IEEE life members newsletter

contents

3rd & 4th quarters

2003

In the last installment, I addressed the issue of IEEE Life Member Qualifications and the anticipated IEEE Board of Directors (BoD) actions to make some changes. Specifically, the anticipated changes under consideration were to: 1) increase the age limit, and 2) increase the years of IEEE Membership to obtain Life Member (LM) status. The response from readers of this newsletter against making any changes was overwhelming and greatly appreciated.

So what happened? The IEEE Board of Directors (BoD) at its June meeting opted not to change the requirements to become a LM as a way to save money. Instead, the BoD voted to give all LMs electronic versions of the IEEE publications they are entitled to free of charge. If a paper copy is requested, the LM would be charged the cost of publishing and mailing. In the case of *IEEE Spectrum*, which all LMs now receive in print form for free, the cost was to be approximately $20 (USD).

These changes were to become effective no later than 2005, with a projected cost savings to IEEE's overall budget of $500K. This action by the BoD was not well received by Region 1. At their Board of Governors meeting on 16-17 August 2003, they voted to request that the IEEE BoD rescind its June action. Also, the Life Members Committee (LMC) at its 22 September 2003 meeting voted to support the Region 1 motion.

The motion to rescind the June IEEE BoD action was placed on the November IEEE BoD meeting agenda. I attended the November BoD meeting in Seattle, Washington and presented data from our recent survey. The data shows that over 75% of LMs do not want electronic versions of IEEE publications. Thanks to lobbying by Region 1 volunteers and others, the BoD rescinded its June action. However, the vote was not unanimous. So expect future motions to come the down the pipe for saving money at LMs' expense.

Also, in response to the survey that many of you participated in, the LMC is emphasizing the formation of LM Chapters. There are now around 20 LM Chapters, mostly in Canada and the United States. The LMC was also involved in establishing the IEEE Life Members Forum using the IEEE Virtual Community platform. The forum will allow LMs to share "war stories" with other members and stay informed about Chapter activities among other things. See the article in this newsletter on page 3.

My time on the LMC has come to an end. I have been honored to serve as an LMC member and as its Chair. I wish to thank the IEEE Staff and LM volunteers who supported me and made my tenure on the Life Member Committee so enjoyable. Our new LMC Chair, Om Malik, brings a wealth of experience and tenacity of principles to the LMC. I'm sure you join me in wishing him well in his LMC endeavors. Wishing all of you a healthy, happy and (fingers crossed) prosperous 2004!

B. Leonard Carlson, Chair
IEEE Life Members Committee

The LMF

The year-end tally will be revealed in the next issue. But based on the table here, the Life Members Fund (LMF) should reach its 2003 Contributions goal of $170,000 (USD). And, since the LMC is now much more modest about anticipating income from Interest and Dividends ($20,000 (USD) for 2003), the LMF should make that financial goal as well. For 2004, the contributions and investment budget goals remain the same as for 2003, respectively.

Does grade matter for donations? Only it seems if the the donor is a Life Fellow. As of August 2003, Life Fellows' average contribution was $49.06, whereas Life Seniors, Life Members and Life Associates ranged from $32.07 (LA) to 33.84 (LM). (The Life Seniors averaged $33.63.)

So where does the money go? Check the web site (see pg 3) for the complete list. However, at the September 2003 LMC meeting, these additional project funds were approved: 1) $5,000 (USD) to help defray travel expenses for individuals in developing countries in northeastern Europe to attend the Engineering Accreditation Around the World Workshop last September; 2) $1,000 was given to help support a project on the Soviet quasioptics of the Millimeter and Sub-Millimeter Wavelength Ranges in the Historical Background, and 3) up to $15,000 was approved to support an EWeek Future City Competition longitudinal study. The Competition has grown from five schools in 1993 to 30 in 2003 with an estimated 30,000 students involved in the US. The study would assess the impact of the Future City Competition on local communities and ways to help grow it successfully.

