

nuclear news

A PUBLICATION OF THE AMERICAN NUCLEAR SOCIETY
JULY 1995/ VOL. 38/ NO. 9



John Graham

1995–96 ANS President
See profile, page 52

ALSO IN THIS ISSUE

- Thomas Murley proposes a new safety contract—page 22
- The latest list of scheduled nuclear plant outages—page 26

John Graham: A man with a mission



John Graham takes office as ANS President this month. This NN profile provides a view of his professional and personal life, and his goals for the coming year.

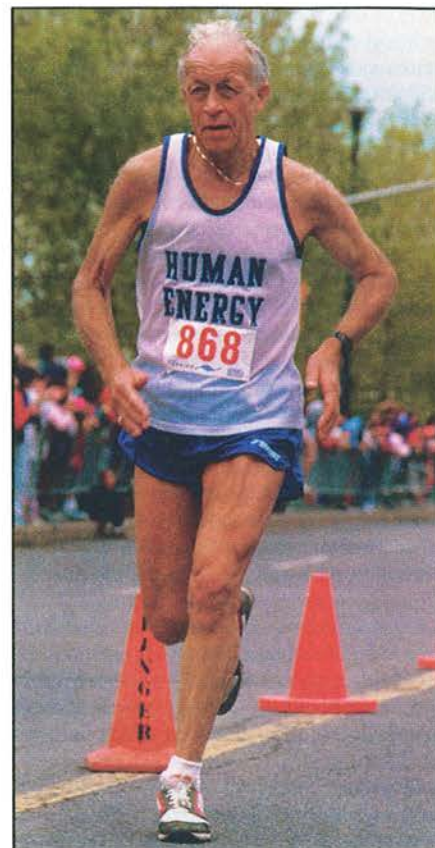
John Graham's objectives during his year as ANS president have already been circulated to society governance:

- To balance the operating budget.
- To make significant inroads into solving the worsening financial situation of the society by starting two new revenue streams.
- To make significant technical advances in partnership with other societies.
- To move toward a system in which we work between committee meetings—possibly through on-line activities.
- To invest effort in education, both at the university level and at a teachers' education level—in the latter case through the local sections.
- To make our approach to decision-makers proactive and effective.
- To start restructuring the society to meet our new challenges and to enfranchise all our constituencies.
- To improve our membership at all levels and classes.

To focus on any one of these objectives would be a challenge in today's nuclear climate. To focus on all eight requires a person with a broad range of interests and unbounding energy. And anyone who knows him knows that that is just how you would describe John Graham.

First foot forward

Graham was born in 1933 in the United Kingdom. His father, Robert William Graham, was a chief inspector for the London Metro-



politan Police. "My earliest recollections concern him and the police force," John says. "He would take me along on a tour of police stations, and I would spend time in the stables, so I could sit on the police horses. And, of course, I wanted to be a policeman when I grew up."

The senior Graham retired from the police force in 1938, however, and the family—Graham's father, mother (nee Edna Morgans), older sister Jean, and the five-year-old John—moved to the town of Pwllheli in Wales. "My mother was Welsh, and she spoke the language, of course. My father had a book called *Welsh in a Week*, but after about three months he retitled it *Welsh in a Lifetime*. He never learned to speak Welsh, and neither did my sister, but I did, mostly because you *had* to."

After his retirement, Graham's father devoted most of his time to gardening. "During the war, you had to be self-sufficient, so we kept pigs and chickens and ducks," Graham explains.

Speaking about his family, Graham notes: "I got my love of reading from my mother, and my love of writing from my father. And from my sister, who is now dead, I got a love of nature—she was a biologist, and she would take me along on her field trips when she was learn-

ing to identify plants and flowers. I still love to photograph flowers.

"My sister also took me along on some cycling trips through England and Ireland. She paid for everything, and my job was to keep the bikes going, which was a real pain, because nothing was new on those bikes, so I was always mending punctures, repacking bearings, and so on. But from her I learned to travel—I learned about youth hostels, hitchhiking, and foreign places—and I've never stopped."

In Wales, Graham attended grammar school and college, focusing on mathematics, physics, and chemistry. "I was still going to be a policeman, you see, but now I wanted to go into forensic science," he says. "Mathematics was something I've always liked—I love numbers; they're fascinating. I liked algebra, and I love calculus. I truly believe the whole of life is based on calculus and any aberrations in life are simply aberrations in the calculus."

