

## Amateur Radio Timeline History

**1894-1899**--Marconi conducts his wireless experiments in Europe and sends a message across the English Channel. First article on building a wireless set appears.

**1901**-Marconi sends a wireless signal across the Atlantic.

**1900-1908**--Thousands of Americans experiment with wireless. Few at this time are interested in it as a hobby only.

**1904**-J.A. Fleming develops the 2 element (Diode) vacuum tube.

**1906**-Lee deForest develops the 3 element (Triode) vacuum tube. R.A. Fessenden uses the Alexanderson Alternator to make the first voice & music transmissions.

**1908**-A possible beginning of amateur radio. Prior to this time, interest in wireless had primarily been either as an experimenter or as an entrepreneur. By 1908, definite hobby interests exist among users.

**1909**-The first radio clubs are formed. Spark and the longwaves (300-6000 meters) are king.

**1912**-The Titanic disaster points out the need for Wireless Regulation. The Radio Act of 1912 is passed, which limits "private stations" (i.e. amateurs) to 200 meters, a "useless" frequency. The number of "private stations" drops from an estimated 10,000 to 1200.

**1913**-Edwin Armstrong develops the regenerative receiver and also discovers that the "Audion" (Triode) can oscillate. CW is born.

**1914**-The ARRL is organized by H.P. Maxim to help relay messages, given the limited range on 200 meters at that time. (25 miles).

**1914-1917**--The number of amateurs increases from 1200 to over 6000. The ARRL has an effective traffic handling network set up. David Sarnoff, (future head of RCA) proposes a "Radio Music Box" receiver. deForest (and some amateurs) make experimental broadcasts. The ARRL starts a little magazine, called "QST".

**1917**-The US enters WWI. All amateurs are ordered to dismantle their transmitters and receivers. With no radio operations, and 4000 hams in uniform, QST ceases publication.

**1918**-Major Armstrong develops the superheterodyne receiver while serving in France. C.W. is used by the military during the war.

**1919**-Secretary of the Navy Josephus Daniels tries to get the Navy a total monopoly on all wireless communications. The ARRL's "blue card" appeal saves the concept of private radio operations. Amateurs get back on the air in November, 1919.

**1919**-Woodrow Wilson becomes the first President to speak over radio when he broadcasts a speech to American Troops in Europe.

**1919-1920**--King Spark's last stand, with the success of CW in the war & the availability of tubes, Spark was doomed. Some amateurs experiment with broadcasting, including 8XK (KDKA). The number of hams = 5719.

**1920**-"Amateur Police Radio" becomes popular. Amateurs operated as an intersystem police communications service to relay broadcasts of crimes and stolen vehicles.

**1921**-The National Amateur Wireless Association becomes active. It's main success is the broadcast of the Dempsey-Carpenter fight. Many amateurs helped in this broadcast, from acting as relay stations to setting up receivers and loudspeakers in public places.

**1921-1922**--The Transatlantic tests are a success. Amateurs discover that frequencies below 200 meters (above 1500 kc) work even better. Amateur Broadcasting ("Citizen Radio") is popular with up to 1200 amateurs, but is prohibited in 1922 with the first broadcast regulations issued.

**1923**-The amateur census is at 14,000. Shortwave development continues. The MacMillian Arctic Expedition is the first to carry two way radio; an amateur 200 meter station. Over the next 10 years, dozens of Arctic and Antarctic expeditions, including those of Commander Byrd, used amateur radio as their primary communications.

**1924**-Amateurs get new bands at 80, 40, 20, and 5 meters. Spark prohibited on the new bands. Broadcast band expanded. The ARRL adopted Esperanto as the international auxiliary language

**1925**-The International Amateur Radio Union (IARU) formed. Amateurs finally are successful in working around the world on shortwave.

**1926**-Crystal control of transmitters developed. A Federal Court declared the Radio Act of 1912 to be unenforceable in regards to broadcasting & the shortwaves. The "Summer of Anarchy" commences in the broadcast world, but amateurs stay within their bands.

**1927**-The Radio Act of 1927 creates the Federal Radio Commission. The word "amateur" is used for the first time in a Federal Statute. The International Radiotelegraph Conference is held in Washington. 70 Nations send representatives. Amateurs, represented by the ARRL & the IARU, fight overwhelming odds, keep 160, 80, 40, 20 & 5 meters, gain 10 meters, but lose 37.5% of our overall frequencies. International callsign prefixes are assigned.

