Involvement with IEEE Proves Retirement Isn’t for the Weary

Lyle D. Feisel, Chair, IEEE Life Members Committee
l.feisel@ieee.org

In my salad days—and even, I guess, in my main course days—I used to wonder what retired people did with their time when they were no longer spending 50 hours a week in the office and bringing work home at night. Now that I am in my dessert days, I am finding that, lo and behold, I am as busy as ever and have quite a backlog of things to be done in the future. (You will be relieved to know that I am not going to push this metaphor any further and contemplate my after-dinner drink days. Dessert is far enough.)

Dorothy and I do a lot of traveling, and I have a good workshop where I turn out projects of various size and complexity. Boating is good here in Maryland on the Miles River and, in the summer, the blue crabs command a considerable amount of my attention. And of course there is the church and the investment club and the Sail Committee that wanted some help with strategic planning. But I still have time for IEEE activities, and I am most thankful that the organization continues to offer me opportunities for involvement. I hope that you are also still active with our professional society. If not—or if you would like some additional involvement—there is plenty of opportunity.

As many of you know, Life Members, in about 40 sections, have formed Life Member Groups. If you are in one of those sections, this is an opportunity for you to interact with other life members and to provide whatever level of leadership you wish. If your section doesn’t yet have such a group, you might consider starting one. The groups have various agendas, but they tend to provide a good mix of social interaction and technical programs at a general level.

Another opportunity for you to become involved is with IEEE conferences in your area. Very often, the conference organizers are looking for people to serve as ushers and helpers in various capacities. The pay isn’t very good but you get to hang out with a lot of great IEEE Members.

At many IEEE conferences and meetings, there will be an IEEE booth that advertises membership as well as the various services that the IEEE provides. There is a need for people to staff the booth. Life members, with their long service and their obvious dedication to the organization, could educate non-members about the IEEE and provide information about the extent of our activities.

Finally, you can use just a small amount of your time to make a donation to the IEEE Life Members Fund. The fund provides financial support for a number of interesting projects including student activities, awards, historical projects, and more. This year, in recognition of contributions of US$100 or more, you will receive a very handsome coaster depicting an IEEE milestone. I hope you will join me and several thousand other life members in supporting the fund.

I must also tell you—with considerable regret—that I will complete my two-year term as chair of the Life Members Committee on 31 December. I have enjoyed serving in the position, and I have particularly enjoyed the e-mails that so many of you have sent. My e-mail address is still L.Feisel@ieee.org, and I would enjoy hearing from you.

Here’s wishing you a happy and healthy 2008 and continued involvement in IEEE.
Membership Renewal/Member Elevations

Reminder – Membership Renewal

As a reminder, even though the membership dues for IEEE Life Members have been waived, all Life Members are required to renew their membership. Renewal notices have been sent to all members. Please take the time to return the renewal notice you received by mail or renew online via http://www.ieee.org/renewal. In order to renew your membership online, you must have an IEEE Web account. Please renew as soon as possible but no later than 25 February 2009.

Life Member Elevations

Being an IEEE Life Member indicates that an individual has achieved a distinguished status that has been reserved for those with a long association with the IEEE. Achieving this status does not alter your privileges or responsibilities in the IEEE, but it does mean that the IEEE will waive base membership dues. An individual is still responsible for Society dues unless you have met the five years of Society or IEEE-SA membership, immediately prior to attaining life membership.

We are pleased to report that 2,028 members will be elevated to Life Member status effective 1 January 2008. These individuals have received a congratulatory letter from the IEEE president, an LM certificate, and a membership card.

If you have any inquiry regarding your IEEE Membership, please contact:

IEEE Member Services
445 Hoes Lane
Piscataway, NJ 08855 USA
+1 800 678 4333 or +1 732 981 0060
www.ieee.org/memberservices

The IEEE Life Members Fund (LMF) supports the activities of interest to Life Members, potential engineers and engineering students. The LMF is supported by the generosity of IEEE members. In recognition of contributions of US$100 and higher, donors will receive this distinctive coaster.

