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E. Linn Draper, Jr.
ANS President

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Draper: Spreading the word

ANS presidents by tradition are people who have worked hard for their companies, for the industry, and for ANS. But it's difficult to think of anyone in recent years who has worked harder spreading the word about the benefits of nuclear power than E. Linn Draper, executive vice president for external affairs and production for Gulf States Utilities, who will be serving as ANS president for 1985-86. His efforts on behalf of nuclear power—public speaking, media appearances, stumping around the country as part of the "truth squad" team—have done so much to help the image of the nuclear industry that one ANS wag was prompted to comment recently that ANS didn't really need to recruit new membership, it just needed to "clone

Linn Draper." Unfortunately, we have only one Linn Draper, but, given the level of his talents and efforts, that may be all that ANS needs.

Beginnings

Draper is a native Texan. He was born (February 6, 1942) and raised in Houston, and attended Houston public schools through high school. His father, Ernest L. Draper, worked as an employee of the federal government, first for the Reconstruction Finance Corporation, and later for the Federal Housing Administration. He died in 1978. Linn's mother, Marcia, still lives in Houston.

But 18 years of Texas was enough, Linn says. "After graduation, I had a scholarship (a National Merit Scholarship) that was good anyplace, so I thought I should see something as different from Houston as I could find. So (in the fall of 1960) I went to a small liberal arts school in the northeast—in western Massachusetts—called Williams College." At that time, he says, he had no special idea of what his career would be—law, science, engineering were all possibilities—and one attraction of Williams was that since it was a liberal arts college, one did not need to commit to a major right away.

Nominally, though, he was a chemistry major at Williams—"the two things I was most interested in at the time were history and chemistry," he explained—and took a majority of physics, chemistry, and math courses.

After two years at Williams, however, Draper says he decided that he "was more interested in the applications of science than in pure science, and so engineering was my thing, and that meant Williams was not the place to stay forever—it was time to go somewhere else." The somewhere else was Rice University—back in Houston—to study chemical engineering.

His reasons for choosing Rice were many, Draper noted. For one thing, having grown up in Houston, he was familiar with the school. For another, Rice, he says, had a particularly good chemical engineering program. And, most persuasive, at that time there was no tuition at the school. "From the time of its founding in 1912 until about 1965, there was no tuition at Rice," he says. "In addition, they had a policy of taking all people who had National Merit scholarships."

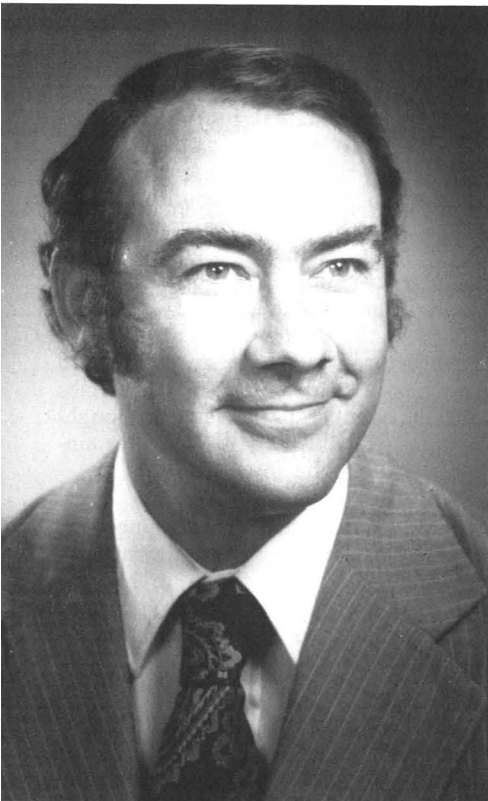
The idea of zero tuition would appeal to anyone, but it was particularly attractive to Draper at the time, because he had just gotten married. "My roommate at Williams—Mike Doyle—kept trying to get me to take his sister out," he explains, "and though I resisted valiantly, I finally did it." The upshot—he finished two years of college at Williams, got married on June 9, 1962, to Debby Doyle, and transferred to Rice.

At Rice, Draper worked on his chemical engineering degree—the engineering program at Rice was a five-year program—and Debby finished her degree in education. Both worked in a variety of capacities—Linn delivering newspapers, working in a laboratory; Debby teaching in private school. By 1965, Linn had earned his BS in chemical engineering, Debby had finished her education degree, and the two had had two children, with one more on the way.

