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September 2001

P.O. Box 1005, Newcastle, CA 95658

At the Key of S.F.A.R.C.

PRESIDENT

Matt Diridoni, KC6RUO
916.632.4084

mdiridoni@rsvl.net

VICE PRESIDENT

Steve Faulkner, KF6OCE
kf6oce@aol.com

SECRETARY

Joe Sylvia, KF6OQY
916.797.3149
jsylvia@vfr.net

TREASURER

Debbie Cunningham, KF6LXN
dmc@midtown.net

BOARD OF DIRECTORS

Bob Boeckman, WA6ULL
wa6ull@aol.com

Eldred Wilkerson, KD6ZSL
kd6zsl@yahoo.com

Richard Kuepper, WA6RWS
rkuepper@juno.com

REPORTERS

Satellite Report

Greg Dolkas, K06TH

40 Years Ago at the SFARC

Gary Cunningham, KQ6RT

VE Program

Bob Metke, W6SUP

REPEATERS

145.430(-0.6 Mhz) PL 162.2

440.575(+5 Mhz) PL 94.8

223.860 (-1.6 Mhz)

CLUB NET

All welcome to check
in Thursdays, 7:30 PM
2M K6ARR & Club
Repeater 145.430

CLUB MEETINGS

Second Fri of the
month 7:30 PM at the
Auburn Library 350
Nevada St. Auburn

CLUB BREAKFAST

Last Saturday of the
month at Susie's Café
Cirby at Riverside Ave.
Roseville - 8:00 AM

NET CONTROL OPS

Dave Jenkins, WB6RBE
Gary Cunningham, KQ6RT
Joe Sylvia, KF6OQY
Wayne Mikel, KE6DJE

WEBMASTER

Chris Wright, KF6OGD
wingman@newworld.net

NEWSLETTER EDITOR

Fred Jensen, K6DGW
530.885.8251
k6dgw@arrl.net

2001 Calendar of Events

(Operating Events in Italics)

Sep 8-9 *ARRL VHF QSO Party*

Sep 12 VE Test

Sep 14 Regular Meeting

It's an Ice Cream Social -- Bring the family!

Sep 29 Club Breakfast

Oct 6-7 *Cal QSO Party*

Oct 10 VE Test

Oct 12 **White Elephant Sale**

Oct 27 Club Breakfast

Nov 3-5 *ARRL Sweepstakes (CW)*

Nov 9 Regular Meeting

Nov 14 VE Test

Nov 17-19 *ARRL Sweepstakes (Phone)*

Nov 24 Club Breakfast

Dec 7-9 *ARRL 160m Contest*

Dec 12 VE Test

Dec 14 **Christmas Dinner**

Dec 15-16 *ARRL 10meter Contest*

Dec 29 Club Breakfast

From the President's Shack

**Matt
KC6RUO**



Hello everyone!

We had a great time and great turnout at the club picnic August 18th. Thanks to all of you that brought all the yummy good side dishes. Our next meeting is Friday September 14th, and I think it's been awhile since we had an ice cream social, so what the heck, lets have one. Please feel free to bring the family and socialize.

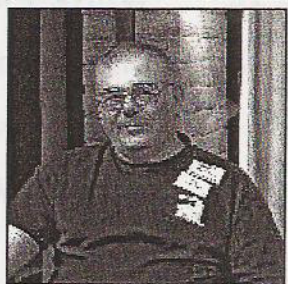
It's time to think about nominations of 2002 Club Officers. If you are interested in running for a club office, please contact me, or a member of the board, and we can explain what is involved. It's not as much work as I thought it would be, and it's allot of fun. I will not run for President, but will be happy to serve on the board of directors. With our excellent membership, and participation, Sierra Foothills Amateur Radio Club still is, and will remain the best club in the Sacramento Valley.

73,

Matt, KC6RUO
President

Secretary's Report

**Joe
KF6OQY**



General Meeting August 10, 2001

President Matt KC6RUO was unable to attend this month's general meeting but will attend the club picnic on August 18. Vice president Steve, KF6OCE, filled in and opened the meeting at 1937 hours. Officers present: Secretary Joe, KF6OQY, and Treasurer Debbie, KF6LXN. Board members present: Eldred, KD6ZSL, and Bob, WA6ULL. Introduction of officers, members and guests followed. Debbie, KF6LXN, gave her treasurer's report followed by Joe, KF6OQY, with reading the board meeting minutes of August 3.

