given to **William F. Lieske Sr.** by President Emeritus **Mercy Contreras**.



A special one-time **Appreciation Award** was presented to (from left) **Carl J. Kraus**, **Charles Sackerman Jr.** and **Steve J. Hemphill** by Radio Club President **Tony Sabino** to recognize their combined significant contribution to the 70th Anniversary Commemorative Broadcast of Major Edwin Howard Armstrong's first public demonstration of FM Radio, celebrated on June 11, 2005. A feature story commemorating that event appears in the Radio Club of America Fall 2005 Proceedings.





For 30 years of hard work and effort in supporting the RCA's needs, especially as an officer and treasurer since 1987, **Eric D. Stoll, Ph.D., P.E.** (left) was presented with the **President's Award** by Radio Club President **Tony Sabino** (right).

For achieving excellence through outstanding quality in the design and manufacturer of electronic components and equipment as exemplified by "Grebe Radio," the **Alfred H. Grebe Memorial Award** was presented by **Alfred H. Grebe Jr.** (left) to **Jerry B. Minter** (right).



For his untiring work as a journalist, investigative reporter, historian, syndicated columnist and author, **June Poppele** gave her father's namesake **Jack Poppele Broadcast Award** to **Gordon B. Bishop**.

# Response For The Class of 2005 Radio Club Of America Fellows

by Donald J. Backys, P.E.



**P**resident Sabino, directors, members and guests: Good evening and thank you for allowing me to speak this evening on behalf of the Radio Club of America's 2005 Fellows.

I was personally introduced to radio electronics in May of 1959 when my dad took me to an Armed Forces Day open house at the Great Lakes Naval Training Center. I was then 15 years of age, with a strong desire to excel in math and science. But it was that visit to the

Electronics Training Command at Great Lakes that steered me in a direction that would change my life forever. Witnessing live demonstrations of radio operators communicating thousands of miles with no solid interconnecting wires between end points was more than my teenage mind could handle. To me, it was truly magic. I was so impressed and inspired at what I had witnessed that, by fall of that year, I had passed my first Federal Communications Commission Amateur Radio license exam. And on a cold and misty November morning, Dad and I installed my first antenna to begin communicating with the world. Little did I know that my career in wireless had officially been launched.

I am sure that each of us being elevated to Fellow tonight has a similar story to tell. A magic trigger point took place launching an exciting and rewarding career into the world of radio communications. If you pick up the Radio Club of America Membership Directory and scan the biographies of its members, you will see the results of what magic events can do for anyone's career.

I joined the Radio Club of America because of a RCA member by the name of Ed Dervishian. Ed worked with me for many years as an engineering colleague in the land-mobile-radio communications industry. I admired him not only as a successful engineer but also for his desire to see others be successful, for his laughter and humor, and the stories he would tell me of his



## The Newest Radio Club of America Fellows

**Standing** (left to right): C. Preston Thomson, Harlin R. McEwen, Gregory S. Ballentine, Robert B. Famiglio Esq., David J. Savolainen Sr.

**Seated** (left to right): Charles P. Adams, Donald J. Backys, Richard T. Jones

**Not Pictured:** Leopoldo Barrios, Ralph E. Blount

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early career working as a personal assistant to Dr. Lee DeForest. I would joke with Ed, telling him that, some day, I wanted to be 'just like him.' It is ironic that I stand here tonight being elevated to Fellow in the Radio Club. You see, it was 10 years ago tonight that Ed was here in New York at this banquet to receive the Lee DeForest Award. Ed was my inspiration to join the Radio Club of America.

RCA members form a highly talented base of people upon which the world of wireless continues to grow into ever increasing market applications. Its members have had a positive impact on radio communications and the world of wireless since RCA's inception in


1909. It is truly wonderful that we join together for one night at this banquet and recognize individuals for their personal achievements in the world of radio.

Special thanks tonight to my dad who never really understood everything I was trying to do with radio as a teenager but supported me in my efforts to become an engineer. Special thanks to Ed Dervishian who inspired me to join and share membership with talented people in the Radio Club of America.