"I went to college on a state scholarship," Graham continues. "In college, I got my first taste of society and volunteer work. I was treasurer of the student union, and one perk of that position was that the treasurer's office was where the gramophone society stored their records. So on Saturday mornings, I would do the accounts, and I would play the gramophone records while I calculated. So I learned all the operas while doing the accounts. The only trouble was that these were 78s, and you had to keep changing the records during the opera."

Graham received a B.S. degree in math and physics from the University of Wales, graduating with a "first" in 1954. "When my son graduated from Cornell several years ago, I discovered that we have the same graduation: *summa cum laude*," he comments.

Hitchhiking around the U.S.

While he was still in college, he learned

about Fulbright scholarships, and decided a free trip to America might be fun. "I applied to various places, was accepted at the universities of Ohio and Illinois, and went to the University of Illinois in 1954–55. I studied quantum mechanics and mathematics. I didn't stay to get the master's degree because I didn't think the master's was at all significant, and besides, I wanted to take some time to travel around the States."

Graham admits that he was a bit anti-American at this time. "The only Americans we ever saw back home were soldiers and tourists, and neither is a very good ambassador," he notes. "But when I got to Illinois, I got to know ordinary American families, and they were wonderful." Ironically, when he began his hitchhiking tour of the country, he discovered a lot of anti-English bias among Americans, especially since he wore a kilt and that seemed to allow people to reveal any anti-English bias. In Texas, he was escorted out of the state and into Louisiana by state troopers because a woman was concerned about the man in a dress standing by the road.

Home again

Once back in England in the fall of 1955, Graham began work on a doctorate in theoretical physics at University College of London. (Somewhere along the line, the desire to be a policeman must have waned.) "I always had an ambition to win a Nobel Prize, so all my scientific moves have been toward pure science and less to applied science," he notes.

In his spare time, however, he became a lecturer on life in the United States. He explains: "In the States, I discovered color photography, which was not available in Britain at the time. So I brought home about 700 slides of the United States. I convinced my Dad to buy me a projector—I had visited his older sister in Vancouver while I was in North America, and

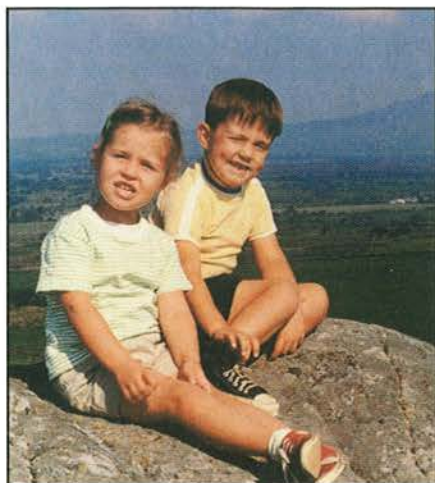
bribed him with promises of pictures of his sister—and I lectured to youth groups, church groups, anyone who would listen.

"That projector got me married. I talked to one youth hostel group, and they failed to tell me that their power source was d-c, not a-c. It burned out my projector. A few weeks later at a party, I ran into the secretary of that group and reminded her of what happened. Her name was Claire Biggerstaff. We got together that evening, and we've been together ever since."

At university, Graham worked on neutron-deuteron impact problems. "But I found out," he says, "that everybody in that graduate department was working on similar problems in slightly different force fields. So I was doing neutron-deuteron impact problems with a given force field, someone next to me was working with a different force field, and someone else was doing deuteron-deuteron problems with my force field. We were all contributing to the professor's thesis, but we were each only a very small brick in his edifice. That's not very satisfying. So I didn't finish that degree—I left after three years to marry Claire and to get a job."

It was 1958, and Graham had two job offers—one with industry, and one with the U.K.'s Atomic Energy Authority at a much poorer salary. "Since my interests were always more toward theoretical and less toward applied science, I took the Authority position. I thought about finishing up the work on my degree, but I was already getting paid, and a degree wouldn't change my salary, and it was going to cost me another £30. With that £30 I figured I could buy a typewriter, which is what I did. I still have that typewriter, and I wrote my first book on it. So it wasn't a bad deal."