Bob, WA6ULL, brought the equipment which was donated to the club from the W6JER estate to the meeting for the members to see and possibly purchase. Some of the items were sold and the balance is to be stored until the white elephant sale scheduled for October 12 at which time they will go up for bid.

Questions about the State Fair were asked from the membership. No information was available at this time. We hope to have this information available on our Thursday 2 meter club net August 16.

Mary Ann Balthrope, KE6EST, did a report on the Tevis event which took place on the weekend of August 4 and 5. This was a 100 mile ride which 91 out of 225 horses and riders finished. There were some injuries which occurred and were quickly attended to. Veterinarian and medical help was available and utilized. Communications by the volunteer amateur radio operators kept everyone informed. Mary Ann thanked everyone who helped and also for the use of the repeater and everyone's cooperation.

In answer to the question about the upcoming Christmas Party, this is what we have at this time: It will be held at the Auburn Recreation Park, Racetrack St. and Recreation Dr, in the Stella Irving Room on December 14. Details will follow at a later date.

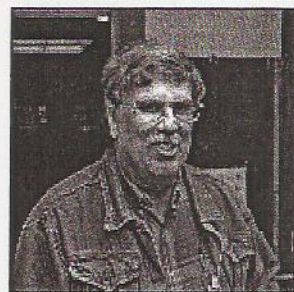
Thank you to all 30 members and guests who attended this meeting and for your questions and interest. Vice President Steve, KF6OCE, adjourned the meeting at 2107 hours. Thank you Steve for filling in. Job well done.

Respectfully Submitted

Joe, KF6OQY
Secretary

40 Years Ago At The SFARC

**Gary
KQ6RT**



20th Dist. Fairgrounds
Auburn, Ca.
Sept. 13, 1961

Regular meeting has been cancelled because we were asked to put up a station in the commercial bldg. at the fairgrounds.

Jim and Sage put up a 75 M. antenna. Jim brought his transmitter and used Sage's SX100 receiver.

Jim operated the station most of the time as K6ARR portable 6, and also

completed the Heath two-er and put it on the air. There were approximately forty registered in the guest book on the last two days. We were awarded a participation certificate and ribbon from the fair.

We had two meter operation with Buzz K6KDU/6 who was in charge of Civil Defense booth, K6CKH, WA6QWE, W6UNT, and K6ZWZ, which proved very interesting. We are looking for more and better participation at the next fair.

Respectfully submitted,

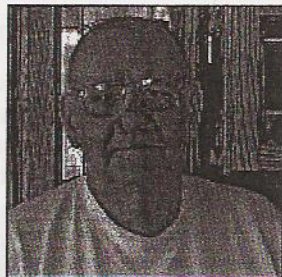
Sage Otow

73,

Gary, KQ6RT

VE Report

**Bob
W6SUP**



Volunteer Examiner Report

Upcoming Exam Dates for 2001

Sep 12

October 10

Nov 14

Dec 12

Pre-registration is required. Contact Bob Metke, W6SUP for more information.

Special arrangements and dates can be made to accommodate the disabled, including conducting tests at home.

73,

Bob, W6SUP

511 Oak St.

Roseville, CA 95678

916.783.7610

w6sup@rsvl.net

SFARC Event Dates

All at Auburn Recreation Center, 123 Recreation Dr. in the Stella Irving Room:

White Elephant Sale: October 12

Christmas Party: December 14

Amateur Satellites

**Greg
KO6TH**



Kodiak Star set to launch on September 17th, 2001

Kodiak, as in Kodiak Island, Alaska. Much to my surprise, there is a Spaceport there, newly constructed by the Department of Defense. From this new facility will soon come its first launch, and on this first vehicle will be several satellites of interest to the amateur radio community.

Since the DOD isn't interested in launching polar bears into orbit, there must be a reason to build such an expensive facility in such a remote part of the world. The reason is Latitude; lots of it. Kodiak Island is at 56 degrees North latitude, compared to Cape Canaveral in Florida at only 28 degrees. Why that is important is a matter of physics. The easiest way to launch a satellite is to send it due East from the launch pad. This gives the rocket up to an additional 1000 miles/hour boost in speed, since the Earth is already spinning in that direction. Launching in a different direction takes more fuel, or less satellite. But, once launched, the orbital path taken by a satellite is usually fixed. It takes a lot more fuel, and onboard rockets, to change an orbit. AO-40's problems started late last year during an orbit-changing attempt, when a faulty rocket exploded. The rocket was put there in the first place to allow AO-40 to achieve a different orbit than the one it was to be launched into.