On behalf of the 2005 Fellows, I sincerely thank the directors and The Radio Club of America for bestowing this honor upon us.

**Don Bishop**

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# A ‘Feed-Back’ Court Case Retrospective

Contributed by Maurice Zouary

*A century later, the invention of the three-electrode Audion Vacuum Tube Amplifier stands out as the mother of all telecommunications devices, equal to inventions patented by Bell, Edison and Marconi. The path to that patent, however, was rocky.*

**D**r. Lee DeForest’s invention of the three-electrode Audion Vacuum Tube Amplifier 100 years ago had far-reaching effects throughout the field of electrical and radio engineering. It was regarded by the U.S. Patent Office as one of “the most valuable patents ever issued.” The DeForest amplifier was the basic device of a great number of electronic inventions by others who followed, creating a giant industry.

This discovery by DeForest enabled the original AT&T to establish for the first time its “new” long-distance telephone service in 1912 (contrary to reports otherwise). DeForest established the first known electronic voice transmission in 1907, which led successfully to Earth/moon communications.

While DeForest’s invention of this amplifier has been lauded as the mother of many other devices, he did have to go to court – twice – to protect it and other patents. In fact, he spent 14 years on Patent Office interference proceedings and subsequent litigation in



**Dr. Lee DeForest**

various federal and appellate courts. The following excerpt comes from the August 1934 issue of *Scientific American*, titled “*DeForest Wins ‘Feed-Back’ Patent Suit.*” (*Editor’s note: The excerpt appears as it did then, with all the typographical and grammatical error intact.*)

After years of litigation in various courts, Dr. Lee DeForest’s claim to the invention of the “feed-back” and oscillating vacuum-tube circuits has been upheld by the Supreme Court of the United States. This decision reverses that of the Circuit Court of Appeals and affirms that of the District Court on which the matter had previously been argued.

The suit in the Supreme Court was brought by Radio Corporation of America, American Telephone and Telegraph Company, and DeForest Radio Company, petitioners, against Radio Engineering Laboratories Inc., respondent. The petitioners are assignees of patents 1507016 and 1507017, issued to DeForest on 1924; the respondent of patent 1113149.

The suit was brought for infringement of the DeForest patents, the respondent, defendant in the trial court,

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admitting infringement if the validity of the patents could be sustained, but maintaining that these patents are void in that they were issued to a patentee who was not the first inventor.

In the decision upholding the DeForest patents, adjudging Lee DeForest to be the first in this important vacuum tube work, the Supreme Court, after mentioning the development of the vacuum by Fleming and DeForest, made the following statements:

“Many experiments were made with a view to exploring its capacities and developing them. Among those interested and curious was Armstrong, then a very young man, a student in the school of electrical engineering at Columbia University. He conceived the idea about January, 1913, that through a hook-up or coupling of the output and the input circuit there would be a feed-back or regeneration of energy whereby the plate in the audion would become an independent generator of continuous oscillations...

“It was a brilliant conception, but another creative mind, working independently, had developed it before in designs and apparatus till then unknown to the art. DeForest with his assistant Van Etten had been working during the summer of 1912 along two lines of thought. One was the use of the audion as a telephone repeater to amplify weak telephone currents and thus facilitate the transmission of long distance messages. The other was its development as a generator of alternating currents for any and all uses, some perhaps indefinite, that were capable of being served by oscillations thus produced. On August 6, 1912, a diagram showing a feed-back hook up of the input and output circuits is recorded in Van Etten’s note book with a note that by the use of the coupling ‘a beautiful clear tone’ had been developed, which means that oscillations had been produced and that the oscillations were sustained...

