

PERSPECTIVES OF FEMALE EXECUTIVE SCIENTISTS & ENGINEERS—PANEL DISCUSSION

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This panel was assembled to inform others about the Department of Energy (DOE), describe what the panelists do within the DOE, and convey some of their experiences relating to programs for women, as well as their personal experiences as women climbing the corporate ladder.

Moderator and Panelist: Antoinette Grayson Joseph, Director, Office of Laboratory Policy and Infrastructure Management, U. S. Department of Energy, Washington, DC

Toni Joseph began her career 30 years ago as a management intern at the Atomic Energy Commission (AEC), now the Department of Energy. Before doing so, she attended graduate school and received teaching credentials in chemistry, history, and Spanish. She decided to work for two years before beginning a teaching career. (She admits that her career path was determined more by the graduate fellowships she received than by any career plan.) It was the time of John F. Kennedy who had asked the question, "Ask not what your country can do for you . . ." Being socially minded, Toni decided to work in Washington to help President Kennedy. Unfortunately, there was a government hiring freeze at the time, and the only offices hiring were the Department of Defense, the Central Intelligence Agency, and the Atomic Energy Commission. She had offers from all three, but chose the management intern position at the AEC and has never regretted it.

The DOE is a large investor in basic and applied research—more than the National Science Foundation. There is also a large emphasis on physics, more than the National Aeronautics and Space Administration or the Department of Defense. There are currently 28 facilities used by 278 colleges and universities, a growing number of companies, as well as other federal laboratories and agencies. These are examples of major science and technology partnerships that help keep the U.S. on the cutting edge in many scientific fields.

The main challenges of the DOE include maintaining scientific productivity, sustaining the research infrastructure—the scientific cutting-edge facilities that they build—and retaining, training, and using the best science and engineering performers. In addition, given the current budget situation, there is a real need to retain, maintain, and increase public support for science, and science education, which seems to be decreasing substantially.

From an historical perspective, in the 1950s there was an attitude in the country that women needed to be included out of fairness. In the 1960s it was because the law said you could not discriminate against women. Now it's not just that it's law, but a belief shared by the Secretary of Energy, Hazel O'Leary, that diversity, including women, helps to bring new and better solutions to science and technology problems.

Toni worked for the first woman to chair the Atomic Energy Commission, Dixie Lee Ray. She described Dr. Ray as a self-made woman who believed anyone who wants to succeed can succeed if they work hard enough. She believed that there was no difference between

men and women, that mentoring and networking were “silly”. However, Toni believes that Dixie Lee Ray was one of the greatest communicators of science in the AEC, and she was an excellent role model and a real mentor even though she never admitted it.. But even more often, men served as Toni’s most important mentors.

For some time there has been a commitment of diversity in science across the government. It is a heartfelt, high priority commitment of Secretary of Energy Hazel O’Leary who says, “Diversity still matters.” Her organization chart and her specific actions in support of diversity efforts are evidence of that continuing commitment. This commitment is demonstrated by the fact that there are several prominent high-level women in the Clinton administration with responsibility for determining high-level R&D policy, administering large science budgets, and managing major science activities. She noted that for the first time in her 30-years of service in the government, she is a woman, who works for a woman, who works for a woman, and half of her professional staff are women

Toni believes that women and men have to work together to make progress. They must form partnerships, have real, open communication, and learn to work in teams. She owes much of her success to her willingness to work on major task forces and working groups and to write the first draft.

Panelist: Cherri J. Langenfeld, Manager, Chicago Operations Office, U. S. Department of Energy, Chicago, Illinois

The Chicago Operations Office, one of ten field offices of the Department of Energy, works with laboratories and contractors to get research done. The laboratories include Argonne, Fermi, Ames, Brookhaven, Princeton Plasma Physics, Environmental Measurements, and New Brunswick. The government owns the laboratories, the physical property and equipment, everything except the people. Most of the people are employees of universities and there are contracts between the universities and government for operating the laboratories. These contracts are managed through the Chicago office with a budget of \$2.4 billion, mostly funded by the Office of Energy Research. The contracts employ over 6,000 laboratory researchers and visitors, 5,000 university researchers, 1,000 researchers from international institutions, and a small number of industrial researchers. There are 520 federal employees to oversee the more than 1,600 contracts.

