


# nuclear news

A PUBLICATION OF THE AMERICAN NUCLEAR SOCIETY

JULY 1989/VOL. 32/NO. 9

A portrait of Walt Loewenstein, the ANS President, wearing a dark suit, a light blue shirt, and a red patterned tie. He is wearing glasses and has a serious expression. The background is dark and textured.

**Walt Loewenstein**  
**ANS President**

## ALSO IN THIS ISSUE

- **Using bar codes for radwaste control**
- **Latest list of scheduled plant outages**



## Loewenstein: A nuclear veteran looking to the future

The veterans of the nuclear industry have fond memories of the early days—of the time when reactor physics and reactor development were trial-and-error technologies offering seemingly unlimited opportunity. Walter Loewenstein, the 1989–90 American Nuclear Society president, began his nuclear career during that time of great promise and possibility. The ensuing 35 years have seen the industry mature and change, and Loewenstein's work has reflected that change. In a sense, his career is a microcosm of nuclear history, from the early days of excitement and discovery to the current refocusing on improved safety on an international level.

### Early years

Walter Loewenstein was born on December 23, 1926, in Gensungen, Hesse, Germany, where his father, Louis, and an uncle owned a lumber and grain supply business. The Loewenstein family (Louis, his wife Johanna, and two sons, Walter and Victor) emigrated to the United States in 1938, settling in Tacoma, Wash., at that time a world lumbering center. Ironically, Loewenstein notes, his father ended up working in a brewery in Tacoma, not in the lumber business.

"I was about 11 years old when we came over—in grade school," Loewenstein says. "I had studied some English, but it wasn't great. But we were graciously accepted by the people in Tacoma at that time, and were made to feel quite welcome.

"After we came to this country, we really tried to get rid of everything German and made an effort to speak English at home. So when I got to college, I had forgotten most of my German and really had to work hard to recover it." The family gained U.S. citizenship in 1943.

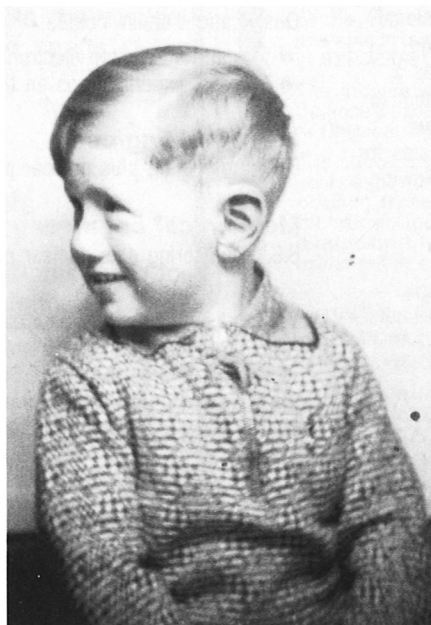
Loewenstein attended public schools in Tacoma, and was attending the College of Puget Sound when he was drafted into the Navy in 1945. After boot camp in San Diego, he was sent to electronics training school in Chicago and Gulfport, Miss. "A few years ago when I was reading [former ANS president] Bert Wolfe's profile in *Nuclear News* (NN, July 1986, p. 103), I discovered that he and I must have been stationed at Navy Pier in Chicago at about the same time,"

Loewenstein recalls. "We compared notes about it later. Of course, we didn't know each other then. In all, my naval experience was rather unique in that I was never on a seagoing vessel—the biggest ship I was ever on was a rowboat."

Loewenstein served in the Navy for only about a year, since after the war ended, the service personnel were demobilized. So he returned to the College of Puget Sound (which later became the University of Puget Sound). His original intent, he says, was to take preengineering coursework and then transfer to the University of Washington. "But I fell under the influence of a physics professor at Puget Sound, Martin Nelson, and he sort of steered me in the direction of graduate school in physics rather than in engineering."