At the AEA laboratory at Harwell, Graham worked as a reactor kineticist—dealing with neutron transient behavior. He worked in an assessment group that evaluated many differ-



Right: John and Claire with John's mother, during a 1970 visit to Wales; left, Jennifer and Paul, Wales, 1970

ent types of reactors, to see which one the AEA should pursue. They also evaluated fuel types.

"It was good fun, because we could create mathematical models that we would put on computers. In those days, computers ran on punched tape, and then we graduated to punched cards, which were an improvement, since if you dropped the tape, the center of the roll would drop out and it would be a pain to rewind it, whereas if you dropped the cards, at least they were numbered. Things have changed since then. The big Mercury computer at that time had a memory of 15k, and I know my smallest chess computer today has more than that."

Graham then moved from the Harwell labs to Winfrith, on the Dorset coast. He remained there until 1968. "It was great fun: pure research. But at some point we came to the end of our mission. In those days, you didn't lay people off just because there was no work to do anymore, but it was obvious that we really didn't have enough to do. I was organizing chess for the whole west of England, for example, as well as writing a weekly chess column and a monthly chess magazine. And I know the guy in the next office was organizing cricket for the area. That's what we were all doing—expanding our creative energies outside of work, instead of inside. And yet at the time I was also recruiting, of all things!"

So Graham began to think about working in the United States. "I wrote to several companies, and got a response from the Westinghouse Advanced Reactors Division (WARD) inviting me to London for an interview. I was on a recruiting trip myself, so in the middle of my recruiting trip, I went to be recruited. They offered me a salary about six and a half times larger than the one I was then making, so I figured it wasn't a bad deal, even if it meant living in Pittsburgh. But when I went home to Claire and told her we were going to America, she burst into tears."

The Westinghouse years

Claire had good reason to be upset, Graham concedes. They had two small children at that time—Paul, aged four, and Jennifer, who was less than a year old. Plus, he notes, "a move like that is always hardest on the wives. The husbands are fulfilled at work, but the wives were the ones who had to deal with all the problems of a strange locale. If there had been a bridge, Claire would have walked back the first month." But they bought a house within the first couple of months, things got better, and over time they became American citizens.

At that time, WARD was moving into fast reactor technology with the Fast Flux Test Facility and the Clinch River Breeder Reactor. Since it had no fast reactor technology of its own, the company "went to Britain and bought it," Graham says. "There was a tremendous brain drain from England to America at about that time, including Peter Murray, who is still in Washington, D.C., as the Westinghouse representative. He was a metallurgist, a brilliant person in fuels, and he brought most of his metallurgists with him. Westinghouse set up a metallurgy department at a site in Waltz Mill, Pa., and something like 70 percent of the people there were British—including such people as Roger Tilbrook, Jim McAnally, Joe Buggey, Carl Anderson, Lee Strawbridge, Paul Fox."

Graham worked in safety engineering for Westinghouse. It was this work that first got him involved with the American Nuclear Society. He explains: "I had reached the point where I was not yet a manager, and I asked my boss, Bob Cockerell, about getting into management. During our discussion he suggested that I join ANS. So I applied, and got a letter back from Octave Du Temple welcoming me into the society. I wrote back saying that I would be happy to work for the society, and I was immediately appointed to two committees by return letter, including the Power Division

Program Committee. And I found myself one of two reviewers of all the safety papers submitted during the paper review meetings. It was only after David Okrent proposed the Nuclear Reactor Safety Division that I got out of reviewing all the safety papers for the Power Division. Then, shortly after I joined ANS, I became a manager—it was amazing."

Once he was in management, Graham led a rather cosmopolitan safety analysis group that included Mario Carelli, Nicko Bonhomme, John Zoubeck, and Tilbrook. "We would compile our work,