“Armstrong does not deny that all this was done just as stated by DeForest. Indeed the authenticity of the note book entries has never been disputed through the many phases of the controversy. What Armstrong does deny is that anything done or recorded in August, 1912, is an anticipation of his own invention. He says that the sustained oscillations generated at that time were of audio and not of radio frequency, and this, it seems, is admitted. He says there was then no perception or thought that the audion plate could be made to oscillate at radio as well as audible frequencies through a coupling of the circuits. This DeForest denies. He maintains, with the backing of other witnesses, that upon discovering the effect of the feed-back in generating sustained oscillations of the plate, he understood at once that by controlling the inductance or capacity in the oscillating circuit he could also control the frequency.”

*Maurice Zouary is an expert on Lee DeForest and the author of  
“DeForest – Father of the Electronic Revolution.”  
He was inducted into the DeForest Pioneers in 1970.*

## THANK YOU, IWCE BREAKFAST SPONSORS

The Radio Club of America wishes to thank Schwaninger & Associates, Radio Soft, *Mission Critical* magazine and first-time sponsor JPS for their support of the Club’s annual breakfast at the 2006 IWCE show in Las Vegas. A big round of applause also goes to Elizabeth Sachs, a partner at McLean, Va.-based law firm Lukas Nace Gutierrez & Sachs (and a Radio Club fellow), who keynoted the event.



# The Radio Club of America, Inc.

## TREASURER'S REPORT FOR FISCAL YEAR 2005 (October 1, 2004 – September 30, 2005)

### CHANGES IN UNRESTRICTED NET ASSETS

REVENUES & GAINS	
Dues Collected & Applied	\$36,417
Other Member Fees	1,383
Advertising Sales	18,602
Publications Sales	295
Banquet (net)	22
Pins & Plaques Sales	882
Interest on General Funds	16,360
Dividend / Capital Gain Income	6,021
Contributions - General Fund	466
- SW Section - members & sponsors	4,230
- Member Donations - SW Section	3,488
Net Unrealized Gain (Loss) on Investments	(601)
Total Unrestricted Revenues & Gains	(\$8,995)

NET ASSETS RELEASED FROM RESTRICTIONS	<u>\$16,000</u>
---------------------------------------	-----------------

<b>TOTAL UNRESTRICTED REVENUES, GAINS &amp; OTHER SUPPORT</b>	<b><u>\$94,570</u></b>
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#### EXPENSES

Program Services	
Management & Consultant Fees	\$33,380
Meeting Expense	7,856
Pins & Plaques	1,197
Postage	1,530
Printing & Stationery	1,146
Trade Show & Web Site Expense	2,002
Publications Printing	15,860
Publications Mailing Expense	3,514
Miscellaneous Program Expense	394
Grants	16,000
Total Program Services	<u>\$82,879</u>

Management and General Services	
Ballot Expense	\$911
Insurance	1,754
Legal & Accounting	1,700
Office Supplies	291
Telephone	579
Miscellaneous G&A Expense	650
Total Management & Gen'l Svces Expense	\$5,885
Transfer Interest & Dividend Income to Temporarily Restricted Funds	<u>\$19,510</u>

<b>TOTAL EXPENSES</b>	<b>\$108,274</b>
<b>(DECREASE) IN UNRESTRICTED NET ASSETS</b>	<b>(13,704)</b>

### CHANGES IN TEMPORARILY RESTRICTED NET ASSETS

Grants and Contributions	\$11,145
Transfers from Unrestricted Funds	19,510
Net Assets Released from Restrictions	
Restrictions Satisfied by Payments (Scholarships Awarded)	<u>(16,000)</u>
<b>INCREASE IN TEMPORARILY RESTRICTED NET ASSETS</b>	<b><u>\$14,655</u></b>
Increase in Net Assets	\$951
Net Assets at Beginning of Year	498,492
<b>NET ASSETS AT END OF YEAR</b>	<b><u>\$499,443</u></b>

### BALANCE SHEET

#### ASSETS

Current Assets	
Cash-Operating	\$44,690
Cash-Banquet & Section	34,714
Accrued Interest	15
Prepaid Banquet & Operating Expenses	<u>2,500</u>
Total Current Assets	<u>\$81,919</u>

