December 6, 2002

The Honorable George V. Voinovich
United States Senate
Washington, D.C. 20510

Dear Senator Voinovich:

I appreciate your taking the time to meet with me on October 9. Although our discussion was primarily about the Davis-Besse reactor vessel head, you also requested that I write you about possible legislative assistance you could provide that would help the NRC in its recruiting program as well as certain other matters. My Commission colleagues and I appreciate your leadership in dealing with human capital and welcome any assistance that you are able to provide.

As the enclosed answers to your questions indicate, the NRC, like most other Federal agencies, has an aging workforce. The Commission is concerned about its ability to attract suitable candidates with the critical skills needed to carry out its regulatory responsibilities. We have identified legislation that would help us achieve our objectives.

In general, the NRC has some hiring flexibility based on its status as an excepted service agency, consistent with Section 161d. of the Atomic Energy Act of 1954 (AEA), as amended. The provisions that Congress included in the Homeland Security legislation to allow us to offer voluntary separation payments (buyouts), as necessary, also enhance our ability to manage our workforce effectively. New legislation that would aid NRC's recruitment and retention efforts includes provisions for independent authority to:

- Increase flexibility in compensation comparable to that provided to Federal agencies covered by the Financial Institutions Reform, Recovery, and Enforcement Act of 1989;

- Eliminate the restriction in section 161d of the AEA that limits broad application of NRC's independent pay-setting provisions to scientific and technical personnel. The NRC's authority to set pay under section 161d., without regard to 5 U.S.C. Chapter 51 and 5 U.S.C. Chapter 53, Subchapter III, should apply to all positions in the agency without regard to occupational category;

- Waive the pension offset on a case-by-case basis -- that is, allow the NRC to pay full compensation to retired former Federal employees whom the NRC employs, without prior OPM approval for either individual waivers or for delegated authority;

- Broaden the existing authority under Section 31a. and b. of the AEA to provide grants, loans, cooperative agreements, contracts, and equipment to academic

institutions in support of courses, studies, training, curriculum, and disciplines important to nuclear safety.

The need for this legislation is described in greater detail in Enclosure 1 to this letter. These steps would enable the NRC to continue to recruit and retain a high-quality workforce with the critical skills and competencies to carry out our important safety mission. The NRC appreciates your interest in and support of its efforts to attract talented new staff, and we to would welcome the opportunity to explore these ideas further with you.

Enclosure 2 provides some additional information on several other topics we discussed during our October 9 meeting. You also suggested a future meeting to discuss our views on future trends in commercial nuclear power, including new plant construction. I would welcome the opportunity to have such a discussion.

Thank you again for the opportunity to meet with you and to discuss these matters. We look forward to working closely with you and the Environment and Public Works Committee in the new Congress.

Sincerely,

/RA/

Richard A. Meserve

Enclosures:
As stated

Human Resources at the NRC

The NRC currently has 2,928 employees, including 149 members of the Senior Executive Service (SES). Of these, 36 percent of our employees -- including 52 percent of our managers -- are eligible to retire within 5 years. The agency's preference is to fill many of the expected non-supervisory vacancies with recent graduates of the nation's universities. We have examined our workforce, and the areas in which we have the greatest need for technical skills will include the following disciplines: electrical, structural, materials, nuclear and mechanical engineering; digital instrumentation and control; metallurgy; thermal hydraulics; reactor operations; health physics; and risk analysis. Unfortunately, universities are not producing a sufficient supply of individuals with expertise in these areas to satisfy the projected staffing needs of the NRC, other Federal agencies, and the nuclear industry. To help address our needs, the NRC submitted a legislative proposal to the 107th Congress that would allow the agency to establish a fellowship program at institutions of higher learning to pay the tuition of undergraduate students in these disciplines in return for an obligation for the individual to accept employment with the NRC upon graduation. We are pleased that the Senate passed this provision in its version of the energy legislation, H.R. 4, and hope that it will be enacted into law by the 108th Congress.