Want to Donate During Your Online Dues Renewal?

1) When you have completed your online renewal, click the yellow button—View Cart/Proceed to Checkout.
2) There is a blue box labeled, “What Do You Want To Do?”
3) Click the link—Make a donation to the IEEE.
4) You have now arrived at the Web page reserved for donations—Contributions.
5) Your shopping cart balance will increase (the screen does not change).
6) To complete the online dues renewal process, click the yellow button—View Cart/Proceed to Checkout.

More information regarding online dues renewal can be viewed at http://www.ieee.org/organizations/foundation dues renewal.html.

Thank you for your continued support and generosity to the IEEE Life Members Fund.

U.S. IEEE Life Members 70 and older may be running out of time to take advantage of the IRA Charitable Rollover Provision, allowed under the Pension Protection Act of 2006, to make a gift to the IEEE Life Members Fund. This provision allows U.S. taxpayers to make up to $100,000 tax-free distributions of up to US$100,000 from traditional or Roth Individual Retirement Account (IRA) assets to a qualified charitable organization, such as the IEEE Foundation.

This provision is set to expire on 31 December 2007, but there is a possibility that it will be extended. On 12 Nov 2007, the United States House of Representatives passed the Temporary Tax Relief Act of 2007 (H.R. 3996), which includes a one-year extension of the (IRA) Charitable Rollover Provision. However, it may still be reviewed and voted upon by the United States Senate and if passed, signed into law by President Bush.

Highlights of the IRA Charitable Rollover Provision:

- The IEEE Foundation must receive your gift before 31 December 2007.
- You must be age 70 1/2 or older.
- Distributions of any amount up to US$100,000 are allowed.
- Couples with separate IRAs can each make a gift up to US$100,000.
- Gifts must be transmitted directly to the IEEE Foundation from the IRA plan administrator.
- Gifts may be applied to satisfy your minimum required distributions from your IRA for 2007.
- Only traditional IRAs and Roth IRAs are eligible under this provision.
- Because no income will be reported on your tax return, you will not receive a charitable income tax deduction for the gift.

The IEEE Life Members Fund (LMF) is one of the over 100 funds administered by the IEEE Foundation. The LMF supports educational and professional projects that are of interest to IEEE Life Members and that reflect the breadth and range of the engineering field and make a significant, positive, global impact on the profession.

The IEEE Foundation is an organization qualified under U.S. Internal Revenue Code 501(c)(3) and is a qualified charitable organization as described in the Pension Protection Act of 2006. Its U.S. Employer Identification Number (EIN) is 23-7310664.

Use Your IRA as Never Before

By Karen Galachie, IEEE Development Office

A gift receipt from the charity is specifically required for a donor to substantiate a charitable IRA distribution.

To make a gift to the IEEE Life Members Fund by taking advantage of the Charitable IRA Provision before it is too late, please contact your IRA manager and direct him to transfer the funds to the IEEE Foundation. To designate your gift to the IEEE Life Members Fund, instruct your IRA manager to make the gift payable to the IEEE Foundation – IEEE Life Members Fund.

The information in this article is for educational purposes only and is not intended as legal, tax or investment advice. If you are considering a planned gift to the IEEE Foundation, we highly recommend you consult with your own tax, and legal advisors to determine the best options for you.

IEEE Mentoring Connection Program Seeks Life Members to Mentor Young Professionals

The IEEE Mentoring Connection is looking for “online” mentors to help guide younger IEEE professionals in career planning and professional development. Currently, 600 mentors are needed to register to participate. Mentor participation is open to all IEEE members above the grade of Student Member.

Gary Hinkle, a mentor in the program, says “Helping young engineers develop in their careers is very rewarding. Working with some of these individuals has proven to be quite challenging, because of the diversity among those seeking mentors. I’m glad to be contributing to this program.”