Other Assets	
Investments	\$439,770
Inventory	<u>3,076</u>
Total Other Assets	<u>\$442,846</u>

<b>TOTAL ASSETS</b>	<b><u>\$524,765</u></b>
---------------------	-------------------------

#### LIABILITIES

Current and Long Term Liabilities	
Accounts Payable	
Prepaid Dues & Advertising - Current	\$15,209
Prepaid Dues - Long Term	<u>10,113</u>
Total Liabilities	<u>\$25,322</u>

Net Assets	
Unrestricted	\$7,458
Restricted	<u>491,985</u>
Total Net Assets	<u>\$499,443</u>

<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b><u>\$524,765</u></b>
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**TREASURER'S REPORT FOR FISCAL YEAR 2004  
(October 1, 2004 – September 30, 2005) (continued)**

**SCHOLARSHIPS AND GRANTS FUNDS**

	<b>Capital</b>	<b>Available for Distribution</b>	<b>Totals</b>
Opening Balance October 1, 2004	\$372,701	\$16,805	\$389,506
Contributions & Additions	10,534		10,534
Interest Earned		16,136	16,136
Scholarships & Grants Awarded		(16,000)	(16,000)
Ending Balance September 30, 2005	\$382,235	\$16,941	\$400,176

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Email: [lou.meyer@andrew.com](mailto:lou.meyer@andrew.com)



## AURORA MARKETING COMPANY

### Stan Reubenstein, WA6RNU

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Denver, CO 80224-2412

Phone: 303-758-3051

Toll Free: 800-525-3580

Phone: 303-758-6630

Email: [stan@auroramkt.com](mailto:stan@auroramkt.com)

Website: [www.auroramkt.com](http://www.auroramkt.com)



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*Lloyd B. Roach, President*  
1025 Meetinghouse Road  
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**Phone:** 610-793-2552  
**Cell:** 610-420-3023  
**Fax:** 610-793-1298  
**Email:** [W3QT@aol.com](mailto:W3QT@aol.com)  
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*Eric D. Stoll, Ph. D., P.E., Sr. Staff Engineer*

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**Fax:** 973-284-3394  
**Email:** [eric.stoll@itt.com](mailto:eric.stoll@itt.com)



## L. ROBERT KIMBALL & ASSOCIATES

*William Waugaman, Project Manager*  
200 S. Harbor City Blvd., Suite 202  
Melbourne, FL 32901  
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**Fax:** 321-733-4464  
**Cell:** 321-266-2237  
**Email:** [billwaugaman@lrkimball.com](mailto:billwaugaman@lrkimball.com)  
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**Fax:** 626-305-8801  
**Email:** [don.werner@prodigy.net](mailto:don.werner@prodigy.net)  
**Res:** 626-914-7216



**ELECTRONIC MANUFACTURERS'  
REPRESENTATIVE**

## SCHWANINGER & ASSOCIATES P.C.

*Robert H. Schwaninger, Jr.*  
1331 H Street, NW, Suite 500  
Washington, DC 20005  
**Phone:** 202-347-8580  
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31855 Date Palm Drive, Suite 3-509  
Cathedral City, CA 92234  
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**Fax:** 720-489-3913  
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**CREATING SOLUTIONS**



The Radio Club of America, Inc.  
Awards Committee  
**Major Award Nomination Form**

The Club annually grants each of several major awards to members and non-members in recognition of outstanding achievement, and to provide inspiration for many people, both currently and in the future. As a member of the Club, your help in nominating and sponsoring candidates is appreciated. This form is provided to assist you in this process. In order to complete the grant process in time for the annual Awards Banquet in November, the Awards Committee prefers to receive nominations prior to April of the year of the proposed grant.

For each major award, the Awards Committee collects and evaluates all nominations then submits its recommendation to the Board of Directors for final approval by a majority of the Board.