All donations are greatly appreciated. Please make your check payable to the "IEEE Life Members Fund." Mail it to: IEEE Regional Activities, 445 Hoes Lane, PO Box 1331, Piscataway, NJ 08855-1331

*As of 20 October 2003

IEEE Life Members Fund Contributions

	2003	2002
January	40,321	14,538
February	11,706	5,153
March	4,464	2,127
April	846	220
May	1,665	1,926
June	1,430	3,113
July	10,285	1,283
August	213	1,567
September	---	575
October*	55,302	75,290
YTD	126,232	105,792

In memory of a long and happy marriage

Bob and Jean Holtz in 1992 at a favorite restaurant in La Jolla, California, United States

One of the most inspirational stories the IEEE Foundation has had the pleasure of being a part of is that of childhood sweethearts, Robert (Bob) and Jean Holtz. Shortly after their wedding in 1942, Bob graduated from the University of Wisconsin-Madison with his Masters Degree in Electrical Engineering, joined the IEEE, and began his almost forty year career with RCA. The Holtzs lived spontaneously, adventurously, and were hardly ever apart from one another throughout their fifty-five years of marriage. They lived abroad for most of their life together, with time in Venezuela; four-and-a-half years in Jarkarta, Indonesia, where Bob was an independent communications consultant; and over twenty years in Zurich, Switzerland, where he was managing director of RCA's basic research laboratory. While Bob was not active as a volunteer in the IEEE during his career, he found IEEE publications to be "absolutely essential."

In 1991, with the future of the profession in mind, Bob felt the need to encourage financially able IEEE Life members to support the IEEE Foundation. Bob shared with the IEEE his intention to make annual gifts during his lifetime to the IEEE Life Members Fund and that he had established a Trust that would direct a grant of US$10,000 to the IEEE Life Members Fund after both he and his wife passed away. Sadly, Bob passed away on Christmas Eve in 1996. Last year, after looking through old files Mrs. Holtz found a copy of the letter Bob had written in 1991 and made a generous gift of US$1,000 in his memory to the IEEE Life Members Fund to fulfill his "annual gift" promise. In the note she sent with the gift, she described Bob as "a fine man, wonderful husband, and always proud of his IEEE membership."

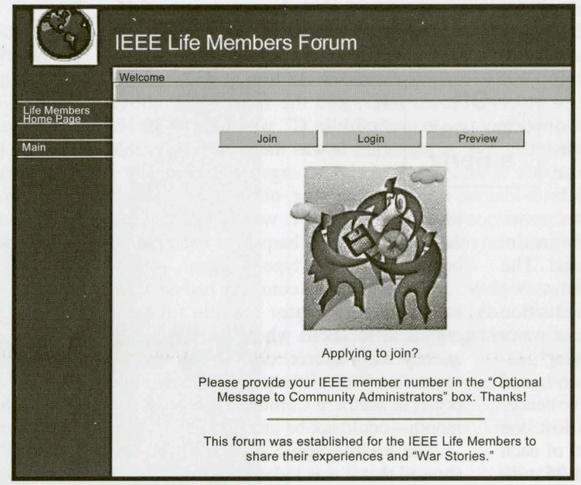
Earlier this year, the IEEE Foundation was very surprised to hear from Jean who chose to fulfill the US$10,000 grant to the IEEE Life Members Fund from their Trust during her lifetime. She chose to make this generous gift now to assure his wishes would be honored. When asked how she would like to be acknowledged for her generosity, she suggested listing their names as the "Robert F. and Jean E. Holtz Trust" to honor the memory of their long and happy marriage career in which they did everything together.

Try it, you just might like it

https://www.ieeecommunities.org/lifemembers

Well, an IEEE Virtual Community under the auspices of the Life Members Committee has been set up. The hope, and goal, is that this forum will provide a watering hole of sorts were IEEE Life members can exchange stories, queries and information regarding IEEE activities and concerns as well as non-IEEE related matters.

Current content should be regarded as just a starting point. We want feedback from within the forum and about the forum. So please check it out. And, remember this community needs your continual input to succeed.