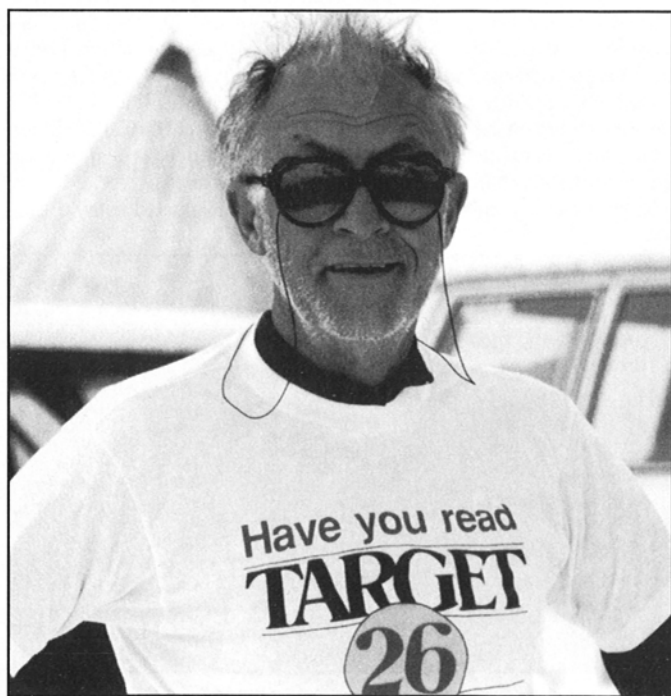
which consisted of lots of safety calculations, and then run it past our bosses," Graham recalls. "They would pass it along, and it would go on, up to the general manager, who at that time was John J. Taylor. There it would stop dead, because he would review every page, every equation, every number, and our report would come all the way back down the line of management with paper clips on every page, with questions. John Taylor was the most thorough reviewer I ever met, and that's partly because he's not an engineer, he's a mathematician. He has always been a personal hero of mine, and he is the general chair of the November 1995 San Francisco ANS meeting. I'm really looking forward to working with him."

During this time, Graham published his first technical book, *Fast Reactor Safety*, which was issued by Academic Press in 1971. "Interestingly, that book was the equivalent of a doctorate for me, at least in Westinghouse's eyes. If you had written a book, you were automatically an expert. So my £30 investment in the typewriter paid off as much as the equivalent investment in a doctorate would have."

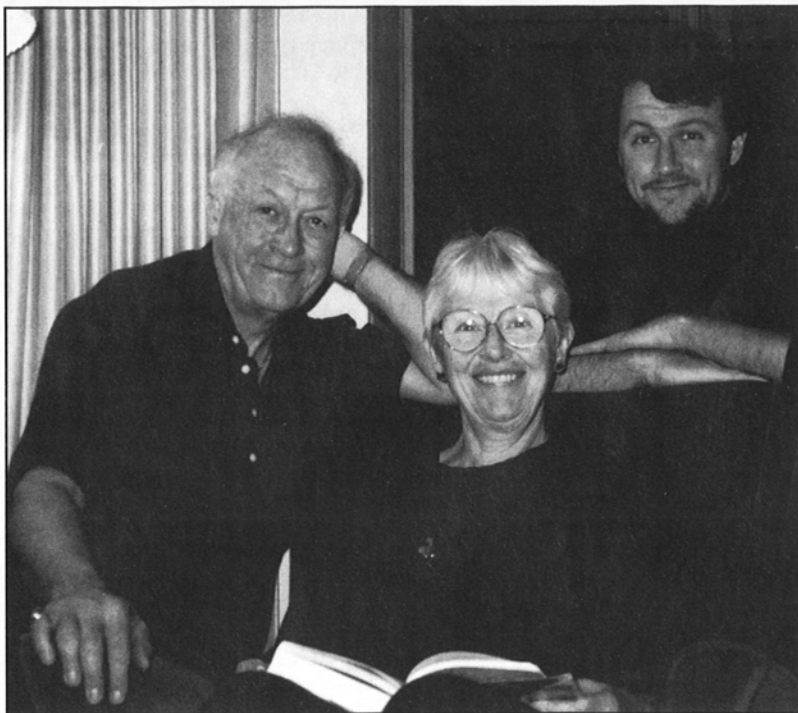
During the 1970s, Graham worked on the FFTF project, which was designed to test fuel for a commercial breeder reactor. The facility itself was being built in Richland, Wash., but core engineering work was centered at Waltz Mill. "We had a small group of fast reactor analysts, including Tilbrook and Skip Brown (who later coauthored a running book with me)," Graham recalls. "Our counterparts at Hanford included Alan Waltar, his boss Russ Peterson, and others like Norm Weber, Nelson Grace, and Dan Simpson. And these two groups—the Pittsburgh group and the Hanford group—had a not-quite-cooperative relationship, almost a competitive relationship, you might say. We were trying to design the reactor, and they would say, for instance, define a particular loading, which we would use in the design. Then next week, they would change the loading, which meant we would have to change the design. This led to a situation where the Hanford people would get what they referred to as 'another letter from John Graham,' or a 'Dear Nelson' letter. A few years later, Bill Jacobi gave me a performance appraisal, and he told me only one thing, and he was oh, so accurate. He told me that I didn't 'weasel-word' my letters enough, and he was absolutely correct. I'll never forget that phrase. For example, those 'Dear Nelson' letters simply stated the facts, but readers extrapolated the English meanings. Over the years I've created a lot of problems by writing letters and then not letting them sit for three months before weasel-wording them before dispatch."