To nominate someone for an award, please **legibly provide the information below** to the Club's Awards Committee in care of the Club's Executive Secretary in any of the following ways:

Fax: (732) 219-1938  
E-mail: ExSec@Radio-Club-of-America.org  
U.S.P.S. mail: 10 Drs James Parker Blvd – Ste 103, Red Bank, NJ 07701-1500

**A. Name of RCA award:** \_\_\_\_\_

**B. Is Club membership required for this award?** \_\_\_\_\_

**C. Full name of candidate:** \_\_\_\_\_

**D. Is candidate a member of the Club?** \_\_\_\_\_

**E. Proposed citation (between 5 and 25 words), based on why it is felt that this candidate should be considered: (to be published and announced at the presentation of the award)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**F. Attach supporting material such as an expanded explanation, a biography, a resume, and any significant published articles: (please list your attachments below)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Sponsor submitting this nomination:**

**Full name:** \_\_\_\_\_ **Phone number:** \_\_\_\_\_

**E-mail address:** \_\_\_\_\_ **Fax number:** \_\_\_\_\_

**U.S.P.S. mailing address:** \_\_\_\_\_

**Date submitted:** \_\_\_\_\_



The Radio Club of America, Inc.  
Awards Committee  
**Fellow Nomination Form**

The Club annually elevates worthy Club members to the grade of Fellow in recognition of outstanding achievement, and to provide inspiration for many people, both currently and in the future. As a member of the Club, your help in nominating and sponsoring candidates is appreciated. This form is provided to assist you in this process. In order to complete the elevation process in time for the annual Awards Banquet in November, the Awards Committee prefers to receive nominations prior to April of the year of the proposed elevation.

Article I of the Club's By-Laws states the following:

- Section 6: Elevation or transfer to the grade of Fellow shall be by a majority vote of the Board of Directors.
- Section 7: A Fellow shall have been a member of the Club for at least five (5) years and/or a Senior Member for at least two (2) years and one whose contributions have been outstanding with extraordinary qualifications in the art and science of radio and electronics. The five and two years referenced above may be waived by a majority vote of the Board of Directors.
- Section 8: Elevation to the status of Fellow is by invitation only. If such person is not a Senior Member, his/her sponsor must submit a Senior Member form to the Executive Committee for recommendation to the Board of Directors

To nominate an RCA member, please **legibly provide the information below** to the Club's Awards Committee in care of the Club's Executive Secretary in any of the following ways:

Fax: (732) 219-1938  
 E-mail: ExSec@Radio-Club-of-America.org  
 U.S.P.S. mail: 10 Drs James Parker Blvd – Ste 103, Red Bank, NJ 07701-1500

**A. Full name of candidate:** \_\_\_\_\_

**B. Proposed citation (between 5 and 25 words), based on why it is felt that this candidate should be considered: (to be announced at the presentation of the award)**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**C. Attach supporting material such as an expanded explanation, a biography, a resume, and any significant published articles: (please list your attachments below)**

\_\_\_\_\_

\_\_\_\_\_

**Sponsor submitting this nomination:**

**Full name:** \_\_\_\_\_ **Phone number:** \_\_\_\_\_

**E-mail address:** \_\_\_\_\_ **Fax number:** \_\_\_\_\_

**U.S.P.S. mailing address:** \_\_\_\_\_

**Date submitted:** \_\_\_\_\_



The Worlds First Radio Communications Society, Founded 1909, New York City, USA

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**RJR Wireless**



**The Jack Daniel Company**

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MANUFACTURERS REPRESENTATIVES



# The Radio Club of America, Inc.



Founded 1909, New York, U.S.A.  
WORLD'S FIRST RADIO COMMUNICATION SOCIETY

*The mission of The Radio Club of America is to provide a forum for the exchange of knowledge, recognize outstanding achievement, provide financial assistance to deserving students and preserve the history of wireless communications.*

## APPLICATION FOR MEMBERSHIP

---

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

**TO: THE EXECUTIVE COMMITTEE**

I hereby apply for  Regular  Retired  Student (please check one) membership in THE RADIO CLUB OF AMERICA, INC. and certify that I meet the requirement for the grade selected. I further agree that, if elected, I will be governed by the Club's Constitution and By-Laws as long as I continue to be a Member.