Because the NRC would only be able to fund a limited number of fellowships, the establishment of such a fellowship program, if authorized by legislation, is only a partial solution. To attract other qualified candidates that meet our recruiting needs, the NRC must also be able to pay competitive salaries. We are finding that, for entry level positions in the fields specified above, the NRC salary offers are appreciably below those being offered by the nuclear industry. Many

students joining the workforce have college loan obligations of $50,000-$150,000, and our inability to offer more competitive starting salaries increases the difficulty in hiring individuals with the needed skills.

One of the best means to address the compensation issue is to authorize the NRC to pay comparable salaries and offer the same benefits provided by other regulatory agencies, such as the banking agencies and the Securities and Exchange Commission. We also seek amendments to the AEA that would remove restrictions that limit broad application of our pay-setting authority to scientific and technical personnel. We note that, even if we are able to attract qualified individuals for entry level positions, we are losing some of our most promising employees after a few years to the nuclear industry or to law firms because of the absence of competitive pay at the NRC.

Compensation problems that inhibit recruitment at entry level positions only grow worse at the executive levels. Because of pay compression most members of the SES are now paid at the same rate; 66 percent of the SES members at the NRC receive the same salary. This means, for example, that the NRC Executive Director for Operations is paid the same salary as an SES manager at positions several supervisory levels lower. It is difficult to attract capable managers, particularly from outside, under these conditions, particularly when compensation for senior management is substantially below that paid by the private sector. Thus, to retain our current highly qualified managers and to be in a position to recruit suitable replacements, the pay cap compression for executives should be promptly addressed by Congress.

Other legislation is needed as well to address these problems. Since we anticipate the retirement of many highly qualified members of the SES and other long-term employees in the near future who have critical skills that are in short supply, we would like to be able to rehire them (as well as highly qualified retirees from other agencies) to serve as consultants on specified projects where their institutional and specialized technical knowledge would be of great value to the NRC. To do this, however, we need permanent legislation that would allow the NRC, on a case-by-case basis, to waive the salary offset provisions of current retirement law that do not permit a reemployed annuitant to retain both his/her full annuity and salary. This new legislation would allow the former Federal employee to receive the full daily compensation for services rendered, in addition to the full annuity. Without such authority, we are unable to attract former employees of the NRC or other technical agencies to carry out needed assignments.

Finally, the NRC's current statutory assistance and grant authority under Section 31a. of the AEA allows for assistance under six narrowly stated and specifically listed technical areas. This limits the NRC from providing broader financial assistance to or establishing other arrangements with educational institutions. Also, under Section 31b., NRC's grant and contribution authority is limited to the construction of buildings and equipment relating to the six listed technical areas in Section 31a. The existing AEA authority is not sufficiently broad to authorize NRC to provide grants, loans, cooperative agreements, contracts, and equipment to academic institutions in general support of courses, studies, training, curriculum, and disciplines important to nuclear safety. Accordingly, NRC seeks to broaden its existing authority.

Question 1: How is the NRC doing in hiring and retaining employees?

Response:

Hiring

Although the NRC has been successful in hiring during the last fiscal year, we continue to be concerned about our ability to meet our employment needs in the near future. We made a substantial investment in entry-level hiring during the past two years. We used special teams of senior technical managers and human resource representatives with authority to make on-the-spot job offers at designated career fairs and college recruitment events. In addition, the agency has increased its on-going dialogue with several universities, including four Historically Black Colleges and Universities, in an effort to increase the agency's visibility with these institutions and attract the interest of their best students. Prospective students have been invited to the NRC headquarters facility as well as to regional offices to get a first-hand look at the agency and to discuss opportunities with senior managers. These initiatives greatly improved the acceptance rate for our entry level and intern positions. Forty-one percent of our 182 professional hires in FY 2002 were at the entry level.