In the period at Rice, Linn says, his interests "evolved away from chemical engineering and more to the nuclear side—I'd taken a lot of physics courses, and was interested in nuclear engineering. Again, I was lucky, and when I finished at Rice, I had financial assistance that allowed me to go on to study someplace else, and so we went to Cornell.

"The four years at Cornell were just a terrific experience," he continues. "The nuclear engineering group there was relatively small, both in terms of faculty and students. There were about half a dozen faculty members and 15 or 20 students. And my PhD adviser was Mark Nelkin [winner of the 1966 ANS Special Award for "outstanding contributions to reactor physics since 1955"]—he was really the influence for my having gone to Cornell.

"While I was there, I became interested in some experimental work that had to do with measuring fission cross sections. Cornell had a great experimental facility—they have a TRIGA reactor that has unusually good access to beams of neutrons. And about the time that I was looking for a dissertation project, Nelkin went on



a year's leave in France—he did that periodically—and in his stead, Frank Feiner spent a year on leave at Cornell from the Knolls Atomic Power Laboratory. He had an interest in measuring and calculating fission cross sections, and his suggestions turned into a dissertation project.”

For his dissertation project, Draper measured fission cross sections of a number of heavy nuclides that were plated out on pieces of aluminum foil. The foils were lent by Los Alamos Scientific Laboratory. “It was a very interesting project,” he continues. “It was partly experimental and partly calculational, and thus fit my needs well—it had become clear to me that I was not interested in doing work that was solely calculational, nor was I interested in making a life's work of experimental activities, but the combination was attractive.”

While living in upstate New York, Linn also became a cattleman, going into business with his former roommate/now brother-in-law. “Debby's parents live in upstate New York, on a place that was once a dairy farm, and so they had barns and fields, and it just seemed a shame not to put these to some good use. And my kids thought

that was pretty entertaining, to see the cattle. We made absolutely no money, but had a great time.”

The University of Texas

In 1969, his PhD work finished, Linn began to look for a job. “I had no special intentions of returning to Texas,” he says, “but at the time, the best job was at the University of Texas.” So Linn and the family moved to Austin, and Linn became a member of the nuclear engineering faculty at the university.

At that time, nuclear engineering at Texas consisted of a small nuclear engineering program embedded within a mechanical engineering department. The school had a nuclear reactor, Draper notes, and four or five people who were interested in nuclear engineering. “It was a very young group in which one wouldn't be buried,” he explains. “At the time I went there, the person in charge of the program was Steve Gage, who was only a year or two older than I was. He had been there two or three years. The other principal faculty member in nuclear engineering at that time was Billy Koen. So it was really the three of us for a short time, until gradually other

people were added to the group. The number of graduate students was also modest—there were only maybe a dozen at that time, and over the years I was there, it gradually built up to around 25 or 30. It was a place that was exciting and vibrant, and there was lots to do. Over a period of time, there were a number of opportunities that you wouldn't expect in a relatively small group like that.”

According to Linn, the program at Texas benefited as well by an “infusion of interesting people” over the years. “We had Moshe Etzion come and spend a year from Israel,” he notes, “and one year we had Bill Davey from Argonne National Laboratory—he'd won a prize as the outstanding researcher there, and as a reward was given a year's leave of absence to go to one of the universities affiliated with Argonne, and he chose to do his work at Texas.”

Other work at Texas centered initially around the program's TRIGA reactor. The group did forensic investigations for the Texas Department of Public Safety—activation analysis work investigating paint samples, safe plasters, and headlight glasses, and other methods of interest in criminal investigations. They worked with other university departments—geology for mineral investigations; zoology for labeling fruit flies to determine migration patterns. Later, as time went on, the interest of the group evolved from using the reactor as an experimental facility to using isotopic sources such as californium-252 in process control and radiography.

“We were one of the first universities to express interest in Cf-252, and had one of the first big sources that Savannah River made available to a university, and we had people that came from around the country to use that source. Several of us got involved in a brief venture to manufacture shipping containers to move this californium around the country. We established the Nutex Corporation and manufactured big, polyester resin-filled cylinders that people at national labs and in commercial endeavors bought from us. That was a pretty entertaining activity to be involved in.”