**1929-1936**--Despite the Depression, Amateur Radio enjoys it's greatest growth--from 16,829 to 46,850. Low cost components make it possible to build a quality station for \$50. VHF phone operation becomes popular with the superregenerative receiver (developed by Armstrong) and the modulated oscillator. Phone operation begins to appear on some HF bands. But C.W. & crystal control are still number 1.

**1932**-The Madrid Conference. No changes to Amateur Radio.

**1933-1934**--The Communications Act of 1934 creates the Federal Communications Commission. Amateur Licenses are reorganized into Class A, Class B, and Class C. Major Edwin Armstrong develops wideband FM.

**1936**-H.P. Maxim, founder of the ARRL & it's first President, dies.

**1938**-The Cairo Conference. Amateurs lose the exclusive use of 40 meters, now shared with Broadcasters. The FCC gives us 2 new "UHF" bands, 2 1/2 meters (112 Mc) and 1 1/4 meters (224 Mc).

**1939-1940**--We are joined in the "UHF" range by two new users--the first FM Broadcast Band (42-50 Mc) featuring stations such as W1XPW, W2XMN, and W2XOY; and the first Television Broadcast Band, above 60 Mc, with stations such as W2XBS.

**1940-1941**--With the war raging in Europe, our ability to have international QSO's is severely limited. When the US enters the War, all amateur activity is suspended

**1942-1945**--Except for WERS (the War Emergency Radio Service) on 2 1/2 meters, no amateur operations take place. New "UHF" tubes and circuits are developed as a result of the war.

**1945**-A major battle develops over postwar frequency allocations. The ARRL (amateurs), Major Armstrong (FM Broadcasting), and Brigadier General David Sarnoff (RCA/NBC Television), all fight over the low end of the VHF spectrum

between 44-108 Mc. At one point, the FCC submits 3 Alternatives--#1 gives us a 7 meter band (44-48 Mc), #2 our 5 meter band (56-60 Mc), and #3 a 6 meter band (50-54 Mc). Alternative #3 wins and our 6 meter band is located between TV Ch 1 (44-50 Mc) and Ch 2 (54-60 Mc). FM is moved (over Armstrong's objections) from 42-50 to 88-108 Mc. The FCC moves our 2 1/2 meter band to 144-148 Mc (over the ARRL's objections) because they want it to be next to government & military allocations. On November 15, 1945, amateurs are allowed back on the air--but just on 10 & 2 meters only.

**1945**-CQ magazine is first published.

**1946**-The military leaves our HF bands in stages, hams gradually get their frequencies back, all except for 160 meters, which will be used for the LORAN Radio navigation system. The FCC creates the Tenth Call District (using the numeral -0-), and realigns the District boundaries. War surplus equipment finds its way into the ham market.

**1947**-The Atlantic City Conference--Amateurs lose the top 300 kc of 10 meters (29.7--30), and will lose 14.35--14.4 Mc on 20 meters. But they will gain a new band at 15 meters (21.0--21.45 Mc) in the future. To compensate hams for their loss, the FCC allows them to use the 11 meter band (26.96--27.23 Mc) on a shared basis with Industrial, Scientific & Medical devices. TVI is starting to become a problem--the ARRL determines that Ch 2 is very vulnerable to TVI & recommends it be eliminated, but the FCC removes Ch 1 instead. The Transistor is developed by Bell Labs.

**1948**-Single Sideband is fully described in the amateur publications. The FCC creates Class A & Class B CB radio between 460--470 Mc.

**1951**-The FCC completely reorganizes the amateur license system. The Class A, B, & C Licenses are replaced by the Advanced, General, & Conditional Class respectively. Three new license classes are created--the Amateur Extra, Novice & Technician. The Technician Class is created for experimentation, not communication, and has privileges only above 220 Mc. Novices are given limited HF CW subbands, 75 watts, crystal control only. They may also use phone on 145--147 Mc. It is a 1 year, non renewable license.

**1952**-The FCC allows phone operation on 40 meters, which had been CW only. The 15 meter band is opened. The Advanced Class is withdrawn from new applicants, although present holders can continue to renew, and the "exclusive" 75 & 20 meter phone bands are opened to Generals & Conditionals. Everyone, Conditional & above, has the same privileges.