The Life members web site

This web site lists LM relevant IEEE Bylaws along with the IEEE Life Members Committee (LMC) activities. The web site also gives summaries concerning funded projects and programs as well as reports on recent LMC meetings and more (like this newsletter).

LM web site:
<www.ieee.org/lmc>

Keep your *IEEE Spectrum*
and the other publications/services coming
return your completed profile immediately (if you have not already done so).

Otherwise, you may not get *IEEE Spectrum* (and other publications/services) until you contact us.

In memory of Daniel W. Jackson

"The IEEE Life Members Committee extends our most heartfelt sympathy to the Jackson family on the passing of Daniel W. Jackson. During his career he made many noteworthy contributions to IEEE.

His 53 years of continued support of the Engineering Profession and the IEEE is a significant accomplishment. We are grateful for his dedicated service to the IEEE Life Members Committee (1999-2002) and especially his IEEE Life Member Chapters activities."

This resolution was approved by acclamation by the IEEE Life Members Committee on 22 September 2003.

LM Chapters
Region coordinators

A Life Members Chapter can help Life members and other IEEE members remain active and involved. The LMC makes funding available as seed money. Jacob Baal-Schem oversees this program for the LMC as the Regional LM Chapter Liaison. For more information about creating a LM Chapter contact him or your Regional LM Chapter coordinator.

Region	Coordinator	Email alias
1	Edward Altshuler	edward.altshuler@hanscom.af.mil
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10	Matt Darveniza	matt@csee.ug.edu.au

Jacob Baal-Schem, Regional LM Chapter Liaison,
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Off by just a Hertz

During the entire month of March, 1947, Pacific Gas and Electric (PG&E), one of the largest investor owned utilities in the nation and based in San Francisco, reduced the electric power frequency for its service area from the standard 60 Hertz to 59 Hertz.

In 1947, northern California had suffered a multiyear drought without prospect of abatement. In those days, a significant part of PG&E power generation came from water power derived from higher level lakes in the mountain ranges east of the coast. The western power grid did not exist as we know it today. The frequency reduction was a test to determine if significant water could be conserved while maintaining generation of power to meet demand, and without too much offsetting inconvenience.

Of course, all electric clocks lost one cycle of each second, one second of each minute, one minute per hour, and 24 minutes a day.

Everyone devised their own way of coping. At the Signal Office of Camp Stoneman, California, where I was in the US Army, we adopted the procedure of setting our electric clocks six minutes fast at 8:00 AM, and again at 8:00 PM daily. Thus, we recovered 12 minutes twice a day. Like a stopped clock, our clocks were only right twice a day, but, with never more than six minutes error.

Of course, induction motors ran 1/60, or 1.67 percent, slower than normal. This was not enough to notice in most power environments. But Hammond electric organs, whose pitch depended upon 60-Hz synchronous motors, ran 28 percent of a half tone flat. Standard A-440 Hz was 7-and-1/3 Hz low at 432-and-2/3 Hz, and the fourth "C" above "middle C" was nearly 70 Hz flat. It was therefore impossible to play an organ with companion chimes or other fixed tuned instruments. And it was impractical to detune pianos and harps, for example, to be played with that type of organ.

(The Hammond company had an accurate 60-Hz generator module for their organs in locations where the power frequency was incorrect or unstable. But the expense of retrofitting every Hammond organ in northern California—for just one month—could not be justified.)

The hydrographic results of the test showed that it was indeed possible to save measurable amounts of water. But the difference was nominal, and insubstantial, in the light of the inconveniences, which were more than anyone wanted to bear on a continuing basis.

Everyone hoped they would never do it again. They didn't.

William C. Perkins, LS
New Smyrna Beach, FL

"Things are never as blue as they first seem"

In 1949, right after graduation, I took my first engineering job at the Air Force's Communication and Navigation Laboratory at Wright-Patterson Air Force Base. One of my first assignments was with the ARN-6 Radio Compass. I had to investigate problems reported in from the field.