Still later, the Texas group's interest evolved toward fusion engineering. Over the years, the fusion physics program at Texas had grown to become one of the top two or three in the country, and “we thought there should be an engineering complement,” Linn says.

A career move

By 1979, Linn says, he decided that he had done a lot of interesting things



Debby and Linn on their wedding day, June 9, 1962

at the university, but that it was time to look for something else. "I looked at consulting firms, manufacturers, vendors. I had never given any thought to a utility, but at just the time I was looking, Don Crawford, then the president of the Edison Electric Institute, had decided to make a career move, and he had come to Gulf States Utilities as chairman of the board. He and I knew each other from the public speaking we'd done around the country on behalf of nuclear power, and he heard that I was looking, and he asked me if I was interested in a job at a utility. My first reaction was that though I didn't know much about the utility business, I didn't think so. So we talked and separated, but six months later we talked again, and I decided it might be a pretty interesting thing to do for a while.

"I told him that I was interested in coming to work at Gulf States under two conditions: one, that I could spend about a year on things other than exclusively nuclear—I'd been doing nuclear things for the university for ten years, and I thought it would be useful to do other things—and two, that I would like to be out of line responsibility for about a year and do staff work, to get some knowledge of what goes on at a utility without having managerial responsibility. Crawford thought that both these conditions fit well with Gulf States' agenda, and that's how I became technical assistant to the chairman of the board."

Linn went to work for Gulf States on February 1, 1979. As technical assistant to the board chairman, he was in charge of the company's research and development program, and had communications responsibility as well. Gulf States was just "cranking up" a nuclear program. The utility had ordered a nuclear plant in 1972—River Bend—and had done a lot of work on engineering and site preparation, but because of financial conditions, had not yet begun plant construction, even though a construction permit had been issued in 1977. By early 1979, however, the decision to go ahead with construction had been made—just prior to the March 28, 1979, accident at Three Mile Island. Still, the company remained committed to a construction start, and construction for the River Bend project was officially begun in August 1979.

The truth squad

Also during that first year at Gulf States, Linn, already an experienced public speaker on behalf of nuclear, became involved in the nuclear industry's "truth squad" activities. "I was at a meeting of the National Academy



Linn, daughter Barbara, and cattle during the Cornell years

of Science discussing radioactive waste management in September 1979, and I got a phone call informing me that the industry—in the form of the EEI and the Atomic Industrial Forum and others—had learned that Jane Fonda was going to make a tour of 50 cities in about 30 days talking about her Campaign for Economic Democracy. This was the program she and her husband, Tom Hayden, had been heavily involved in in southern California, and the thesis of the group was that while the United States had done a good job on political democracy—giving everyone the opportunity to vote and to participate in the political process—it had done a less excellent job of economic equality. So Jane and her husband were going to tour these 50 cities—all of which were in primary states (this being just prior to the 1980 election year)—talking about a lot of issues, one of the principal ones being that our national energy policy was inappropriate and, in particular, that nuclear power was a bad thing and renewable energy sources a good thing. The point of the phone call was to ask if I would participate in a similar tour that would tell the other side of the story. The people who were the brains of this tour decided it should be called the 'truth squad.'

"I was teamed with a woman I'd never seen before—Sandy Kiefer—and it worked out fine. We had absolutely nothing in common and became good friends. She had great patience and would talk at great length to the newspaper people, and I had less patience and would talk to the TV people. The tour was interesting in

that, initially, the media story was the event, not the issues—here were Jane and Tom running around the country talking about certain issues, and here were two other people telling the other side of it, and isn't that strange. But very quickly, after two or three cities, the press began to pick up the issues of nuclear power and its alternatives.

"We never met Fonda and Hayden in a direct, head-to-head confrontation, although we challenged them to debates a number of times, but we were always in about the same place at about the same time. And so we carried on a debate through the media. And I think we had two effects. One, we raised issues in the public mind that should have been raised, and two, we caused Fonda and Hayden to temper some of their more outlandish statements about nuclear power, and so, to that extent, I suppose it was a pretty successful venture. It also caused me to have a heightened respect for politicians—I learned how stressful it is to go from stop to stop to stop."

Moving up at Gulf States

In the spring of 1980, Linn became vice president of nuclear technology at Gulf States. Nuclear activities were divided into different segments—construction, operations, and administration. Linn's job was the last—licensing, training, and administrative details. The main responsibility was preparing the application for River Bend's operating license.