**1953**-The FCC starts issuing "K" calls to amateurs in the 48 States due to the increased ham population.

**1954**-Depressed and broke from his patent fights with RCA over FM, Major Edwin Armstrong commits suicide. His wife continues the fight, winning the last battle in 1967, when the Supreme Court rules that Armstrong did indeed invent FM.

**1955**-Technicians are given 6 meter privileges to help populate the band & encourage experimentation. The ARRL & most hams oppose 2 meters for Technicians. Wayne Greene becomes editor of CQ magazine.

**1956-1960**--A gradual technical revolution on 2 fronts: Transistors find their way into the ham shack, first in power supplies, then audio sections, then receivers and finally QRP transmitters. But most equipment was still 100% tubes. Also, SSB is catching up on AM in terms of popularity. By the 1960's, SSB pulls ahead of AM.

**1957**-Sputnik, the first artificial satellite, is launched by the USSR. Amateurs copy it's beacon on 20 & 40 Mc.

**1958**-Explorer is launched by the US. Amateurs copy it's signal on 108 Mc. The ham population is 160,000--3 times the 1946 total. The FCC has to issue "WA" calls in the 2nd & 6th call areas, as the "W" & "K" 1x3 prefixes have run out. Slow Scan TV is first described in QST. In September, amateurs lose their shared use of 11 meters, as Class D CB is born.

**1959**-The Geneva Conference held, no major amateur changes. Technicians get the middle part of 2 meters (145-147 Mc), but not without some controversy over the purpose of the license. The FCC restates their "experimental, not communication" policy.

**1960**-Wayne Greene fired as CQ editor, forms 73 magazine.

**1961**-OSCAR I, the first amateur satellite, is launched. Thousands of Amateurs copy it's 50 mw beacon on 144 Mc sending out ".... .."

**1962**-CONELRAD is replaced by the Emergency Broadcast System. Amateurs no longer have to monitor 640 or 1240 kc while operating their stations.

**1963**-The ARRL, responding to some complaints about Generals being allowed on 75 & 20 phone, proposes an "incentive licensing" system. Under the ARRL proposal, Generals & Conditionals would lose 75, 40, 20 & 15 meter phone privileges over a 2 year period. The Building Fund, to construct the ARRL Headquarters at 225 Main St., Newington, is in full swing. The amateur population is over 200,000, but CB licenses now outnumber hams.

**1964**-A ham in the White House? Barry Goldwater, K7UGA/K3UIG is the Republican Candidate for President. (He is defeated). Herbert Hoover dies at the age of 90. As Secretary of Commerce in the 1920's, and President of the United States from 1929-1933, his strong support of amateur radio was invaluable. He lived long enough to see his son (Herbert Hoover, Jr, W6ZH) elected President of the ARRL.

**1965**-The FCC comes out with it's own incentive licensing proposal. General/Conditional Class operators would lose 50% of the 75-15 meter phone bands. A new "Amateur First Class License", with a 16 wpm code speed, would be the stepping stone between the General and the Extra. Advanced Class amateurs would not be "Grandfathered" into the "First Class", rather, they would be bumped down to General upon renewal. OSCAR III & OSCAR IV allow 2 way QSO's via satellite.

**1967**-The FCC announced the new Incentive Licensing rules: over the next 2 years, General & Conditional operators would lose 50% of the 75-15 meter phone bands, the "First Class" idea was dropped, the Advanced Class was reopened to new applicants, Extra & Advanced Class operators get exclusive subbands on 80-15 and 6 meters, the Novice license term is doubled to two years, but Novices lose their 2 meter phone privileges, the FCC restates the "Technicians are experimenters, not communicators" policy, and states that the next license step for Novices is the General, not Technician, class.

**1968**-The FCC authorizes SSTV in the Advanced/Extra Class subbands. Generals & Conditionals get SSTV later.

**1969**-The FCC removes the ability for a Technician to hold a Novice license at the same time. The ARRL announces a new policy, they now consider Technicians to be communicators and petition the FCC to give them full VHF privileges, a 10 meter segment from 29.5-29.7 Mc, and Novice CW subbands. "Long Delayed Echoes" appear. Were they real, or a hoax?

**1970**-The amateur population is 250,000 but stagnant. The license fees & Incentive Licensing are blamed. Meanwhile, 2 meter FM is starting to boom. New equipment designed for the amateur market joins the surplus wide band commercial radios which were converted for use on 146.94. "Mhz" & "khz" replace "Mc" & "kc". Amateur Radio is dragged into the Vietnam War protest movement with the "Student Information Net" in operation on College Campuses nationwide.