The program enables mentees to select their mentoring partner online from a list of individuals who have volunteered to serve as mentors. After mentors are identified as a potential match, they are contacted and asked to begin establishing a relationship. IEEE mentors presently in the program include those in various engineering-related industries, government and academic positions, private consultant practices, and retired workers. Interested members can visit http://www.ieee.org/mentor for information on the roles and responsibilities of each mentoring partner, including additional program information and an FAQ page. Potential mentors are asked to review the time and effort commitment to the program necessary to ensure a successful mentoring partnership.

To enter the program Web site, please go to http:// www.mentoringconnection.com and use the IEEE Group ID “IEEE2006” to enter for the first time. Once in, you will need to set your own User ID and Password.

If you have any questions, please contact Cathy Downer, Member and Geographic Activities, at c.downer@ieee.org.
Life Members—A Natural Resource

Wanted: Mature engineers who have lived under different circumstances and possess various experiences that have influenced their individual attitudes and aspirations. A local resource that is willing to volunteer, and one that needs to be accessible to local Regions, Sections and societies.

Volunteering is a way for older engineers to remain involved in society following retirement from formal employment. It is a means of engaging the mind, staying active and staying independent. Engineers have the innate desire to be continually active for as long as possible. It's also a win-win situation, both for the engineer and the profession.

Worldwide, Life Members are a team of 25,000 strong, which can help play a pivotal role both within and outside the IEEE. We have backgrounds in science and technology, economics, various disciplines of electrical engineering, computer science, social science, communications, strategic planning, information technology, business, marketing, and administration.

Life members can serve as local area resources for:
- Judging science fair competitions
- After-school homework programs in math and science
- Manning booths at local technical conferences (i.e., handling registration, judging, etc.)
- Speaking on various topics of technology
- Teaching other senior citizens about new technologies (computers, Internet, e-mail, etc.)
- Mentoring high school students for the Boy Scouts program

Life Members Affinity Groups

Participating in Life Member Affinity Groups activities is an excellent way individuals can remain active and provide a contribution to IEEE and your local community. As of December 2007, 44 LM Affinity Groups have been formed (see the list below). If there's none in your area, you can start one. In order to establish an LM group, you need the signature of six IEEE members who have indicated they would be willing to participate in LM group activities.

Lou Luceri, L5

A Pig in a Poke

In the meat-packing business, hog carcasses are called "best before" entering the cooler. Knowing the exact weight of each carcass as it enters the cooler is important in the packing business. Our system was dubbed "The Toledo Hot Hog Scale." Around 1956, our company needed a method of digitizing and recording weight from carcasses being conveyed on an overhead rail into the meat cooler. The conventional pendulum dial scale was all we had to work with then. This scale included a gear rack with a movement of about two inches travel.

We made a glass "chart" consisting of 1,000 equally spaced lines, which was covered by a shutter connected to the gear rack. As the weight on the scale increased, the shutter uncovered more lines on the chart.

An optical arrangement swept a light beam through the chart onto a photocell so that the number of pulses generated with each sweep was equal to the number of lines uncovered by the shutter. Thus, we had an electronic analog to digital (A/D) converter for weight.

Vacuum tube binary coded decimal (BCD) counters tallied the pulses from the photocell. These used four 12A7/12 triodes, making up four "flip flops" with feedback to force reset after ten pulses. With such counters we could count 100,000 pulses.

The carcasses swayed and bounced on the weighing area, so we made total of ten consecutive weighings per carcass, then moved the digital point to divide by ten and get the average weight.

The digital recorder was a paper tape punch, which recorded a weight and ID number for each carcass. We could process about 20 carcasses a minute. Of course the packers wanted more speed, but that came later.

On early installations, things were done well once we got the cleanup crew to stop hosing down the electronics and the paper tape people to stop splicing the punch paper tape with Scotch tape. Tape punches didn't like the Scotch tape glue in the punch dies, and the electronics did like water.