In September 1981, Linn made another change, this time becoming senior vice president for engineering and

profile

technical services, with responsibility for all power plant engineering, design, and construction, as well as the engineering, design, and construction of the transmission systems and substations—basically all the non-nuclear areas of interest.

And in October 1982, his job changed again, as he became senior vice president for external affairs. He explains: "The company had decided that as time went on and we finished the nuclear project and our coal plants, and as our cheap long-term fuel contract expired, the thing that was really going to cause significant difficulties for the company in the long run was the fact that our rates were going to go up, and the customers needed to understand why that was going to happen. Gulf States decided to vest the responsibility for the rate activities and public affairs activities in a single group so that we could explain to the public just what it was that the rate people were doing, and so it established a department called External Affairs that dealt with rates, regulatory activities, public affairs, and legal services. It might sound illogical to put a nuclear engineer in charge of those activities, but since the principal driver in all this business was our nuclear plant and its completion, it wasn't totally illogical.

"In October 1984, they added to my job the operation of all the fossil-fueled plants—our gas plants, coal plants, etc.—and my job became executive vice president in charge of external affairs and production. In the external affairs capacity, we've devoted a great deal of attention to our interactions with regulatory bodies on the issue of River Bend. It's been an extraordinarily successful project so far."

The River Bend story

According to Linn, because of the long hiatus between the 1972 order date and the 1979 start of construction, Gulf States' contractor, Stone & Webster Engineering Corp., had been able to complete some early engineering work on the plant, and had also been able to negotiate an agreement with the 16 international craft unions involved with building the plant such that any labor disputes would be settled at the international level in Washington, not at the local level, so that there would be no slowdowns, no walk-outs, and no strikes.

The work schedule adopted at River Bend was also unique, Linn states. Instead of the usual 8 hours per day, five days a week, or even two 8-hour shifts per day, Gulf States adopted what they termed a "rolling 4-10 pattern"—a work crew would work 10



The Drapers today—from left: Rob, Barbara, David, Debby, Susan, and Linn

hours a day four days a week, and then be off four days, while a second crew would come in and work the next four days. Each crew had four days off and four days on. It was a system that the craftsmen enjoyed, since it gave them longer "weekends," and allowed them more time with families, more time for leisure activities. As a result, Linn says, the absentee rate was about half of what it was at a coal plant construction project directly across the river.

Gulf States figured they could build the plant very rapidly, Linn continues. At a time when it was taking some utilities 100-120 months to build a nuclear plant, Gulf States projected an original construction time of 50 months. By 1981, however, the utility recognized that it just did not have the financial resources to build the plant that fast and so settled for a construction schedule that would complete the plant in 68 months—and would call for fuel loading in mid-April 1985. The Nuclear Regulatory Commission was skeptical, Linn notes, but agreed to schedule their licensing work load in keeping with the utility's 68-month schedule. In 1981, the NRC viewed the utility's schedule as 24 months too optimistic; in 1983, they thought the schedule 14 months too optimistic; and by the fall of 1984, the NRC was projecting fuel loading the following autumn. Gulf States continued to hold out for the earlier fuel loading date, and a compromise date of June 19, 1985, was reached—which will mean a 70-month construction time if the date can be met. "I think it's important for a company like ours—a medium-sized company with no prior nuclear experience—to have set a

tough goal like that and to have achieved it," Linn says.

Linn has nothing but praise for the people involved in the River Bend project. "This achievement is to the credit of the folks who had the wisdom to hire a guy like Bill Cahill, who has 30 years of experience in nuclear power from Consolidated Edison and who has been involved in the Indian Point plants there. We hired Jim Deddens from Babcock & Wilcox; we hired Gary Weigand, who had Navy nuclear experience; and then we took a lot of people who had Gulf States backgrounds, not in the nuclear area, and made them proficient in the nuclear area.

"I think it is going to be a very successful project, and my involvement in more recent times has been with the plant Safety Committee, and in worrying about how this nuclear plant that, in the long run, will be very good for our customers, will impact them in terms of their rates. It's a major transition for a company like ours, which has historically been a gas-fired utility—with cheap and abundant fuel—to make the transition from being a supplier of very low-cost electric power to one that has to build and operate coal and nuclear plants, and that transition means that our rates will go up—we'll no longer be supplying low-cost electricity—and that will have an important impact on our customers.