\_\_\_\_\_  
Signature

Full Name: \_\_\_\_\_  
(LAST) (FIRST) (INITIAL) (CURRENT AMATEUR CALL)

Home: \_\_\_\_\_  
(STREET) (The above information is used for mailings and your membership directory listing)

\_\_\_\_\_  
(CITY) (STATE) (ZIP CODE)

\_\_\_\_\_  
(PHONE) (FAX) (EMAIL)

Business: \_\_\_\_\_  
(ORGANIZATION) (DIVISION)

\_\_\_\_\_  
(STREET) (CITY) (STATE) (ZIP CODE)

\_\_\_\_\_  
(PHONE) (EXT.) (FAX) (EMAIL)

Birthplace: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Education and memberships in other clubs and societies: \_\_\_\_\_  
\_\_\_\_\_

Present occupation \_\_\_\_\_

Previous experience, indicate approximate dates (a current resume may be attached to the application):  
\_\_\_\_\_  
\_\_\_\_\_

In what particular branch of the communications art are you most interested? \_\_\_\_\_

In what year did you become interested in electronic communications? \_\_\_\_\_

SPONSOR (optional) Please list the name of a member to whom you are personally known: \_\_\_\_\_

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Mail this application with the applicable TOTAL DUE AT INITIATION (as indicated on the reverse of this form) to:  
**The Radio Club of America, Inc., 10 Drs James Parker Blvd - Ste 103, Red Bank, NJ 07701-1500**  
732-842-5070 ♣ Fax 732-219-1938 ♣ Emails: exsec@radio-club-of-america.org [or] info@radio-club-of-america.org ♣ www.radio-club-of-america.org

The Radio Club of America was founded in 1909 by a group of the industry's pioneers, and is the first active electronics organization in the world. Its roster of members is a worldwide Who's Who that includes many who founded and built the radio industry.

The Club's objectives include promoting cooperation among individuals interested in electronic communications and in preserving its history. The Club administers its own Grants-In-Aid fund to provide educational scholarships from tax-deductible contributions of the Club's members and business organizations.

The Club publishes and distributes its *PROCEEDINGS* twice a year.

**ENTRANCE FEE AND DUES**

<u>Membership Category</u>	<u>Annual Dues Rate</u>	<u>3-Year Dues Rate</u>	<u>Initiation Fee</u>	<b>*Total Due At Initiation</b>
Regular	\$50	\$135	\$50	<b>\$185 (Includes 3-yr's dues)</b>
Retired	\$32	\$ 75	\$25	<b>\$100 (Includes 3-yr's dues)</b>
Student	\$20	n/a	\$10	<b>\$ 30 (Includes 1-yr's dues)</b>

**REGULAR** member is a member not qualified for **RETIRED** or **STUDENT** status

**RETIRED** member is at least 65 years of age and fully retired.

**STUDENT** member is a full-time student at an accredited academic institution.

\*For Non-U.S. Mailing Address please add \$45 surcharge (\$15 per year of dues) to Total Due At Initiation

Check enclosed     
  International Money Order enclosed     
  Traveler's Check enclosed     
  Credit Card

Visa M/C Amex Card number \_\_\_\_\_ Exp. date \_\_\_\_\_ Amt. \$ \_\_\_\_\_

Signature \_\_\_\_\_ Billing address for credit card \_\_\_\_\_

*(The charge will appear on your statement as Meredith & Hopkins.)*

All monies to be issued in U.S. funds, drawn on an U.S. bank. International money orders and traveler's checks are accepted in U.S. funds, payable in the U.S. Checks should be made payable to **The Radio Club of America, Inc**

Recommendation of sponsor: (optional)

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Sponsor Signature: \_\_\_\_\_

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

**FOR OFFICIAL USE**

**REV-010104**

Date Application received: \_\_\_\_\_

Date and Amount of Dues Received: \_\_\_\_\_

Admitted to Membership: \_\_\_\_\_

Membership Certificate and Pin issued on: \_\_\_\_\_

# The Radio Club of America, Inc.



Founded 1909

WORLD'S FIRST RADIO COMMUNICATION SOCIETY

## APPLICATION FOR SENIOR GRADE MEMBERSHIP

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

### TO: THE EXECUTIVE COMMITTEE

I hereby apply for the Grade of Senior Member of THE RADIO CLUB OF AMERICA, INC. and agree, if advanced to this level, that I will be governed by the Club's Constitution and By-Laws.