**1971**-The Japanese are starting to dominate the amateur markets. National, Hammarlund, Hallicrafters and Gonset were beginning to fade away, but Drake, Ten-Tec, Heathkit and Collins were still going strong.

**1972**-A national 2 meter FM band plan was announced, 146.52 was chosen as the national simplex frequency. The FCC released the first repeater rules, expanded the Technician 2 meter allocation to 145-148 Mhz, and relaxed mobile logging requirements.

**1974**-The Electronics Industry Association proposed a new "Class E CB" using 2 Mhz of our 220 band. The FCC proposed a "Dual Ladder" license structure which would take privileges away from Generals and Technicians (again) and would create a new code free "Communicator" license. Both proposals eventually were scrapped. "WR" prefixes began to appear on repeater callsigns.

**1975-1976**--A new repeater subband is established at 144.5-145.5 Mhz. Technicians now have 144.5-148 Mhz on 2 meters, and finally have Novice privileges. Novices are given a power increase to 250 watts. The "mail order" Technician license is eliminated--applicants must appear at a FCC examination site. The Conditional class is abolished.

**1977**-The FCC expands CB radio from 23 to 40 channels. Hundreds of hams purchase "obsolete" 23 channel CB sets at fire sale prices and convert them to 10 meters.

**1978**-Technicians finally get all privileges above 50 Mhz, and can obtain a RACES Station authorization. The Novice license is made renewable. The FCC relaxed some of it's regulations, and instituted a new callsign system using 4 "groups", corresponding to the class of license held. "WR" repeater callsigns are phased out. The amateur population stands at 350,000--33% more than in the early 70's. "Packet" radio first appears on the hambands, on an experimental basis.

**1979**-The World Administrative Radio Conference, or WARC-79, takes place in Geneva. The ARRL, IARU & other groups have been preparing for years. We lose nothing & gain 3 new bands at 10, 18, & 24 Mhz, which are phased in over the next 10 years.

**1980**-Spread Spectrum appears on an experimental basis, and the FCC authorizes ASCII on the ham bands. Packet is starting to grow.

**1982**-The "Goldwater" Bill is passed. It allows the FCC to set industry standards regarding RFI.

**1983**-A ham in space!! Owen Garriott, W5LFL, becomes the first amateur to operate on board a Space Shuttle. He makes hundreds of QSO's on 2 meters. Another "Code Free" license idea pops up. Amateurs are overwhelmingly opposed, & the proposal is dropped.

**1984**-The 10 year license replaces the 5 year one. The FCC stopped giving examinations, turning the duty over to the new Volunteer Examiner Program. The HF phone bands are expanded. The amateur population is up to 410,000.

**1985**-State and local rules which restrict amateur antennas must now comply with the FCC's new policy, expressed in PRB-1. The FCC gives itself preeminence in antenna regulations, and states that local ordinances must provide for "reasonable accommodations" regarding amateur antennas.

**1987**-Novices & Technicians get 10 meter SSB privileges from 28.3-28.5 Mhz. Novices also get phone operation on portions of 220 & 1296 Mhz. The Element 3 written exam is broken into 2 segments--3A (Technician) and 3B (General). Technicians who passed their exam prior to March 1987 get permanent credit towards the General written exam.

**1989**-Amid growing calls for a code free license, the ARRL comes out in favor of one. (The ARRL's version does not include voice privileges on 2 meters).

**1990-1991**--MARS operations increased as amateurs became involved in Operation Desert Shield/Storm. As the war in Kuwait increases, tens of thousands of Americans discover Shortwave Radio, to get the latest news.

**1991**-Amateur Radio gets it's first code free license--the "No Code Technician". "Regular" Technicians are renamed "Technician Plus". The first all amateur Shuttle, the "Atlantis", goes into space.

**1991-1998**--Amateur Radio grows from 500,000 to over 710,000 hams. The ARRL is at its highest membership ever. Despite the "Doomsday" crowd, amateur radio is healthier than ever. The Internet hasn't killed us. Schoolchildren talk with hams in space. Our Public Service activities are wanted & appreciated. And Amateur Radio looks forward to the next Millennium, confident that it will evolve and grow.