Cherri was 37 when she took the position as only the second woman manager of an operations office (the first left after 10 months). Her qualifications for the position were developed through earning an undergraduate degree in civil engineering from Georgia Institute of Technology, working for Exxon for six years where she built off-shore platforms, earning a business degree from Harvard Business School, working as a member of The Boston Consulting Group, and working for General Motors in corporate planning and then as assembly plant foreman. For personal reasons she relocated to Washington, DC, and eventually decided to work for the Department of Energy. She spent three years in the policy arena working on technology transfer, the interface between the laboratories and industry. Through her work experience, she learned how to be an effective manager, gained the technological background necessary to talk with PhD scientists and engineers, and developed an understanding of the scientific culture, all necessary for her position. After working as the field office manager for awhile, the staff soon forgot that she was female. “. . . it took them longer to forget that I was 37 years old.”

Cherri believes that there are “people’s issues,” not “women’s issues” any more. First, she believes there are a lot of good guys—white males. When she arrived at the Chicago office, the entire management team of 13 was male. However, 50% of both the professional and

clerical positions were filled by women—these 13 men had done a good job. Cherri's challenge was to get these women prepared for upper-level positions.

Second, women sometimes hold themselves back. Today it is felt that women have more choice—many choose not to take more the challenging, stressful, demanding senior-level positions, which is acceptable in our society. Men, on the other hand, are expected to always take the promotion, and are looked upon negatively if they don't. Both need to be moderated. Third, child care is not just a woman's issue, it is a parents issue. There is increasing number of men who are single parents. Employers need to stop discriminating against any single parent.

Fourth, filling top-level positions with women is much easier in growing organizations or when political appointments can be made. Cherri does not have the luxury of either, so it will take time before enough positions are filled by women. And, sometimes a man is promoted because he is more qualified than a woman.

Cherri cited some advice on how to go about making changes given the above impediments and concerns: eliminate biases in hiring (e.g. women may not have as much hands-on experience as men because they haven't been in the workforce as long); don't make assumptions about what challenges men and women will or will not take; and provide mentoring for women to help them learn how to take on the challenges.

Panelist: Dr. Linda C. Cain, Director, Office of University and Science Education, Oak Ridge National Laboratory, Oak Ridge, Tennessee

The Department of Energy relies very heavily on an a well-prepared workforce. The Office of University and Science Education (formerly the Office of Science Education) works to ensure that there will be a science and engineering workforce reflective of the population in the future, as well as a general population that is literate and informed about scientific issues. Part of Linda's purpose is to help the public in general understand the importance of what the various federal agencies are doing and to encourage people to understand the impact that funding cuts can have.

The DOE employs scientists and engineers (6,000 in 1993), supports research out in the field in the area of energy, and supports students. For example, in 1991 70% of the 20,000 doctoral scientists and engineers in energy research and development were supported by the DOE. In 1994, 6,800 graduate students were supported by the DOE and its laboratories through funding given to colleges and universities.

In 1994, almost 1M students and teachers were touched by DOE laboratory education programs. Linda's responsibility is for the education programs across the Oak Ridge complex, including programs for K-12 students and teachers, as well as opportunities for faculty, undergraduate students, and graduate students.

One of the tasks that a group of DOE laboratory women have been involved is gathering data from the research facilities in order to look at the number of scientists and engineers and determine how many are female. While the group found that some facilities have good percentages of women researchers—18% at Oak Ridge, 32% at ORISE, and 21% at Pacific Northwest in 1993—the average is around 15%.

Linda is part of a group called the Laboratory Review of Programs for Women which was started about 5 years ago and meets about every year and a half. The review group came about through an interest of the technical staff at Argonne National Laboratory where they

saw that a lot was being done to encourage women at the laboratories, and by and large these efforts were informal. They decided to look at these efforts at Argonne and other laboratories periodically to identify the education programs going on at the DOE laboratories, and to assess the climate for women at the laboratories. Through this review, programs and activities at the laboratories are monitored (e.g mentoring programs, day care centers, alternate work schedules), and it seems that the competition among the laboratories works well. Lab A wants to be sure that it's doing as well as laboratories B and C in terms of providing these choices. As a result, improvements for women have been made.