\_\_\_\_\_  
Full Signature

Full Name: \_\_\_\_\_  
(LAST) (FIRST) (INITIAL)

Home Address: \_\_\_\_\_  
(STREET)

\_\_\_\_\_  
(CITY) (STATE) (ZIP CODE)

\_\_\_\_\_  
(PHONE) (FAX) (EMAIL)

### PRESENT OCCUPATION

\_\_\_\_\_  
(COMPANY OR ORGANIZATION NAME)

\_\_\_\_\_  
(TITLE OR POSITION)

\_\_\_\_\_  
(STREET) (CITY) (STATE) (ZIP CODE)

\_\_\_\_\_  
(PHONE) (EXT) (FAX) (EMAIL)

### SPONSORS

Letters of recommendation are required from two or more members (any grade) for sponsorship of Grade of Senior Member. Letters must be sent by each sponsor directly to The Radio Club of America, Inc., 10 Drs James Parker Blvd - Ste 103, Red Bank, NJ 07701-1500. List Sponsors below:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_

Mail this application with the \$40 initiation fee to cover the cost of the Senior Grade Certificate and Pin (which will be mailed to the address indicated above).

Check enclosed       International Money Order enclosed       Traveler's Check enclosed       Credit Card

Visa M/C Amex Card number \_\_\_\_\_ Exp. date \_\_\_\_\_ Amt. \$ \_\_\_\_\_

Signature \_\_\_\_\_ Billing address for credit card \_\_\_\_\_

*(The charge will appear on your statement as Meredith & Hopkins.)*

All monies to be issued in U.S. funds, drawn on a U.S. bank. International money orders and traveler's checks are accepted in U.S. funds, payable in the U.S. Checks should be made payable to **The Radio Club of America, Inc.**

**(more) →**

**The Radio Club of America, 10 Drs James Parker Blvd - Ste 103, Red Bank, NJ 07701-1500**

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**EDUCATION**

Institution

Level Achieved

Date

Field

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RELATING TO ELECTRONIC COMMUNICATIONS**

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RELATING TO ELECTRONIC COMMUNICATIONS**

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**OTHER BACKGROUND  
RELATING TO ELECTRONIC COMMUNICATIONS**

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Professional Awards \_\_\_\_\_