The high latitude of the Kodiak site means that a satellite launched from there, due East, will be in an orbit that flies over the planet from 56 degrees North to 56 degrees South. That puts a satellite within visual range of pretty much all of the areas of interest to the DoD. Remember who built the site...

So, for the first launch, what is going up? The rocket will be a Lockheed Martin Athena-L, which was originally assigned to orbit NASA's Vegetation Canopy Lidar satellite, which has since run into "technical challenges" associated with its science experiments. Instead, a set of three satellites will get a ride into space.

The first is called "Sapphire", which stands for Stanford AudioPhonic PHotographic Infrared Experiment. Sapphire's primary mission is to space-qualify micromachined infrared detectors as part of a JPL program to push the development of lightweight, inexpensive sensors for spacecraft. Also onboard are a digital camera and a voice synthesizer. The spacecraft was designed and built by Stanford graduate students, with "ample and essential help from mentors and industry partners". More information on Sapphire is at: http://ssdl.stanford.edu/aa/projects/squirt1/sapphire_overview.html

The second satellite is Starshine-3. It is one of a series of student satellites, and the second to be launched. The first was carried on board Space Shuttle Discovery in June of 1999. Starshine-3 is a ball approximately 37 inches in diameter and contains nearly 1000 hand-polished mirrors, which were crafted by students all over the world. Also on board are solar cells, and a ham radio transmitter on 146.825 MHz which will relay solar cell output telemetry to hams around the world. From this data the Starshine team will design an attitude (spin) system for Starshine 4 and 5. Starshine-2 is planned to be launched from Shuttle Endeavor in October of this year. Starshine's Website is at: <http://www.azinet.com/starshine/index.html>

The third satellite is PCSat, which stands for Prototype Communications SATellite. It was designed and built by the Naval Academy, by students majoring in Aerospace. Its mission is to provide mobile and

handheld Satellite digital communications for amateur satellite operators worldwide. On board is a 1200 baud packet system and related software, which will give global coverage to the APRS tracking and reporting system. Included in this is some limited capability for Emergency Status and Reporting that can be used by travelers in remote places. The satellite's APRS system will be linked into the Internet by several ground stations, so you will be able to get world-wide APRS coverage. Bob Bruninga, WB4APR, is the creator of APRS, and an active member of the PCSat team as you might expect. You can get more information about the satellite on the Internet at: <http://www.ew.usna.edu/~bruninga/pcsat.html>

Good luck to the launch teams, and all three satellites. I'll report further on their adventures as they unfold.

73,
Greg, KO6TH

Coming Ham Events

Foothill Flea Market - 2nd Saturday of each month from March through October at Foothill College, Los Altos.

Livermore Swap Meet - 1st Sunday of each month at Las Positas College in Livermore, 7:00 AM to noon, all year. Talk in 147.045 from the west, 145.35 from the east. Contact Cliff Chiba, KF6EII, larkswap@usa.com

Sonoma County Radio Amateurs Swap Meet - Sep 22. Doors open at 7:00AM at the Lewis Adult Education Center, at the corner of Lomitas Ave. and Lewis Rd., Santa Rosa. Take the Steele Lane exit from Hwy. 101. Contact: Rick Reiner, K6ZWB, k6zwb@cads1.net



Come to PACIFICON 2001
October 19 - 21
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Sunshine Report

Jerri
K6GKR



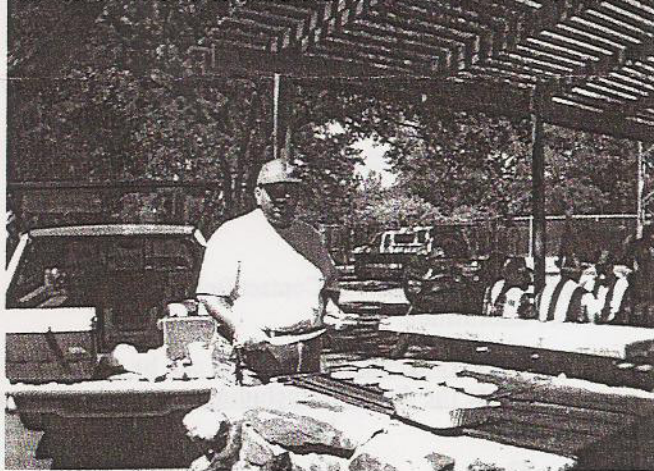
Louis Tuttle - K6UD

Jerri reports that Louis Tuttle, K6UD, a long time member of the SFARC, and an instructor in a long running series of ham radio classes, has been confined to a nursing home due to ill health. She is working to obtain the name and location of the home.