Linda grew up in a small paper mill town in Maine, where her father was a chemist. She studied chemistry as an undergraduate at the University of South Dakota. This is also where she met her husband. She believes that as one moves into a career it is important to pick the right spouse. While attending graduate school in chemistry, she got pregnant. "I think at that point I was the only woman that went the hospital to deliver her baby taking her physical chemistry book because I knew I had to take my p-chem exam as soon as I got out."

Linda has had an interesting background, has done a lot of different things, and has studied a lot of different subjects. However, she believes that what is most important in her current success is the ability to work with a wide range of people. In any given day she may talk with a third grade student, a fifth grade teacher, a staff member from minority institution, and a distinguished scientist who has won the Nobel Prize. She adds to the panelists' list of what is important the ability to work and get along with people—to be able to communicate effectively, to not let your ego get in the way, to not take offense when offense may or may not be intended, and to stay focused and use the skills you need to meet your goals.

Panelist: Dr. Beverly K. Hartline, Associate Director and Project Manager, Thomas Jefferson Accelerator Facilitator (formerly Continuous Electron Beam Accelerator Facility—CEBAF), Newport News, Virginia

Beverly joined CEBAF in 1985 as a scientific assistant to the director. By March 1989 she had become the CEBAF associate director and project manager where she was responsible for the technical cost, schedule success, and construction phase of a \$600M laboratory. She notes that despite having managed a \$600M project, she still doesn't have 15 years of project management experience (referring to the fact that there have been ads for project managers that require 15 years experience, which eliminates a large percentage of women since most have been in the workforce a relatively short time as compared to men).

The DOE laboratories are known for using multi- and inter-disciplinary research teams that work across many fields. These teams have scientists, engineers, computer scientists, technologists, programmers, and technicians on them—every kind of person needed. The more kinds of people the better the problem can be solved. The DOE has a very broad scientific scope including high energy nuclear plasma and astrophysics, materials and chemicals sciences, condensed matter, atomic and molecular physics, and biological science/medicine/human genome, all using major state-of-the-art facilities.

The complex of DOE scientific facilities are the envy of the world, but the budget for operating them is going down 30% in the next three years, based on projections. That is trouble. Some people say that science will get whatever budget it deserves, which means, it will get whatever budget it can justify in the political climate the decisions are made. For this discussion, Beverly divides science into two areas: fundamental science and applied science (which the Republicans call "industrial welfare"). The argument with regard to funding seems to be about the balance between the two. Defense-related science, under the

Republicans, fares quite well. Unfortunately, they don't understand fundamental science. And, while applied science (e.g. energy efficiency, solar energy) is exciting and important to the country, but is not on the Republican agenda. As the decisions are made by a bipartisan group, everything tends to suffer.

It's not clear that science does any worse with Republicans, but it is clear that science and engineering will do a lot better when we become better advocates with our congresspeople, when they get better science experiences when they go to college, and when all of us write our congressperson and senators letters to tell them the exciting activities we are involved in personally and how the federal government has made this possible. "It's individuals who are going to save science, if it gets saved."

As mentioned earlier, people work in teams at the DOE laboratories. As a woman member of teams, and as a woman in power, Beverly states that she believes one has to have a sense of humor and a reasonable threshold of what is considered sexual harassment. She worries less about herself, and more about the intent of the other person—some people are rude to everyone, not just women. Beverly has noticed that she does not seem to have the same credibility as a man with equivalent education or experience—she needs to prove herself, whereas what a man says is taken for granted—which is frustrating. However, she finds that women volunteer more and participate more in things that are good for the environment of the institution, e.g. employee recreation group, site-wide open house.

Beverly is married with two boys, and her husband's support has been essential since he has done a great deal of the child care. Beverly doesn't have daughters, but she has nieces. When it comes time for choosing gifts for them, or any young girl, she gives them volt meters, soldering irons, and other untraditional gifts. She decided this was important when she went to a class at the university level where no one, not even the boys, knew how to use soldering irons. Her goal is to help these girls get to the technological side of things.