After graduating from Puget Sound in 1949 with a degree in mathematics and physics, Loewenstein spent one year in graduate school at the University of Washington. Then he enrolled at Ohio State University, which had offered him a teaching assistantship. While there, he became interested in chemical physics.

"Chemical physics was very big at Ohio State, both in the Physics Department and in the Chemistry Department,"



Loewenstein as a small child

Loewenstein recalls. "Two professors there—Alfred Landé and Wave Shaffer—had quite a bit of influence on my graduate studies." During the summers, he worked as a research assistant under Louis Rosen at Los Alamos Scientific Laboratory.

Loewenstein earned his PhD from Ohio State in 1954, doing his dissertation work in chemical physics.

### Working

Once he finished at Ohio State, Loewenstein says, the question facing him was should he work in chemical physics or try something else? Being a little tired of chemical physics, he decided to try something else for a year or two. "But the two years stretched to 20, and then 30 and more," he notes.

He was attracted by some of the activities at Argonne National Laboratory, especially by the very new field of reactor physics. So he joined the fast reactor physics group at Argonne, working with Robert Avery and David Okrent. Fast reactor physics "was a lot slower in starting than thermal reactor physics," Loewenstein recalls. "There were no books at that time—we learned from looseleaf notebooks that people would put together."

With the start of the Fast Critical Facility—also known as the Zero Power Reactor III (ZPR-III)—Loewenstein began what was to be years of travel between Chicago and the Argonne facility in Idaho Falls, Idaho. In those early days in the 1950s, Loewenstein notes, "we traveled by train because it was easier than flying. We used to commandeer a room in one of the railroad lounge cars so we could work while we traveled back and forth."

In 1958, Okrent was assigned to be U.S. scientific secretary to the second Geneva conference on peaceful uses of atomic energy, and Loewenstein was assigned to work with him. This meant many trips to New York. During one of those trips, Okrent's wife introduced Loewenstein to a relative—Lenore Pearlman, who was working as a teacher in New York. "My running back and forth to New York brought us together a lot. We got to know each other and found we had a lot in common," Loewenstein says. After a year of "heav-



Wedding day: June 21, 1959

ily subsidizing the airlines and the telephone company," Loewenstein and Lenore were married on June 21, 1959.

In 1958, Loewenstein's work at Argonne moved from general fast reactor physics to core design for the small breeder (which became the Experimental Breeder Reactor II—EBR-II). Loewenstein began to work directly with Len Koch, who was then the project director for the breeder design and construction. "We were designing the reactor with no prior information and no prior methods, lots of guts, and a lot of good people," Loewenstein notes. "The big surprise was always how right we were."

In 1959, just a few weeks after his marriage, Loewenstein was assigned to work in Scotland for several months. "The British were working on a breeder at the same time as we were, and it looked as if theirs would be in operation before ours," he explains. "At that point some people decided that they wanted an American over there, so Lenore and I packed everything up and went to Scotland for six months. We went to Thurso, Scotland, which is pretty close to the northern end of Scotland—you can't go much farther in Scotland—where in summer the days were very long and in winter, the days were pretty short. I spent my time there seeing first hand the problems of trying to start up a new reactor."

When he returned to Argonne, he continued his work on the small breeder. In 1961, the reactor went dry critical (i.e., critical without coolant), and in 1963, it went critical with the sodium coolant.

In 1964, Argonne began a project to redesign the EBR-II so that it could be used as an irradiator. Loewenstein was put on the design team, and was also put in charge of reviewing all irradiations.

At the same time, in the early 1960s, Argonne was doing some exploratory work on small nuclear rockets. "At that time, there was a big national nuclear rocket program," Loewenstein explains. "The small nuclear rocket was the back-up. We even did critical experiments at Argonne, but when the other nuclear rocket started working so well, the government lost interest in the small nuclear rocket."