After a few weeks, our BCD counters began to fail. As I puzzled this problem while standing on the packing floor, a man with bib overalls and big work boots said, "Come in to my lab for a minute." There, just off the meat packing floor, was a well-equipped electronics lab. He put one of our counters under a binocular microscope, pointed to a solder joint on the printed circuit board (PCB), and pushed on a component lead with a small probe.

With a puff, a cloud of rosin dust arose! Cold solder joints were the culprit.

Those were the days before wave solder machines, and all the PCBs were hand soldered, obviously not well enough to solder all of our PCBs, we were back in business.

It was another lesson in misleading appearances. That tech, who looked like a meat packer, was really a well-trained electronic trouble shooter! He helped us turn a real problem into a successful "Hot Hog Scale" product.

If offered, would you participate in an IEEE Life Members travel/tour program? If yes, please send your comments to lifemember@ieee.org.

Wire, More or Less

I grew up in a mid-size town in Northern Bohemia, surrounded on three sides by Saxon territory. I must have been in my early double-digit years, and lived in the Edison-gasse, so called because the local power station dominated its otherwise peaceful area.

Our doorbell had been powered by two LaClache cells, whilst my father had recently replaced it with a small transformer. Since it consumed too little power to show on the meter, the power company had imposed a steep fee, which my father found so outrageous he switched back to the battery, and gave me the transformer for Christmas that year. He had also installed dollhouse lights for my "still (single-digit) sister, and I had found the ignition coil of an old Ford at a junkyard.

The power station director's son was a classmate of mine and had taken me there, after giving me a tour of his father's fascinating realm. The giant old generators were still there, but the only thing running was a similar machine he called a "phase pusher" (Phasenschieber). The power now came from deeper inside Bohemia.

With the transformer I managed to produce some rather jarring sparks, and I had just read about "cathode rays." From a small eye dropper filled with iron filings, strapped to the vibrator of a discarded door bell—satisfaction!—I was able to build a receiver that turned on the dollhouse lights whenever I drew sparks from my elementary transmitter.

I couldn't wait for father, a mechanical engineer, to return from work that day to demonstrate my "wireless remote control." It worked, and I grew up in expectation. He examined my rat's nest on the floor and finally said, "Not bad, son. Just tell me one thing: What's wireless here?" "Pop," went my self-esteem.

Max J. Schindler, LM
Boonton, NJ

Ragor Williams, L5
Spring Hill, FL
Father Knows Best

J ust before Dr. Robert Adler died recently, at the age of 92, he was granted somewhere around his 2000th patent. Although his inventions covered many technologies, the invention for which he was most famous was his continual transmission system, which was the Zenith Space Command TV remote control. He invented the “click-
ery” in 1954, this was a handheld device that emitted high frequency (ultrasonic) sound waves that could be used to control the TV. When the TV viewer pushed a button on the “clicker,” a small metal pellet struck the end of the rod, making a clicking sound. Each one of four different rods emitted an ultrasonic sound that corresponded to the controls of On/Off, Channel Up, Channel Down, and Mute (the user heard only the click). On the other hand, the Space Command receiver heard the ultrasonic sound and responded to these commands.

As the number of control options grew, we found that other things made ultrasonic sounds that sometimes could trigger the Space Command receiver. Jingling car keys, rattling dog tags, and even the “Kinky Toy” would sometimes set off a TV set or other device.

To people that worked at Zenith, Dr. Adler was famous for those “quick mental calculations” that he would do to calculate the wave path to us basic physics. His breadth of knowledge and his way of making it simple is what I miss the most.

Robert Podowski, LS
Mundelein, IL

Couch Potatoes Should Give Thanks

to gravity, a sensor on the pendulum arm allows the clock to send a series of pulses through the upper electromagnet to pull the mass up to the neutral position. It is not hard to remember exact values now, but for illustration let’s say that the flag pole was about 30 ft tall. This would require a number of pulses needed to hold the mass at neutral was about 1000, equivalent to an arm of 30 ft.