Club Picnic a Success

As Matt indicated in his column in this issue, the club's annual picnic was a great success. It was held this year at Auburn's Recreation Park on Sunday, August 18. Thanks to Steve, KF6OCE, we have several pictures of the festivities.

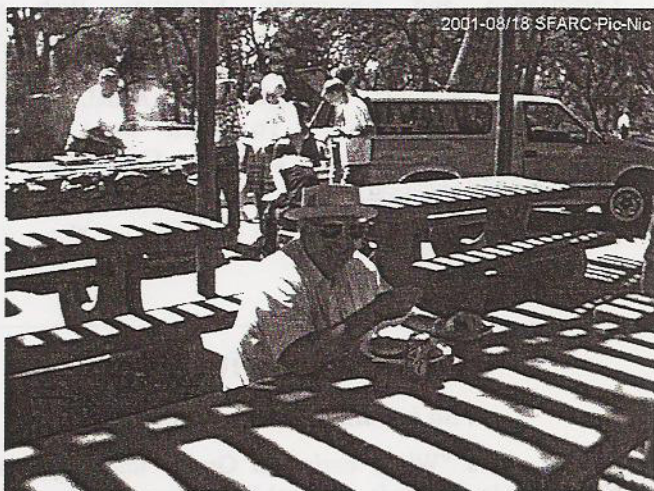
2001-08/18 SFARC Pic-Nic (Matt Diridoni)



2001-08/18 SFARC Pic-Nic (The Feast Begins)



The talented and famous Jettie, W6RFF enjoying the food,



FOR SALE

And, speaking of Jettie, check this monitor that sold for over \$1,000 last year:

15" TFT Flat Panel computer monitor
Samsung Model 520TFT, excellent condition, \$275

Jettie W6RFF, (916) 783-0383
w6rff@arrl.net

Interference Assessment Project

(From Pacific Division September Update)

The ARRL has inaugurated the Amateur Radio Interference Assessment (ARIA) project. The effort will involve amateur volunteers across the country to assess the noise levels primarily from unlicensed devices in bands above 400 MHz.

ARRL President Jim Haynie, W5JBP, has advised the FCC that ARRL plans to conduct ARIA as a "real-world" noise study. The League will contribute its results to an overall radio noise study sponsored by the FCC Technological Advisory Council. The TAC study will look into whether noise generated by low-power unlicensed Part 15 devices is on the rise and whether it's adversely impacting other services.

ARRL's role will be to measure radio noise in the amateur bands above 400 MHz, with initial emphasis on the band 2400-2450 MHz, where Bluetooth and IEEE 802.11b-protocol wireless local area networks are gaining popularity. The ARIA's noise-measurement program will begin with some exploratory tests by the ARRL Laboratory.

Long-term tests starting next year will assess noise trends on the UHF/microwave bands over a period of several years to determine if the situation is staying the same, getting worse or getting better. "If it's getting worse, as some suspect, we will then be armed with factual data to develop a strategy for continued Amateur Radio access to the UHF/microwave spectrum," said ARRL Technical Relations Manager Paul Rinaldo, W4RI.

ARIA is attempting to identify volunteers to participate in the program. Rinaldo asked that "qualified and motivated" individuals send resumes and information related to test and measurement capability and equipment availability to aria@arrl.org. Initial volunteers should be willing to review the test plan, have receiving equipment and antennas capable of covering the 2400-2450 MHz band in a vehicle, and be able to report results in a timely manner.

(Ed. Note: The interfering devices in question use spread spectrum technologies, the effect of which is to raise the noise level heard by amateurs in our bands, rather than to appear as identifiable intruder signals. As Part 15 devices, they are unlicensed and are installed and operated by unlicensed users. If allowed to proliferate without such a study, it will become next to impossible to mitigate their impact on amateur communications in the future. Hence the ARRL's interest)

AO-40 Returns To The Air!