"So my activities in recent times have been worrying about how to tell our customers what we're doing and to explain to them why we're doing it, not that we expect them to be glad their rates are going up, but we want them at least to understand that in

the long run, they will be far better off because we'll have a very flexible supply of fuels—we will no longer be hostage to the gas market. We were 100 percent dependent on natural gas as a fuel in early 1982. By the beginning of next year, we'll have coal and uranium supplying the major amount of our electrical power."

At home

Linn and Debby Draper today live in Beaumont, Tex. Their oldest child, Susan, just graduated from the University of Texas. Older son Rob attends Williams College, and younger daughter Barbara attends Stephen F. Austin State University in Nacogdoches. The youngest child, David, will start high school in the fall.

Debby has a teaching degree in elementary education, and ran a nursery school during the years the family lived in Austin. Now, she does substitute teaching in Beaumont.

The family used to do a lot of camping, Linn says, when the kids were younger. Now, he says, "our lives are hectic. There are six people going in a variety of directions, and we spend a lot of time with David's sports activities, and with the kids in college, and going down to the beach, so we don't have blocks of time that we devote to one particular activity. We do spend time at the beach, we garden, we do woodworking. Our lives, at least at this stage, still revolve around family activities."

ANS activities and goals

Linn became involved with ANS early in his years at the University of Texas, joining the society in 1970. The university's work with Cf-252 led to its sponsoring an ANS topical meeting on Applications of Californium-252 in 1972, for which Linn served as technical program chairman. He performed a similar role for the Texas Symposium on the Technology of Controlled Thermonuclear Fusion Experiments and the Engineering Aspects of Fusion Reactors, also in 1972. This work led to his being chosen to be the technical program chairman for the 1975 ANS annual meeting, originally slated to be held in Dallas, but ultimately held in New Orleans. He served on the ANS board of directors in 1974-77, and as a member of the Executive Committee in 1976-77. He was a member of the ANS Public Information Committee in 1976-84, and a member of the Public Policy Committee from 1979-84, serving as chair in 1983-84.

At the division level, he has served as a member of the Isotopes and Radiation Division Executive Committee

(1975-78), as a member of the Education Division Executive Committee (1977-80), and as chairman of the Education Division Honors and Awards Committee from 1978-80.

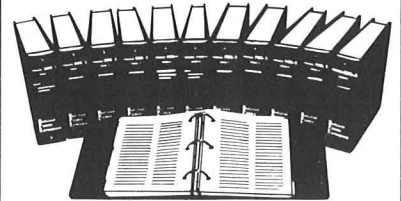
Linn has only good words for what ANS has been able to do in recent years. "It's important to note," he says, "that the ANS has been remarkably successful in the last few years, in times when the nuclear industry has been troubled. The membership has grown, and the enthusiasm—the morale—of the organization has been good, and I think that we as a society have done better than anyone could have reasonably expected in times when there are few orders for nuclear plants and when enthusiasm for things nuclear is modest. And I think that's a reflection of the diversity of the membership and their dedication to the various nuclear professions."

He envisions very few changes during his year as president. "The society is in many ways like an ocean liner," he notes. "You make small corrections in course, but you don't turn it around on a dime. And I don't think that's a problem—we don't need to be turned around." But he does see a challenge ahead because of social concerns about things nuclear. "We need to do a better job of communicating the benefits of nuclear electric power, therapeutic and diagnostic applications of nuclear materials, the way nuclear materials can be used for industrial activities, and so on. We have a lot to offer society, and for the most part, society is unaware of the things we have to offer, so we have a big communications challenge."

A second challenge Draper sees is attracting new membership, especially among the younger generation. "We have a lot of very loyal, very active members, but most of them have been members for some years, and if we want the society to continue to prosper, we have to be sure that young people join the society and that we find meaningful things for them to do in the committees and divisions."

In summary, he feels, "the society is in good shape, but we can do better—we need to tell our story more effectively, and we need to attract young people. In all, we need to be sure that our external activities are on target and that we continue our internal activities to be sure that we're maximizing the efforts of the people who work so hard for the society." And during the coming year, it's unlikely that anyone within the organization will work harder—or with more enthusiasm—to spread the good word about nuclear power than its president. —Nancy Zacha Godlewski

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