Although the manufacture of the accelerometers was quite exacting, the devices are quite sensitive. Daurow observed that the mass of the accelerometer was quite sensitive to the appearance of a particular frequency in the accelerometer’s response signal. Much reactivity power (vars) circulates relative to the real power (watts) passing through it. The main application of loaded Q was calculation of resistance transforma-
tions that are equal to 1+Q2, that is the method’s name.

HF resonators are usually composed of adjacent L and C branches having equal reactances of opposite signs at the passband center frequency. Arthur Collins always preferred top inductive or magnetic field coupling between resonators because of the greater magnetic attenuation, which increased with loaded Q. Despite only two years of junior college, Arthur Collins was innovative and had the ability to find a superior qualitative circuit without a quantitative method to justify it.

Fortunately, the famous Seymour Cohen published ‘Direct-Coupled Resonator Filters’ in the 1957 IEEE Proceedings, and it later dawned on me that resonator loaded Q was simply the ratio of the designer’s normalized lowpass (LP) prototype network element values, resonator Q, and the connecting inverters. The impedance inverters Cohn employed between resonators was capacitive on magnetic couplings that always

Concerned Arthur Collins.

Collins engineers could write ‘working papers’ that were pre-
packaged, contained with a report. I wrote for the Sullair WP-8041 in 1965, which related the isolated ch reorder Q to microwave filter and transformers. I was often in engineering meetings with Mr. Collins and others, I would remark on the devices I was considering would produce a harmonic attenuation of so many deci-

bles and that the passband would be flat if the resonator loaded Qs were distributed in a certain pattern. Finally, Arthur Collins called me one day to say he had discovered my working paper and the source of my quantities.

The title of this tale relates to Mr. Collins’ bold move to deduce that a band reject filter had to exist. Invective simplified filter design and tuning and produced voltages across resonators that are exactly 90° out of phase. So Arthur Collins had his associate Dick Fenwick con-

structed a three-resonator bandpass filter for the low HF band and tune it by the open-short-circuit method so familiar to microwave engineers. A signal at band center frequency was applied to this bench-top rig with vector voltmeters measuring the complex voltage across each resonator. All phasors varied by 90° and had the expected magnitude.

“Well, I’ll be damned!” Mr. Collins said as he smiled at me and walked away. Seeing was believing!

Robert Gilchrist, LM
Holliston, MA

Cleaning Is Next to Aggravation

In 1965, I was an electrical engineer for Honeywell’s Aerospace division in St. Petersburg, Florida, where we were building the navigation suite for the upcoming Atlas-Centaur moon shot series. That series started with orbital tests to verify the overall soundness of the new rocket design. Eventually the rockets were successful at placing the first cameras on the moon.

My task was to test and calibrate the accelerometers, those devices that ambush the earth’s gravity (vertical orientation), then the pendulum arm is in a horizontal position. The electromagnet is positioned above the pendulum mass, and another elec-

However, I was concerned with the cause of the problem: every time any one walked by the test setup, extra pulses were counted. It soon became evident that the culprit was those nylon washers—they were generating several hundred microfarads of capacitance. Yes, the microfarad capacitors from the counter probes to ground could eliminate the extraneous

Tales from the Vault
Cutting the Cord

In the 1960s, I worked at the Bell Telephone Laboratory in Murray Hill, New Jersey. During those years, there were many changes. One of those changes was the deployment of fiber optic wires, which eliminated the need for copper wires. This not only improved the quality of the signal, but it also made the network easier to manage. We were always looking for new ways to improve the network's performance.

Problem Solving

At the University of Massachusetts in the late 1980s, the network was a mix of copper and fiber optic wires. The network was not as efficient as it could be, and we were always looking for ways to improve its performance. One of the major challenges was the lack of bandwidth. We were using a lot of bandwidth, but we didn't have enough to support all the services we needed.