(From the Pacific Division September Update)

AO-40's transponders are back on the air, following an orbital shift that put the Amateur Radio satellite into an orbit that AMSAT says should be good for many years to come. Transponders have 435 MHz and 1.2 GHz uplinks and a downlink in the 2.4 GHz "S band."

The transponders have been off since late May, when preparations began to shift AO-40's orbit at perigee. That

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operation was completed earlier this month, and ground controllers have been readjusting the spacecraft's attitude since then.

Ground controller Stacey Mills, W4SM, said the transponders would operate from orbital positions MA 10 through MA 99. Uplink frequencies (without taking Doppler into account) are 435.495-435.780 MHz and 1269.211-1269.496 MHz, and the downlink passband is 2401.210-2401.495 MHz. The transponders are inverting, so a downward change in uplink frequency results in an upward frequency shift in the downlink.

Mills emphasized that earthbound ops should not use any more uplink power than necessary. (see Greg's column in the August SFARC News) He also noted that the transponders could be switched off to accommodate additional testing.

AMSAT Awards Manager Bruce Paige, KK5DO, in Houston, was among the first stations to get on AO-40 after the transponders were reactivated. "It sounds awesome," Paige said. "I am transmitting with 25 watts up, and it sounds great!" In addition to some domestic contacts, he and his daughter, Mahana, W5BTS, worked EA8/DJ9PC in the Canary Islands.

Although AO-40's attitude still is not optimal at this point, ground controllers had to suspend operations to adjust it after an onboard sensor lost its view of the sun. Without data from the sun sensor, ground controllers cannot be certain of the satellite's attitude. Mills said now that the ground team has "a very good fix" on the spacecraft, they'll do nothing to change its attitude for several weeks, while the solar angle decreases. Once the sensor regains its view of the sun, efforts to adjust the spacecraft's attitude will resume, so that AO-40's antennas are pointing toward Earth.

Mills said ground controllers will use the interim period to see if they can re-calculate the so-called "mystery effect" that had been impacting AO-40 at perigee under its former orbit.

Level II Emergency Communications Course Available On-Line

(From the ARRL Letter)

Registration for the ARRL Intermediate (Level II) Emergency Communications on-line course (EC-002) opened Monday, August 27, at 4 PM Eastern Time. Visit the Course Registration Page <https://www.arrl.org/forms/cce> to take advantage of this continuing education training. Each class is limited to 50. New classes open every four weeks.

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Additional information is available at the ARRL Certification and Continuing Education Web site <http://www.arrl.org/cce>. Be sure to check out the links in the box at the right. Level II course manuals (order item 8519) now are available through the ARRL catalog <http://www.arrl.org/catalog/>. To learn more, contact Certification and Continuing Education Coordinator, Dan Miller, K3UFG at cce@arrl.org.

(Note that the registration page is secure ... "https://..." instead of <http://...>)

SFARC Trivia

Who invented the Morse Code?

This is not a "Who's buried in Grant's tomb" question, although it looks like it. Samuel F. B. Morse was a artist by trade, and is generally credited with the invention of the telegraph, which isn't exactly the whole story. He is also credited with inventing at least one of the several codes used on the telegraph, which is exactly not true!

Morse was a vain and pompous man who would regularly lean toward exaggeration and embellishment to raise his stature in his circles. He was also extremely jealous of co-workers, colleagues, and others working in the same field, and he usually insisted that any works developed jointly would belong to him alone.

Morse was not really a technician, but he recognized that telegraphy using an electric current over a wire demanded two things: 1) Some form of sending and receiving/recording devices to create and detect the electrical current; and 2) A coding scheme to translate characters (and possibly words and phrases) into a form that could be sent and received. Turns out, that's about as close as he really got to doing either operationally.

Morse's concept was to first convert letters, words, and phrases to numbers, and record these in a "dictionary" which both ends of a telegraph circuit would have. These numbers would then be transmitted to the receiving end where they would be looked up in the dictionary and decoded back into the text of the message -- a decidedly slow, tedious, and labor intensive job. He spent close to a decade compiling his dictionary, despite the fact that quite early on, others were inventing much of what we now associate with radio and wireline telegraphy.

His code for sending the numbers was very simple ... just a series of pulses of current. The digits 1 through 5 were just a string of 1 through 5 pulses separated by a short period of no current, followed by a longer period of no current. 6 through 9 were just like 1 - 5 except the short period of no current was longer. The end of the digit was yet a longer no-current period, and the end of a number denoting a dictionary entry was even longer.