Graham rose in management to direct analytical engineering: stress analysis, safety analysis, licensing, and a little bit of design work. "Eventually, we got the FFTF designed and built. It operated, and operated well, though now it's shut down, of course," Graham notes sadly.

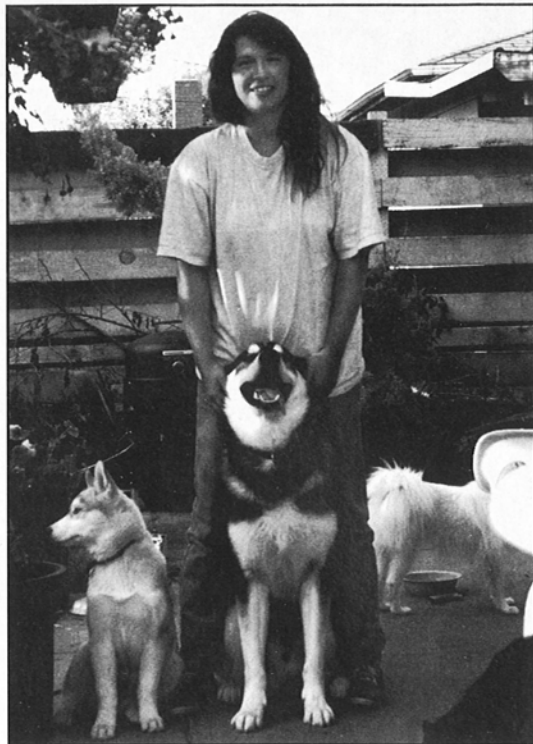
Work was also progressing on the Clinch River Breeder Reactor during the 1970s. For that project, Graham directed nuclear safety and reliability design issues. He concludes, "it



At the top of the world, during the 1987 Tibet running trip



The Grahams today: left, John, Claire, and Paul; right, Jennifer and animal friends



was terrible to have Clinch River go down the drain, basically because of the 20 percent interest rates in the early 1980s. We had continued work in the late 1970s even though President Carter had stopped the regulatory process. We submitted materials to the Nuclear Regulatory Commission, even though we knew they didn't have the funding to read them, so they simply stacked up on a table. But by the time President Reagan restarted the process, the price of the plant had gone out of sight. We did manage to get our construction permit about a month before the project's cancellation, so we achieved one of our goals."

With the Clinch River cancellation, Westinghouse shut down its fast reactor work, and 900 people were laid off, Graham among them. "I learned about the layoffs at the November 1983 ANS meeting in San Francisco," Graham recalls. "I had to spend a morning finding and breaking the news to all my staffers. The job was made a little easier by the fact that I could tell them I was on the lay-off list as well."

Moving on

With the Westinghouse job at an end, in 1984 Graham joined the Basalt Waste Isolation Project at the Hanford site in Richland, Wash., at first working for Rockwell until Westinghouse took over project management. "I found out about the job through an ANS member, Tris McCall III, who knew I was available and recommended me to his boss, Larry Fitch," Graham notes. He adds, "As part of the management contract, those Rockwell years became Westinghouse years, so I managed to complete 20 years with Westinghouse."

The Basalt project was one of three projects supported in the mid-1980s by the Department of Energy's Office of Civilian Radioactive Waste Management. Under terms of the Nu-

clear Waste Policy Act of 1982, three potential sites for the disposal of high-level radioactive waste were to be characterized. These sites were located in Texas; at Yucca Mountain, Nev.; and at Hanford. Graham directed a group devoted to regulatory work. "Even though we weren't licensed, because we were only characterizing the site, we still had to deal with Nuclear Regulatory Commission and DOE regulations and guidelines," he explains.