Professional Engineer's License(s) \_\_\_\_\_

Other Professional Society Affiliations & Grade of Membership \_\_\_\_\_

Current Amateur Radio Call Sign \_\_\_\_\_

Other FCC Licenses Now or Previously Held \_\_\_\_\_

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**FOR OFFICIAL USE**

**REV-010104**

Date Application received: \_\_\_\_\_

Amount of Fee Received: \_\_\_\_\_

Date Approved by Board: \_\_\_\_\_

Certificate & Pin issued on: \_\_\_\_\_

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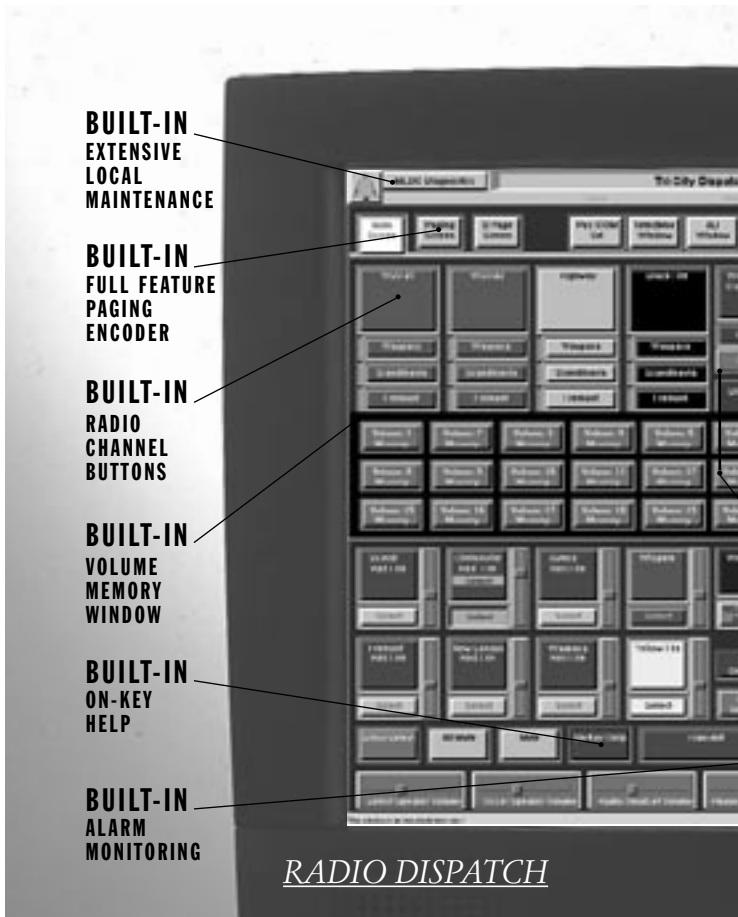
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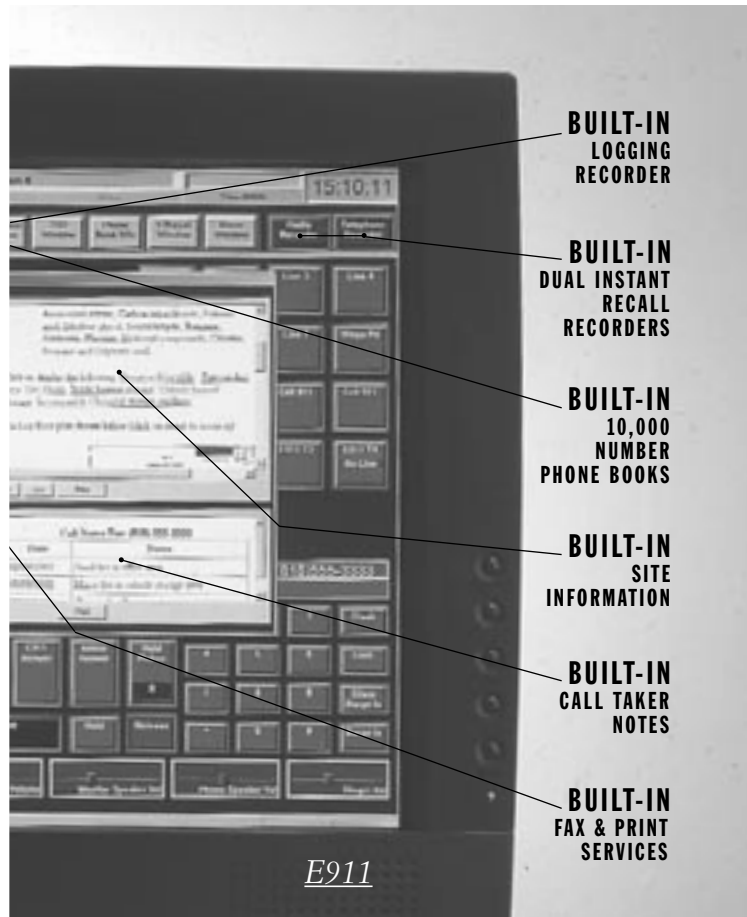
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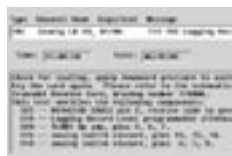
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