Sweet Smell of Success

Before I graduated as an EE at the University of Buenos Aires, Argentina, in 1967, I worked for some time at the Engineering Faculty's Instrumentation Lab. One time, I was repairing a Philips oscilloscope. It was a large unit filled with vacuum tubes—at that time Philips had incorporated miniature tubes that still needed a lot of heat, even if they were small. I had removed the sides, top, and back panels and was taking measurements. I then gave me a picture of the rest of my professional life. In 1977, I started working with Hewlett-Packard's Insturment Group and retired in 2003 after more than 25 years.

Enrique Setaro, Miami, FL

Rocketeering Behind the Iron Curtain

After receiving my diploma in physics from Warsaw University of Technology, and spending a short period as an assistant/instructor, I started working in the field of precision mechanics in Warsaw, Poland, where an R&D project in the area of rocket technology was developed. The project was carried out for the Polish Army, and to build an experimental earth-air rocket missile was its aim.

The project had started a little earlier, with the awareness and without any participation of the Russians. But the heyday of the project fell during the period of augmented Polish soverignty after the collapse of the Stalin regime, and the entire work was done with Polish hands exclusively. The Russians were quite advanced in rocket technology then, but no information was available for us from this source. A team of about 40 mostly young engineers, who hadn't any earlier experience with rockets, carried out the project. Our chief, Wieslaw Czurzajowski, was only five years older.

He had fought in the Warsaw Uprising against German occupants, was taken prisoner, and, after the end of WWII, and after being freed from a prisoner camp, had been in the German army. Germany until returning to Poland at the Warsaw University of Technology. We started the project with information on rocket technology from freely available books and periodicals, among them a report of a Polish engineer who impressed the Soviet rockets and fragments of related documents on Polish technology—and exactly the experimental missile was a two-stage rocket, with a solid fuel first stage and a liquid fuel second stage. In the second stage motor, of the second stage (only in the matter of this motor did we obtain assistance from a similar project, provided us a consultation), alline was used as a fuel and nitric acid as an oxidizer. I was very soon working on this project, and in the next five years worked on the rocket's engines, including its design. The rocket was 15 km long. I was personally responsible for board navigation instruments. The experimental missile wasn't controlled and was only a ballistic flight, but board instruments were used to measure flight parameters including an artificial horizon, an accelerometer, and an altimeter. An artificial horizon, a gyroscopic system, and an altimeter were all designed and tested then by Polish Air Forces, and manufactured in Poland under Russian license. Both instruments had been a bit rebuilt, with the most visible changes concern found in Driwsko, Poland (now frequently used for NATO maneuvers). One of them failed because of the rocket's engines on the second stage didn't start. The remaining two performed the flight successfully, with all systems efficient and meeting requirements. But almost immediately after that, we were told that the Army was no longer interested in the project since it was to be equipped with Russian anti-aircraft rocket missiles. Our team was broken up into groups, to be used in other projects.

Andrzej Kaczmarski, LM Warsaw, Poland

How Microwaves Saved the Day

The problem then was that the equipment needed to generate that pattern, plus the sync and color encoding, occupied one or two eight-foot rack. We had two such sets, but they were not very cost-effective, but they fed the projection lines and the engineering lab. Two were needed because we could not risk shutting down production if one failed.

I called the chief engineers at the non-NBC TV stations in Chicago (RCA was our major competitor). They all had that pattern available, and one of them agreed to make it available for a reasonable cost, if we had a way to get the signal to the Edgewater Beach Hotel. Another phone call to the telephone company required that problem. We contacted them to set up a temporary microwave link from the TV studio downtown, to our location 8.5 miles away. A couple of days before the show, a crew appeared with the right equipment, which we set up on the roof of the hotel. They ran a long video cable down the outside of the building, to the ground floor, and equalized the frequency response of the setup, providing us with a clean, composite video signal. We had our own RF modulator (Does anybody remember the old ‘impugner’)? and distributed the signal to the show's cable box. Our TVs were set up alongside RCA and Zenith receivers. Each had a microphone (in an acrylic housing) that was connected with the 25-kHz anode lead and mounted on top of the cabinet, to show equal composite beam current. The results were dramatic, and the show was a huge success. We also learned that broadcast Consumer Electronics had a record-breaking profit.