Once I was given a field report that was attached to a radio compass antenna. The antenna included a glass-encased desiccant. By changing color, it would indicate whether or not the antenna might have been damaged by water. If water was present, the desiccant would change from blue to pink.

The field report stated that the antenna was known to have been submerged in water. Yet, the desiccant remained blue. It was my task to find out why.

I carefully removed the desiccant cylinder from its glass case and discovered that it had been painted blue. The consensus conjecture was that someone in the field had painted the desiccant blue to avoid being reprimanded for having allowed the antenna to become flooded.

Rubin Boxer, LM
Santa Barbara, CA

Lightly steam and press

This story relates to the 1960s. I was working for an aerospace company that was involved in navigation equipment for missiles. At our plant in California, we would perform tests on the control circuits using a tape reader for feeding in parameters. The fan folded, punched paper tape performed flawlessly. However, when taken to Florida for flight testing during the monsoon season, the paper tape became soggy due to the humidity. It would not feed into the reader. After much head scratching, it was discovered that a household iron and an ironing board could be used to dry out the tape. Then, when fed into the reader, everything worked properly. The only problem was trying to justify the expenditure for an iron and an ironing board.

Lloyd White, LM
Fullerton, CA

A balancing act

In the early '50s, I was working at one of our large missile labs. We had a tracking antenna operating at about 400 MHz with a complex coaxial array protruding in front of a flat screen reflector. The antenna was a beautiful creation of polished copper and silver but was quite fragile.

When set up at the missile range (White Sands, NM), the winds tended to blow the antenna over onto the array. The result was irreparably destroying the alignment of its elements.

I was given the job of adding two legs that would extend in front of the array with foot pads (to prevent their sinking into the sand). As an amateur telescope maker and avid follower of Russell W. Porter—one of the contributors to the design of the 200 inch at Palomar—I proposed an alternative.

The radar antennae that were in use around the lab (SCR584-Signal Corps Radio) were five inch gun mounts on which a parabolic dish had been exchanged for the gun. There was no need for balance as the heavy cast iron pedestals were truly overkill.

My alternative was to attach a three foot long, two inch pipe to the rear of the tracking antenna through which the coaxial cable was routed. It also had a sliding solid lead cylinder which could be positioned for balance and clamped in place on the pipe. My supervisor approved my alternative; but, because of the high cost of the antenna, he insisted that the front foot pads be added as well.

At the next test shot our modified and balanced antenna took its place in the line with other antennae, Telemetry, Guidance, Doppler, etc.

Not long after the test firing, I noticed that antennae around the lab, and also the rest of the country, began showing up with the tube, cable and counterbalance on the back. Probably just a coincidence.

John L. Way, LM
La Canada Flintridge, CA

A jarring moment

After VE day, F company, 506th parachute Infantry Regiment was billeted in the small village of Kaprun, Salzburg Province, Austria. As the war in the Pacific was still raging, it was essential to keep the troops sharp and busy until the expected transfer to the Far East. An order came to prepare a combat training course in the area around Kaprun. That task fell to Fox Company. Since I had attended demolition school, ultimately it fell to me.

Lt. Ben Staplefeld (left) and Pvt. Ted Ulrich (right), with magneto slung on shoulder, F Company, 506th Parachute Infantry, 101st Airborne Division. Kaprunertal (valley of the village of Kaprun),. Austria, June-July 1945.

About one mile and a half from town, a perfect site was found—a steep valley with a small log dam that backed up the river creating a small pond. Shallow fox holes were prepared from which pop-up targets would emerge when manipulated by the pull of a rope. The silhouette targets imitated Axis soldiers emerging from fighting holes. The targets were fired on by our troops as they worked their way through the combat course. We also simulated the impact of artillery shells by detonating blocks of explosives under one foot of water.

One of the problems in setting up this course was finding a suitable source of power to set off the charges. Someone remembered seeing a hand cranked magneto in a pile of discarded German communications equipment at regimental headquarters. Within a day, we had the magneto at our combat training course. During a test run with the explosive charges in the water, I took a good look at the magneto. A white plaque on the cover of the magneto was printed with the German phonetic code, similar to our Able, Baker, Charlie, etc.