Then, in 1968, Argonne "projectized" the operation of EBR-II. Milt Levenson was appointed project director, and Loewenstein, Harry Lawroski, Paul Shewmon, and Ken Winkleblack were appointed associate directors. The project had staff in Illinois and staff in Idaho, and that meant more travel between the two sites. "The traveling kept getting better," Loewenstein remembers. "We were rarely taking trains anymore. As airplanes started coming in, we used prop-jets from Chicago to Denver, and then flew piston-engine planes from Denver to Salt Lake, but the travel between Salt Lake and Idaho Falls could still be pretty grungy. I remember one time when three of us were in Idaho Falls and had to make a connection in Salt Lake. Our plane was delayed, and Western Airlines said they would charter a flight for us to Salt Lake. And a few minutes later, this little single-engine airplane rolled up to the gate, and it had a hand-lettered sign on it reading 'Western Airlines' and giving a flight number. The three of us trundled on, and it turned out to be a beautiful flight. I had never seen the valley like that. I think the reason

they had to designate it an official Western Airlines flight was for insurance purposes.

"Yes, traveling to and from Idaho Falls could be very exciting sometimes. And, of course, you could end up stranded in Denver or Salt Lake City because of weather. And God help you if the airplane ever needed a part in either Pocatello or Idaho Falls, because then you had to wait until it was flown in. But this was at a time when the airlines tried to make you comfortable. At one time there was so much Argonne traffic between Chicago and Idaho Falls that we were actually trying to figure out if it would pay to lease an airplane, but we came out short on some of the numbers."

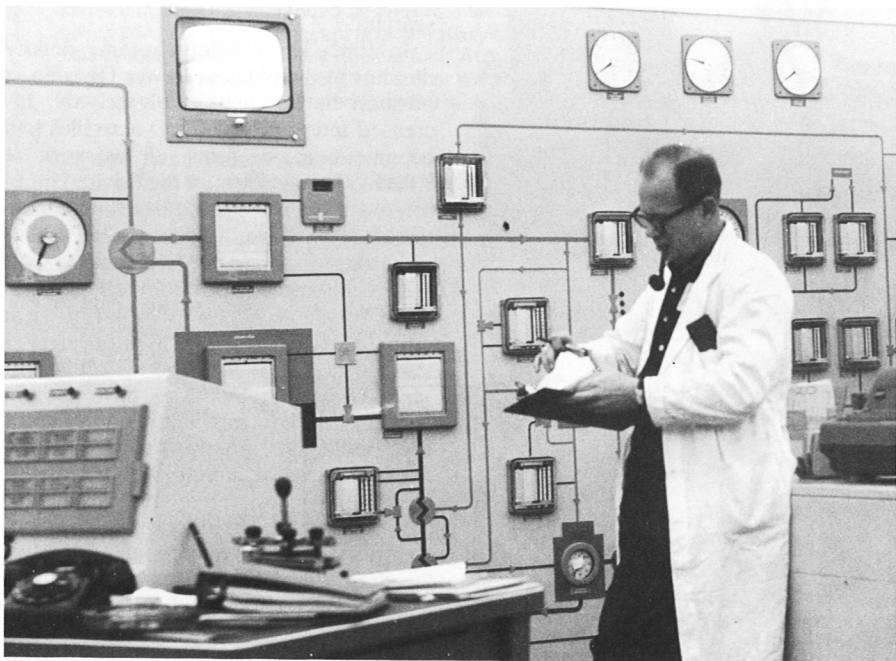
In 1972, Loewenstein was appointed director of the EBR-II Project, and in 1973, was named director of Argonne's Applied Physics Division. During his Argonne years, Loewenstein also served as a member, and later chairman, of the lab's Reactor Safety Review Committee.

Summing up the EBR-II experience, Loewenstein notes, "In retrospect, it's remarkable how well EBR-II has operated over the years. It's approaching 30 years. Obviously, because of the conservatism that went into the design, it has been blessed with a longevity that you don't often see.