Joseph DeMarinis, LM Winchester, MA
The Rewards of Being Prepared

Became an electrical engineering student at the Massachusetts Institute of Technology in Cambridge, Massachusetts, in 1934. In my second year we were given the opportunity to apply for the electrical engineering cooperative program, which had been started in 1922. My application was approved by the Army to teach these soldiers a civil engineer skill so they could learn to use a job in a radio broadcast station after their enlistment term expired. I was lucky to have been accepted by the FPC office in Norfolk, Virginia, with them and took the exam. The exam was very thorough, and it took 40 pages of writing to answer all the questions. Fortunately, I had received such good grades in my studies that I was able to secure the last license, dated 30 December 1935. I was 18 years old.

Now for the miracle: One day early in May, my supervisor told me that our boss, the head of Radiotron Transmitter Test, wanted to see me in his office. When I reported, he was looking at my personnel folder and said, "He says here that you have a Radiotron Transmitter First Class License." He then went on to explain that the president of General Electric had given a complete new radio broadcast station to St. Louis free for the St. Louis Fair. The station was being built in Canton, New York, around 1922 when GE was increasing the power of its station WGY in Schenectady and replacing their transmitter with all new equipment. The university had one operator who had to go to Boston for a week in May and asked GE if they could send a relief operator to Canton to keep their station, WCAD, operating. My boss explained that he could not get away at that time and asked me if I would.

I was thrilled. My boss further explained that GE would buy my bus ticket to Canton, arrange for me to stay in a dorm room and eat my meals in the Student Union at no personal expense. As a cooperative student engineer I would continue to receive 50 cents per hour ($0.20 per hour) from GE. I found out later that General Electric bailed the University $US100 per day for me to run their broadcast station during daylight hours from May 22 to May 27.

Russell C. Colle, LM
Pacific Grove, CA

Atoll Tale

While Thomas Webb, LSM, was home for Christmas vacation in 1935, Kwajalein missile tracking system in 1967, (April 2007 Life Members Newsletter, page 6) he learned about a new system on one of my first assignments, employed by the RCA Service Co. in the Government Service Division (RCA Communications and Measurement, USAF). Also in 1967, my admission to the IEEE came to pass. These coincidences lead to my first submission.

I was then on Reafar Island, Kwajalein Atoll, to find out if there was a radiation hazard to personnel, including natives concerned about their fertility while climbing the coconut trees. The large Tradex missile-tracking dish was understandable formidable in appearance, even to me.

The Tradex was requested to radiate on each of its frequencies, L-band, UHF and VHF at boresight. 1–2 kW average on L and UHF, and 0.1 kW on VHF. Gain was 47 dB on L-band, with a 3–5 dB bandwidth of 0.6 degrees. Pulse width was 10 μs.

Power density measurements were made from a convenient heli- copter at a height of 100 feet for verification purposes. The height was from 100 to 500 feet. The pilot pointed the helicopter in a vertical plane of elevation (his and ours) was 100 feet. That instability at 100 feet was very strong.

The next question was how to measure from ground level up to the 100-foot level. Local people suggested they fabricate a wooden enclosed platform and hang it from a large mobile crane. They found out how to equipment at the site of some of your tax dollars went.) That seemed like a good idea, with rework I decided to call in volunteers for azimuth control. A long tape measure provided exact height above ground. We were about 260 feet from the 84-foot dish, just as far as possible.

At a peak power density of 10 mw/sq. cm., the USAF danger standard in those days, many areas were off limit to people. The area where (at that standard) but elevation and azimuth stops were needed to prevent radiation to other areas, including the coconut trees. If the standard now is 1 mw/sq. cm., we were well radiated.