As I read the phonetic alphabet and neared the end of the code words, the hairs on the back of my neck started prickling. The German code word for the letter "T" was "Teodore" and the "U" was "Ulrich." I knew enough German to recognize my own name, and it took me quite a while to settle down. I finally realized that this was an unbelievable coincidence. We went on to use the German magneto successfully.

Lastly, before inspection by a major from battalion, we wanted to be sure that the combat course made a good impression. So we doubled the charge and increased its depth by an extra 10 inches in the water. The additional "oomph" showered water over the major, who said, "By god, that was pretty good!" He quickly dried out in the summer air.

Ted Ulrich, LM
New Haven, CT

A slogan ahead of its time

In the early 60s at Scantlin Electronics, we were designing the terminal for our second-generation stock market quotation system. The first-generation terminal contained a thermal printer, and we were adding a 4-digit display to it. The original unit had, at the top of the plastic case, a sort of "hood." The "hood" held four lights that indicated various things about the terminal's status and of the other terminals in the broker's office. Each digit of the 4-digit display—we were contemplating—was about 1.5 inches square and four inches deep.

Several of us, engineers, were looking at the terminal and at the displays. We suddenly realized that the width of the "hood," the shape of the plastic cover, and the underlying chassis of the original terminal—designed about five years ealier—were all such that the four display units could easily be packaged with no change in the cover and little change in the chassis.

I remarked, "Well. It turns out that we planned ahead." And for several years thereafter that was the slogan of our engineering department.

Monty Phister, LF
Santa Fe, NM

Wartime crime bust

Sixty years ago, the US Government put a big offender out of business. The effort required the Federal Bureau of Investigation (FBI), the Office of Price Administration (OPA) and the War Production Board (WPB).

The offending organization was selling vacuum tubes, new and used, for more than their official "Ceiling Price." Worse yet, the organization was actually advertising publicly and sending tubes openly through the US Postal System.

The federal agents thus marshalled their resources and swooped down on the offender to catch him by surprise. However, the "entire organization" was simply a pre-teen kid who had a few tubes and other components. His "warehouse" comprised part of one shelf in his parents' linen closet.

Yes, the US Government succeeded in putting me out of the replacement tube business.

Then I experimented with selling tube replacements (note the subtle difference). Two selenium diodes and a few resistors soldered into a tube base makes a perfect substitute for a 5Y3 rectifier—and, without drawing any filament current.

Also, miniature tubes with 7- or 9-pin bases can be adapted as substitutes for full-size tubes with octal bases. The 6DL5/EL95 with an adapter makes a poor-man's 6V6. Okay, it's less audio power, but it's better than no output at all.

Other substitutions can be made, frequently with only some wiring between a tube socket and a tube base. No other components are needed. Finding tubes that have similar characteristics, perhaps at reduced ratings, and making the adapters is a great learning experience for a novice EE.

I learned several lessons:

1. The Government has a lot of three-letter acronynms.
2. You can't traffick in vacuum tubes, but it's "okay" to sell "tube substitutes" and "adapters."
3. Poor solder joints will fracture in transit.
4. Selenium smoke is highly toxic.

Roger L. Boyell, SM
Moorestown, NJ

During the WWII years, I was at Princeton, Class of 1944. But, because it was wartime, I was on an accelerated program. I actually received my BSEE from Princeton in Sept '43. The next eight months I spent working as an instructor at the Princeton engineering department's Navy Pre-Radar program. During that time, I took monthly eye tests for the Navy in New York City and kept failing them. However, eventually, the Navy requirements dropped enough that I passed. I received a direct commission as an Ensign, USNR, with orders through Indoctrination School, Pre-Radar School (Bowdoin), and Radar School (MIT).

At the Radar School in Boston, I was trained in heavy shipboard radar equipment. I ended up being sent to Naval Air Technical Training School in Gainesville, GA to learn maintenance of Ground Controlled Approach (GCA) radar units. Gilfillan and Bendix originally built these radar units with each containing over 700 vacuum tubes.