But politics spelled the death of that project, too. Later legislation limited the number of potential HLW disposal sites to be characterized to one—Yucca Mountain, and the Basalt project shut down. Graham comments with sadness about the storage area at Hanford, where the ghosts of nuclear projects past are lurking: "They're all lined up out there—the Clinch River reactor vessel, the sodium vessels, other equipment we couldn't sell to the Japanese, and right next to them are the 12-foot-diameter shaft liners from the Basalt project. Thirty years of my life are sitting out there beyond the 300 area."

At this point, Graham notes, he was more than a little disgusted with the way the nuclear program in the United States was headed. When a chance to work in Canada appeared, it seemed very attractive. Sitting beside the pool at an ANS meeting in San Diego in 1988, Graham negotiated his next job—licensing the research units at Atomic Energy of Canada Limited's Chalk River and Whiteshell sites. "Some of these units had been operating for a long time, but had never really been properly licensed," Graham explains.

"At Whiteshell they had built a reactor—the Slowpoke—without telling anybody—certainly without telling the regulators. It was an experiment, they said, not a reactor. But when Canada's Atomic Energy Control Board found out about it, they said it was a reactor, not an

experiment. We had to license that on a step-by-step process. It is difficult in national laboratories where many people are not used to regulators coming in and telling them how to work. It was extremely tough for me because I was an American apparently coming in to impose American-type regulations, but nevertheless, we got the units licensed."

But winters are cold in Canada—especially at Whiteshell and Chalk River. In addition, while Graham's work visa enabled the family to live in Canada until they achieved immigrant status in the country, Claire had no official status and could neither work nor attend classes—she was limited to doing volunteer work. So Graham began to look south again to the United States.

An opportunity presented itself—again at an ANS meeting, this time in November 1990 in Washington, D.C.—when Graham secured an interview with Roland Langley, president of BNFL Inc., a subsidiary of British Nuclear Fuels plc established to do nuclear cleanup work. He joined the company three months later, and set up the firm's Denver, Colo., office. "At the time," he says, "I was the company's fifteenth employee. Today, we number about 180, and I guess once we get going July 1, when we help to manage the Rocky Flats operation, we will be about 1000." Graham has high praise for BNFL Inc., which, he says, has been extremely supportive of his work as vice president and president of ANS.

In person

Today, John and Claire live in Golden, Colo. Claire works in the controller's office for the American Animal Hospital Association (you are not allowed to call it Aaha!). Their son Paul, now age 30, has a doctorate in computer science, but is currently working as an artist and as CEO of ARTIX, a World Wide Web company. Daughter Jennifer, age 27, is

finishing up her doctorate in biological sciences at Oregon State University. She is married to John Paul Leeming, and recently gave birth to Ian Angus, the first member of the third generation of Grahams.

Graham's personal life is as full as his professional life with side interests and publications. One of his long-time interests has been chess. Just one of the fruits of that hobby has been *En Passant*, a monthly sound magazine (on tape or cassette) for blind chess enthusiasts, which Graham has produced since June 1964. Some 370 issues have been produced since that date. While working for the AEA at Winfrith, during the height of the Cold War, Graham also organized and directed a chess tournament for 24 teams of blind chess players from around the world, including Eastern Europe and the Soviet Union. Along with the usual problems of politics and protocol, he had to deal with the fact that the interpreter for the Polish team died en route to the British tournament.

John's most visible side interest—at least to ANS members who follow the ANS Non-Race at national meetings—is running. He began serious running in the early 1970s when he was with Westinghouse. He recounts: "There were some guys at Waltz Mill who were going to climb the Cascades. In order to train for this climbing expedition, they felt they should run while carrying a sack of rocks. Then one day they took the sacks off, and discovered that running is actually quite nice without a load of rocks on your back. So they

started a tiny little running group, and I watched them and thought they were terribly slow and that anyone could do better than that. So on July 5, 1973, I took some shorts and tennis shoes to work, and went out to run with them—and I couldn't keep up. That was it, and I have run ever since." Among his running achievements are 88 marathons, 20 of them under 2 hours, 50 minutes. (His best marathon time is 2 hours, 43 minutes.) He has run the Boston Marathon 19 times consecutively. On a lighter side, John is the cofounder—with former ANS President Ed Fuller—of the ANS Fun-Run, or Non-Race, which has taken place on Tuesday mornings during the ANS annual and winter meetings since November 1981.