"Those were pretty exciting times, since, as I've said, we had no prior information and no prior methods, just guts and a lot of good people. I'm not sure you could do that today."

## EPRI

In 1973, a new opportunity appeared with the formation of the Electric Power Research Institute, and, Loewenstein notes, "that seemed too good to miss, starting something from scratch. About



During the "white coat" era at Argonne: EBR-II first critical, 1961



four of us went out to EPRI from Argonne within about a month: one was Milt Levenson, another was Burt Zolotar, still another was A. Gopalakrishnan (who is now back in India). Levenson was named the director of the Nuclear Power Division, and we all came to work under him." Loewenstein was appointed the director of the Safety Technology Department within the Nuclear Power Division.

"During the early years," he continues, "there were several challenges. For me, it was a new ballgame, since instead of working for the government, I would be working for the utilities, and instead of working mostly with fast reactors, I would be working mostly with water reactors. One of the first challenges was starting a staff buildup from zero to a reasonable size. The EBR-II project had a staff of maybe 250 people, whereas at EPRI the staff was much smaller. But things were more complex, because the research was going to be done under contract, so that, for example, if you had maybe 20 people administering \$30 million worth of research, that \$30 million meant 250-300 people elsewhere working, doing something that you were trying to control. It was horrendously complex. But we built what I felt was a very imaginative program out of nothing throughout the 1970s, and were pretty responsive to what the utilities needed at that point. Sage advice from Jack Moore, of Southern California Edison, and Bill Cahill, then with Consolidated Edison, provided valuable in-



Skiing lessons in the early '70s

sights toward developing practical, productive, and useful activities."

EPRI was quick to recognize that international cooperation in nuclear safety research was a way to increase technology transfer and at the same time keep the costs of nuclear research down. "One of the things we brought to the institute was the concept of large-scale cooperative research—research conducted in one place under the auspices of several organizations rather than just one—in particular international organizations," Loewenstein says. "I think this was an important step in reactor safety research."

In 1982, Loewenstein became deputy director of the Nuclear Power Division, a position he has held until recently. Increased international R&D activities had become a major focus of his work at EPRI. "The accident in the Soviet Union offered a lot of opportunity for international interaction," he explains. "Our technology is a world technology, so it means making a lot of contacts, doing a lot of travel, so that we can talk to each other, particularly in the area of safety. I think we're all a little better off for it. Many of our recent efforts have been in establishing contacts with the Eastern Bloc countries." Loewenstein has served on the boards of directors of several international cooperative research projects, including the large-scale aerosol transport tests conducted at Marviken, Sweden; the large-scale reactor safety tests conducted on the LOFT facility in Idaho; and EPRI's large aerosol containment experiments and advanced containment experiments.

Recently, Loewenstein left the staff of EPRI. He is looking forward to new challenges as a professional consultant. "There are many new emerging professional opportunities. I feel I can make some contributions in the new nuclear age, and I look forward to renewed technical excitement."

#### Private life

Walt and Lenore live in Palo Alto, Calif. Lenore works part-time as a school librarian. Their son, Mark, age 27, works as an engineer for the Lockheed Corporation. Daughter Marcia, age 24, works for a financial house in San Francisco.

The Loewensteins enjoy the symphony and ballet and the theatre. In addition, Walt plays golf, and they both like walking, hiking, and other sports. Travel is another activity they find enjoyable, and Lenore often accompanies Walt on overseas business trips when her schedule allows it.

#### ANS activities

Loewenstein has been a member of the American Nuclear Society almost from the very beginning. "A year after I came to Argonne, I began to share an apartment with Dave Rossin [former Assistant Secretary for Nuclear Energy at the U.S. Department of Energy, and now a consultant], and he got me interested in the Society. I'm listed as a charter member, but I really wasn't one of the original members—I think I came on a year later," he explains. Loewenstein served a stint on the Program Committee, served on the editorial advisory committee for the journal *Nuclear Technology*, and served on the program committees of several conferences.