Each unit was mounted in a big trailer, which contained the radar, five operating positions and the three big antennas. On top of the trailer was an S-band (10cm.) surface-search rotating antenna about three feet tall. Built into the trailer were two fire-control type antennas—one horizontal and one vertical—both about 8-10 feet long. These fire control reflectors were fed at X-Band (3 cm), by a series of miniature dipoles mounted on top of the waveguides. The width of these waveguide feeds could be changed mechanically, thereby changing the phase of the feed to all these little dipoles. This enabled bending the beams back and forth, and up and down. Thus, we had the means for locating the aircraft in the vicinity of the airport (surface-search), as well as highly accurate glide-slope radars so we could accurately talk the approaching aircraft down the glide path. We could assist airplanes down through about a 500 feet ceiling. As these airplanes approached the end of the runway, they would take over and easily make the actual touchdown visually. Every pilot, who asked to be talked down, made a successful landing. They all loved it!

Radar landings

Left to right: Don Korth, Chester Rice (kneeling) and Don Hirschberger

After VJ day, during July of 1945, I was ordered to Tsingtao (now called "Qingdao") in North China with GCA Unit 20. It was a strange and lonesome life, especially because we were a small Navy unit attached to a Marine air squadron, with the air base about 10 miles out of town. But soon after finding the air base's Officers' Club, I met Lt. Don Hirschberger, Princeton Class of 1944, who was the quartermaster officer on the base. He was handy to know especially when I needed a 60W light bulb for the radar trailer, and his sergeant in charge wouldn't give me one!

Toward the end of 1945, Ens. Don Korth Princeton '44 came ashore for a visit from his destroyer. He came out to the air base to visit my radar trailer, and the enclosed picture shows Korth, me, and Hirschberger, at GCA Unit 20.

Chester T. Rice, LM
Kentfield, CA

Wet vs dry

In 1951, I was trained as an airborne radar maintenance man for bomb-nav Q-24 radars at the Keesler AFB at Biloxi, MS. These radars were installed on B-45 and B-50 bombers. Assigned to the 4925th Atomic Test Group at Kirtland AFB in Albuquerque, NM, I spent several months servicing radars on these planes. I was given an Atomic Energy Commission "Q" security clearance after appropriate FBI investigation. Kirtland was part of the Special Weapons Command where a variety of classified research activities took place. This included the responsibility for dropping atomic bombs from a B-50 at the Nevada Test Site for a number of the shots.

In the fall of 1952, I was interviewed and chosen to join a select group of about 15 enlisted men with some college engineering preparation. (I had spent 2 1/2 years at Purdue.) We were sent on a per-diem basis to Boulder, CO, for what turned out to be 18 months. It was a dream assignment. We lived as civilians in private, rented rooms or homes. We attended the University of Colorado all day, five days per week, for three months. The top engineering, physics and mathematics professors had set up an intense special course of study for the Air Force to bring us all up to a similar level of proficiency in these subjects. One of the fields covered was cryogenics, the science and technology of very low temperature matter.

Our group then worked daily at a private company, Cambridge Corporation, under contract to the Air Force and in association with the National Bureau of Standards in Boulder. The latter had made great advances in cryogenics, particularly with the technology for producing and storing large quantities of liquid nitrogen, hydrogen and helium. We were allowed to participate in some of the research projects underway at the company. Our principal job was to operate and maintain Refrigerated Transport Dewars (RTDs)(large, improved Thermos bottles), mounted on semi-sized trailers complete with a motor-generator and helium-based refrigerator. Two thousand liters of liquid hydrogen could be stored at 12 to18 degrees above absolute zero (Kelvin) and transported in these units.