His original mechanism for sending was a straight ruler-like instrument which was arranged to send the appropriate number of pulses for each digit. It was up to the sending operator to insert the proper spaces. His receiving

mechanism looked a lot like a picture frame with no picture. Instead, a rod was hung in the center, at whose end was a pen that pressed on a strip of paper pulled at a steady speed by a clockwork mechanism. The arm could be pulled slightly to one side by an electromagnet when a pulse of current arrived. The result was a series of what we would call "square waves" written on the tape. The tape was then read, the message decoded with the dictionary, and delivered to the recipient.

It was actually a colleague of Morse, Alfred Vail, who invented (among other things) the hand operated telegraph key, the "telegraph sounder," and a code of short (dots) and long (dashes) current pulses that encoded the 26 letters of the English alphabet, the ten digits, and a few punctuation symbols. He still recorded the pulses on a paper tape, however the receiving operator would read the tape in real-time, as it was being sent. And, instead of translating everything into numbers, he just spelled it out with his code. This all occurred while Morse was still laboring on his dictionary.

As time went on, operators began to receive and recognize the letters by the sounds that the recorder made without looking at the tape, and would transcribe them directly onto the telegram forms for delivery. During this period, there arose no small controversy as to whether telegrams copied by ear could be trusted.

Alfred Vail's code structure, and even the assignments to characters, was remarkably close to what became American Morse Code (AMC). He assigned the shortest codes of dots and dashes to the most used letters in English. He revised his code several times, and in 1844, his "final" code became the wireline standard well into the 20th century.

The transmission speeds of Morse's original dictionary codes was extremely slow ... perhaps 1 or 2 WPM with most of the time spent looking up the codes on each end (note: they were never in wide operational use). Vail's early code and mechanism raised this value to the 12 - 15 WPM range, and by the time his "final" code went into general usage, typical wireline speeds were in the 30 - 35 WPM range.

Adaptations and changes from Europe led to the Continental Morse Code, which, with very minor changes and additions, became the International Morse Code (IMC) we use today. A primary driver for the IMC was the growth of wireless communications. The sounders used in wireline telegraphy emitted a series of clicks, one when the current started, and one when it stopped. Conversely, wireless telegraphy made the dots and dashes directly audible as long and short tones. AMC character codes included dots ("click-click"), short pauses between dots ("click-click-pause-click-click"), and dashes ("click-pause-click").

American Morse has fallen into disuse (except by a few diehards, usually on 80 CW), and the International Morse code prevails. IMC, sent at 15 - 20 WPM has a steady rhythm in its sound, whereas the extra spaces between elements in AMC give it a syncopated rhythm. AMC is also often said to be more "ditty" than IMC, possibly because more characters are formed from combinations of dots.

So, we call it the Morse Code, but it should really be the Vail Code. While he did not actually contribute much to operational telegraphy, Samuel F. B. Morse gets the glory and few folks have ever heard of Alfred Vail.

There is a great 210-page e-book by N0HFF dealing with all aspects of telegraphy, including history, trivia, and methods for learning at <http://www.qsl.net/n9bor/n0hff.htm>. For example he mentions that our prosign, "AR" comes from the American Morse "FN" meaning "finished."

Interested in learning American Morse? There are four distinct categories to compare AMC and IMC (see also N0HFF-pg 113):

1. A B D E G H I K M N S T U V W and 4 are the same in both codes.

2. Some combinations represent one character in AMC and another in IMC:

AMC: F J Q P X 1 5 7 8 9 . ?

IMC: R C F 5 L P o Z 6 X ? /

3. A few AMC characters contain internal spaces. The following characters in AMC sound like the IMC combination below them:

AMC: C O R Y Z

IMC: IE EE EI II SE

4. Finally, an AMC "L" is a longer dash, a "0" is longer still, and 2, 3, and 6 do not have IMC equivalents.

Thus, "CQ" (dah dit dah dit pause dah dah dit dah in IMC) is in AMC, dit dit pause dit longerpause dit dit dah dit). If you hear it and think its International Morse, you would copy it as "IE F" and wonder what is going on. And you can see how "FN" in AMC became "AR" in IMC.

Interestingly, AMC is about 10% faster than IMC (i.e. it takes 10% fewer elements to send the same thing), and is said to be about 10% easier to send. Now you know

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