The runway used to commute from Reafar Island to Kwajalein Atoll in a C-47 was also found unsafe with the dish pointed in that direction. Layer of the methods used for suspension, delegation would have been more appropriate for my longevity if not my helpers. It was certainly very interesting and challenging, sitting on the horn of that huge dish, and wondering about the odds of someone inside and being on the high swing, still gives me the willies.

W.A. Kernaghan, LM
Independence, MO

Number One with a Bullet

On 15 March 1972, Shinkansen, or Japanese bullet train, began its commercial service by real-time computer systems, which had two off-the-shelf processors connected by a dual system controller, or DSC, for the high reliability operating system. The size of the project was to develop the computerized dispatching system for extended Shinkansen. There were an estimated maximum of 1,000 trains in commercial operation from 6 a.m. to midnight, and additional stations were added to the existing 30 stations between Tokyo and Osaka.

I had only 15 dispatched engineers of JNR who were experts on railway signaling and 12 software engineers from Hitachi in the project at the Hitachi facility. While the project was started in January 1971, the algorithm had not been fixed by JNR until June. In addition, the commercial operation moved up, from 1 April to 15 March. Nobody, including myself, had the firm confidence of success in just one year. On 4 January 1972, the systems were placed in Tokyo's train control center while debugging, operating by full paragraphs, the commercial operation between Tokyo and Osaka equipped the systems from connecting to the railway system. After battling against time constraints and insufficient test cases, the first train left the terminal stations at 6:00 a.m. on 15 March, under the control of the first generation COMMTRAC (Computer-Aided Traffic Control). Improvement and adjustment of software established 99.999% availability after two months.

Hirokazu Iihara, LF
Tokyo, Japan

Tracking Down a Production Problem

I have an interesting story, inspired by "Airship Shunts" in the April 2007 newsletter. The shunt on the dc signals, such as those from thermocouples, was not so easy in the 1950s. The electronics cargo consisted of a rather mysterious looking box that contained a Ph.D. thesis, used as a second harmonic magnetic modulator. This relied on a combination of a magnetic core so that even harmonics would only result from a dc signal in as many turns as could be wound to upset the balance. The full circuit details were later published in the 1953 Internation conference and subsequently in an AIEE paper (Franken for the IEEE). The manufacture by EMI Electronics, the electronics worked well and a good number are at the bottom of Cardigan Bay in the United Kingdom where re-entry tests were conducted on missile skin temperature. The radio frequency sections on the large modules showed the balance was so good that only "Thaumaksen noise" on the 3.8 mm dia. ferrite cores limited the sensitivity. Heating the system gave no measurable dc drift. But when the unit was subjected to cold tests, a puzzling drift was observed. More puzzling still, the only parameters relating to the drift was the modulator serial number!

The solution was eventually found to be a pin whose contacts were hand wound by an operator using a needle and thread. As she gained experience, she wound the toroids better and with a tighter winding. The temperature coeffi-

Richard C. Pose, LM
Ottawa, Canada
Our Mailing List

The IEEE 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 62-64, and 3) members of special boards and committees.

Submitting Articles

We welcome articles for this newsletter. In particular, we seek articles about projects that are initiated at the Section and Region level by Life Members as well as “Tales from the Vault,” which should focus on novel or interesting technical issues. The suggested length for “Tales from the Vault” submissions is 500 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 before hand, you may contact Craig Causer, managing editor, by e-mail at lm-newsletter@ieee.org. The deadline to submit an article for possible inclusion in the next issue is 4 April 2008. Please include your Life grade, town, state, country, phone number, member number, and/or an e-mail address with your piece.

Stopping IEEE Services

Those Life Members who wish to have all 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
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www.ieee.org/memberservices

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Qualifying for Life Member 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 effective the following January must equal or exceed 100 years.

Have Questions, Ideas, or Problems?

Have questions regarding your Life Member status? Contact Member Services. Got something else you need to ask or discuss? E-mail the Life Members Committee or its staff at life-members@ieee.org, or call: +1 732 562 5501, or fax: +1 732 463 3657.

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