Their purpose? In 1952, few people were aware of the possibility or existence of hydrogen bombs. The first bombs were known as "Wets" because they employed liquid deuterium (the heavier isotope of hydrogen). The first test for this type of bomb in the Pacific was the "Mike" shot in November of 1952. It was a building-sized assembly, not a practical deliverable weapon in any sense. Mike yielded over 10 megatons and vaporized a good-sized island. It also vaporized an RTD filled with liquid deuterium that was an integral part of the bomb. (We are probably breathing these vapors today!) There were later "wet" tests but soon "dry" bombs were being developed and tested that employed a solid compound, lithium hydride, as the fusionable material. This enabled the ready weaponization of H-bombs and ended dependence on the awkward, and sizable, cryogenic apparatus.

Our Air Force program continued for a while. We helped develop and maintain the semi-trailer-mounted transportable units that produced hydrogen or deuterium gas by electrolysis of liquid potassium hydroxide or potassium deuteroxide. But it all ended in mid-1954 when the "Drys" proved successful. However, the exposure to top research people and procedures instilled in me a lifelong fascination with physics and state-of-the-art research.

A few decades later, when I could talk about these things, an Air Force 21-year man, navigator and friend said to me, "That's the damndest assignment I ever heard of!"

Donald B. Hopkins, LM
Grass Valley, CA

As long as the shelf life is good

The US Army has an excellent system for testing new hardware. This was organized during World War II into a series of test boards, broken out by specialty fields. Communications and electronics were still located at Fort Bragg, NC, when I reported there in the summer of 1948, fresh from a Masters in nuclear physics at NYU. Radiological matters were just being addressed by the Army—we still used off-the-shelf geiger counters, for example. I served as Branch Chief for three years, covering all the odd-ball hardware that came along—from flashlights to radiation detectors, TV and so forth. (Eventually, we merged with the radar branch.)

My favorite test remembrance involved radiological gear, where a source of gamma rays was needed to elicit a response from the detector. In those days, there was no reasonable way to use the isotopes now so plentiful in US technology and medicine. So I ordered a tiny pellet of radium. It came in a silver BB, housed in a grenade-sized lead container, known in the trade as a "pig."

The Board administration paid for the radium (around $50 (USD) as I recall). Months later a letter came requesting the return of the pig. This had been a provision of those transactions, and we had failed to give it back. This fact came to my attention when the colonel called me to ask if radium did not deplete itself over time. I told him that he was correct, and he hung up. Later, I got an info copy of his letter to the supplier. He reminded them that radium would deplete over time as I had told him. He promised to return the pig as soon as ours was all used up.

It was by then too late to remind the colonel that radium takes thousands of years to "wear out." I'll bet some people in the isotope business still have his letter framed someplace on the wall.

James W. Kerr, LS
Easton, MD

Powerful chaff

The countdown had begun, "...six, five, four." It was 1957 in the midst of the "cold war." We were gathered in the control van of the M-33 radar with all eyes glued to the acquisition plan position indicator (PPI) display. As chief of the Vulnerability Branch Countermeasures Division, US Army Signal Research and Development Laboratory (USARDL), Fort Monmouth, NJ, I had invited several high ranking military personnel to witness our field test. We were evaluating the effectiveness of anti-chaff and anti-jam circuitry our in-house engineering team had retrofitted into the radar system.

Arrangements had been made with the US Navy to have several naval aircraft fly over the Atlantic off the New Jersey coast for coordinated chaff drops. [The chaff (aluminum foil strips and/or metalized glass fibers sized to the approximate wave lengths of the radar frequencies) was originally developed during WWII and is still in use. It can serve to mask or decoy aircraft echoes against surveillance/acquisition radars or "break track" versus tracking radars.]

Our M-33 radar, consisting of an S-Band acquisition portion and an X-Band tracker, was located in the Area G test site of the Evans Signal Laboratory, Belmar, NJ. We were in close radio contact with the navy planes. The aircraft "blips" were readily identified on our PPI display. At the end of the countdown, they were to release chaff so that we could assess our anti-chaff acquisition radar circuitry in discriminating between the chaff and aircraft target echoes.

The countdown continued, "three, two, one...DROP CHAFF!" At that very moment, the entire M-33 van went black; the PPI display briefly glowed; the radio went silent; the complete system shut off! "Wow!" shouted one of our members, "this chaff is really powerful!"