Another Graham pastime is writing, and John has published scores of articles and monthly columns, as well as several books, on chess, running, and other subjects. One major publication has been the book *Target-26: A Guide to Marathon Running*. This book, written with Skip Brown, has gone through two editions and sold some 70 000 copies. A Russian edition was published in Moscow in 1980. Among other Graham publications is a monthly newsletter for BNFL Inc. (*Just an Incling*); he also started the bimonthly newsletter for the ANS International Committee (*ANS Globe*).

Two other Graham interests—photography and travel—are natural companions. World travel provides ample opportunity for world-class photographic effort, and the Graham house is filled with photo albums and slide boxes that have recorded various trips over the

past decades. One of the most spectacular was a recent running trip through Tibet and the Himalayas to Camp One at Mt. Everest.

The year ahead

As readers of this article will have deduced by now, ANS involvement has been interwoven into Graham's life since he joined the society in the early 1970s. He has served on numerous committees, was elected a Fellow in 1974, served as treasurer for four years in the 1980s, and received the ANS Leadership Award in 1992.

He knows that his goals and areas of focus for ANS—the eight objectives outlined at the beginning of this article—will certainly keep him occupied for his 1995–96 term of office, and probably for some time after that. "We're looking at reengineering the society," he states bluntly.

To that end, he continues, he is urging the chairs of every division and of every standing committee to focus on two or three of these eight objectives to help him achieve his goals. "I cannot do it alone." He is also looking to the next generation for some answers. "We have to bring in the young people and the only way to bring them in is to give them a voice. I'd like to see them on the Board, for example."

These are difficult times for the nuclear industry and for ANS, Graham concludes. But he is a man with a mission, and, with goals to direct his progress, he is prepared for the difficult task ahead.—Nancy J. Zacha □

RESIDENT INSPECTOR DEVELOPMENT PROGRAM

(\$49,324 - \$68,426)

The U.S. Nuclear Regulatory Commission's mission is to protect America's health, safety, and environment in the civilian use of nuclear materials. Currently, we have openings in our Resident Inspectors Development Program.

Resident Inspectors are responsible for performing inspections and assessments of licensee activities during construction, pre-operation and operation phases of nuclear facilities. Requirements include a thorough knowledge of the principles, theories, and practices of engineering or scientific disciplines such as nuclear, chemical, mechanical, electrical, and health physics gained through either a B.S. degree in engineering or science and two years experience, or an equivalent combination of education and experience. Knowledge of design features and operating characteristics of nuclear reactor facilities, excellent verbal and written communication skills as well as the ability to establish effective working relationships with coworkers and superiors are necessary.

These highly visible positions could be your opportunity to make a significant contribution to safety standards in the nuclear industry. For consideration, please call the NRC Personnel Smartline (800) 952-9678 to have a copy of the Vacancy Announcement and application materials mailed or faxed to you. Applications are due August 5, 1995 at U.S. Nuclear Regulatory Commission, Office of Personnel, T3-D29, (Dept. A-95061), Washington, D.C. 20555.



**U.S. NUCLEAR
REGULATORY
COMMISSION**

EOE M/F/D/V. U.S. Citizenship required.



FINANCIAL AND OPERATIONS ANALYST

Nebraska Public Power District has an immediate opening for a Financial and Operations Analyst in the Program Control Department at the General Office in Columbus, Nebraska.

Requirements for this position include a Bachelor of Science degree in engineering or another technical discipline, business administration, accounting or finance. The applicant must have eight years professional experience which includes four years financial and operations related experience in a utility power of commercial industrial organization; knowledge of computer applications relating to financial analysis, cost analysis, process analysis and cost control; knowledge of cost engineering and cost analysis techniques to include process cost analysis.

Nebraska Public Power District offers a competitive salary and an excellent benefits package.

For consideration, please send résumé with cover letter to:

Nebraska Public Power District
Human Resources Division
P.O. Box 499
Columbus, NE 68602-0499

EOE

If you have any special needs requests, please contact the Employment and Compensation Department at NPPD.

Powerful Pride in Nebraska