In 1973, he was elected a Fellow of the Society, and in 1985, was elected to the Board of Directors and assigned to the Finance Committee.

As ANS president, he sees several areas where he wants to focus his energies. One area is what he terms "member ownership" of the society. "This should be a society of members rather than a society of the few. Members should have a piece of ownership in the society, and I think that's gradually developing."

Outreach is another area Loewenstein feels needs more attention. "With a membership of 16 000, it's sometimes difficult to reach out in a unified way," he acknowledges, "but I'd like to see us do more. Policy statements are an example of something that can be done. It doesn't take reams and reams of paper to do it. Outreach with sensitivity and objectivity is high on my agenda."

A third area of concern is the issue of requiring and publishing full papers presented at ANS meetings. "Other societies publish the full papers presented at meetings, giving the authors an archival record of the presentation. ANS publishes only the summaries, and thus



The Loewenstein family in the early '70s





Hiking in the Grand Tetons, 1988

the authors don't get archival publishing credit unless they can get the paper published in a journal as well. I would like to stir up the committees so that they can try to figure out some way to find a solution to this. I have some ideas, and other people have some ideas, but this is one area where I have some strong feelings."

But Loewenstein recognizes that an ANS president serves only a year, and can often be most effective in continuing in a direction begun by a predecessor. "Gail [de Planque] has done a lot of work in these areas already, and before her, Ron [Stinson] and Bert [Wolfe], and there's a kind of continuity emerging. They have worked to strengthen the society, and I would like to continue that."—  
*Nancy J. Zacha*



Loewenstein in Israel last year



**FPL**

## NUCLEAR LICENSING ENGINEERS

FPL, Florida's largest electric utility has immediate openings for experienced Licensing Engineers at its Turkey Point Nuclear Plant.

Candidates should be degreed Engineers with a minimum of two (2) years licensing experience working with L.E.R.'s, 5.59 evaluations, Corrective Action Requests and Non-Conformance Reports.

We offer a challenging work environment with career growth opportunities, competitive salaries, excellent benefits and relocation assistance. Qualified candidates should submit resume and salary history in confidence to:

Mr. C.F. Slater  
FPL  
Dept. NU-PTN  
P.O. Box 029100  
Miami, Florida 33102

AN EQUAL OPPORTUNITY EMPLOYER M/F

Circle Reader Service No. 46

## ELECTROCHEMICAL ENGINEER/ ELECTROCHEMIST

Since 1985, Argonne has been developing the Integral Fast Reactor (IFR), the central element in the U.S. advanced nuclear reactor development program. An important part of this new reactor concept is an innovative fuel cycle that relies on pyrometallurgical processes to recycle the nuclear fuel. At the heart of this process is an electrorefining operation in which spent fuel is first electrolytically dissolved, then uranium or uranium-plutonium is separated from the majority of fission products by electrotransport.

Argonne has positions available for Ph.D electrochemists or electrochemical engineers at both the main laboratory near Chicago, as well as the Argonne test facilities near Idaho Falls, Idaho.

Argonne is seeking applications from qualified professionals who wish to participate in this exciting program. Successful candidates must have appropriate knowledge and experience in electrochemical engineering or electrochemistry, in order to be a leader in development of new electrochemical process schemes and strategies. The successful candidate(s) must be able to develop experimental plans, carry experiments to completion, interpret and report results. Must be able to obtain a U.S. Department of Energy Security Clearance ("Q" level).

Argonne offers excellent working conditions and fringe benefits including ample annual vacation and an immediate vestment retirement program. Interested qualified personnel please send resume to Professional Placement.



**ARGONNE NATIONAL LABORATORY-WEST**  
P.O. Box 2528 Idaho Falls, Idaho 83403-2528

Equal Opportunity Employer  
U.S. Citizenship Required

Circle Reader Service No. 22