We ran out of the dark van into the daylight. There, at the external engine-generator which provided the prime power to the radar system, stood a Corps of Engineers GI with tools in hand. "What are you doing?" we demanded.

"Why I shut off this engine," he replied. "I'm to provide periodic maintenance service on all the engines in this area and today's the day!" Of course, no one in our lab had been notified in advance. Talk about remarkable timing coincidences—and coordination—among the military services!

Subsequent tests and contractor studies indicated that many Army Air Defense radars were vulnerable to Electronic Countermeasures (ECM). However, circuitry and techniques developed or adapted under these programs could improve radar performance in an ECM environment. We had recommended that Air Defense radars be retrofitted; however, the proposed "fix" programs were given low priority with no funds. That is, until early 1959 when the Weapons System Evaluation Group (WSEG), a high level Department of Defense organization, announced plans for a huge military maneuver.

Some 50 SAC B-52 aircraft, loaded with ECM (including chaff), were to fly in from Canada to evaluate the performance of the Army Air Defenses in the Chicago-Milwaukee area under a heavy ECM environment. With a rapid mastery of cutting government "red tape," and under intensive quick reaction capability (QRC) programs, we were able to place contracts and have retrofits at key locations in the field within 40 days.

I participated as an observer at an AN/FPS-36 early warning/surveillance radar site near Green Bay, WI. Together, with a contractor, we had adapted a number of "fixes" to the radar; the unit provided essential inputs to other area air defense installations. Once again, a group of us looked over the shoulder of the well trained Army radar operator while he scanned the PPI display. As the massive air armada came into radar range, the operator was able to authenticate targets in the presence of extensive chaff and jamming. Our circuitry was effective.

Theoretically, many of the "attacking" aircraft would have been shot down. However, the "destroyed" B-52s still approached our site with jammers on, full blast; at close range most of the PPI display targets were obliterated by the ECM.

I never did review the WSEG test report. I presume they took into account the aircraft attrition (jammers shut off) and other considerations in subsequent ECM Air Defense maneuvers. Hopefully, they never had a problem with some GI running around and turning off engine-generators.

Robert H. Sugarman, LM
Erdenheim, PA

Our mailing list

The Life Members Newsletter is distributed to Life members and those who are **NOT** Life members but are 1) IEEE members 65 years and older, 2) retired IEEE members aged 62 through 64, and 3) members of special boards and committees.

Submitting articles

We welcome articles. In particular, we seek stories about Section/Region projects initiated by Life members as well as "war" stories. In general, published story lengths are:

1/4 page—175 words 1/2—350 words
3/4 page—525 words 1page—700 words

Acronyms should be completely identified once. Reference dates (years) also should be included. Editing, including for length, may occur. If you wish to discuss a story idea beforehand, you may contact me by email <james.oneil@ieee.org>, or call Mary Campbell, Managing Editor, at +1 732 562 5526.

The deadline for possible inclusion in the next issue is 15 April 2004. Please include a phone number and/or an email address with your piece.

James O'Neil, Editorial Liaison

Stopping IEEE services

Those Life members who would like to have all IEEE services stopped should contact IEEE Member Services. If you are doing it at the request of someone else, submit the member's name, number, grade, address, change date and your connection, e.g. Section Chair.

IEEE Member Services

fax: +1 732 562 6380
or **phone:** +1 800 678 4333 (USA)
+1 732 981 0060 (worldwide)
or
contact us online at:
www.ieee.org/memberservices

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Qualifying for LM status

To qualify as a Life member, an IEEE member must be at least 65 years old, and the sum of the member's age and the number of years of paid membership must equal or exceed 100 years.

Have questions, opinions or problems

Have questions regarding your Life member status? Contact Member Services (see address left). Otherwise, if you have a more general LM question or concern, email the Life Members Committee or its Staff at <Life-members@ieee.org>, or call: +1 732 562 5508, or fax: +1 732 463 3657.

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