The agency contracted for the services of professional applicant search firms to assist in recruitment for hard-to-fill positions. Subscriptions to two recruitment Internet services have enhanced recruiting efficiencies and have been very beneficial in reaching experienced applicants. The staff continues to seek ways to attract and recruit experienced engineers,

scientists and other professionals. During FY 2002, on-the-spot hiring authority was used to make several offers to experienced professionals.

Our major hiring source for entry-level hiring is of course colleges and universities. Hires of experienced employees were from industry, nuclear Navy related organizations, and other government agencies. Our offer acceptance rate was about 60 percent.

Retention

In FY 2002 the rate of attrition for permanent employees was approximately 5 percent. We consider this a healthy attrition rate for the agency, creating enough turnover to provide the flexibility needed to refresh the staff. We are concerned, however, that current economic conditions may be temporarily suppressing attrition as some retirement-eligible employees postpone retirement decisions. This could force us to cope with much higher attrition rates in the years ahead.

Training, development, and career growth opportunities are among the agency's most effective retention initiatives, along with effective communication, timely feedback, and awards and recognition. In an effort to maintain the technical competence of the NRC workforce over time, the agency is undertaking several human capital strategies that seek to facilitate knowledge transfer or to accomplish critical projects. Among these strategies are over-hiring or double-encumbering for positions where the incumbent with critical knowledge has made plans to retire. New staff members are hired to work closely with the soon-to-leave individual to learn vital knowledge and to become familiar with how to perform the job successfully. The agency

uses over-hiring and double-encumbering of positions as a means of assisting new employees to acquire technical perspective and agency-specific knowledge from senior employees before they retire, resign, or move on to other positions. Employee development, succession planning, and retention-enhancing programs such as the SES Candidate Development Program, the Leadership Potential Program, rotations, and mentoring are also emphasized.

The NRC has also been given very limited authority to waive the Federal government's restrictions on individuals receiving a retirement annuity and a salary (dual compensation) in cases where the retiree's knowledge is needed for work related to homeland security or for critical technical projects. This allows NRC to re-hire retired staff members with critical technical expertise. We seek to extend this authority.

Question 2: Does NRC have sufficient hiring flexibility? To what extent would Senator Voinovich's legislation be helpful in NRC's recruiting efforts?

Response:

The section of the Senator's legislation concerning waiver of repayment of voluntary separation incentive payments could facilitate the NRC's recruiting efforts. Because the NRC is an independent excepted service agency, other sections of the legislation would not facilitate these efforts because they address competitive service agencies' concerns (e.g., the "rule of 3") or relate to functional areas outside of recruitment (e.g., initial payment of voluntary separation incentive payments).

Question 3: Is NRC recruiting bound by the “rule of 3,” and does Title V apply to NRC?

Response:

NRC is not bound by the “rule of 3" and instead uses a categorical ranking system to appoint employees, similar to the system which the Senator’s legislation proposes. NRC is exempt from many provisions of Title V that relate to staffing and some provisions relating to employee pay, such as 5 U.S. C. Chapter 51 and the General Schedule pay rates of 5 U.S.C. Chapter 53, Subchapter III. Most other provisions of Title V are applicable to the NRC.

Question 4: How important is the University of Michigan research reactor to the NRC?

Response:

The NRC makes important use of the University of Michigan Ford Nuclear Reactor (FNR) in performing irradiations of materials used in the fabrication of the reactor pressure vessels (RPVs) in commercial nuclear power plants. The RPV houses and supports the reactor core and assuring its integrity is vital to assuring the safety of nuclear power plants. The RPV in a nuclear power plant is degraded by neutrons produced during operations; overtime the neutron flux can embrittle the pressure vessel wall. The RPV irradiations undertaken at the FNR supplement the commercial nuclear power plant RPV surveillance programs by providing irradiation embrittlement data under a far broader range of conditions than is possible with the surveillance programs. These data are very important in providing insights into significant safety issues.

Since 1992, the Office of Nuclear Regulatory Research (RES) at NRC has subcontracted for the services of the FNR as part of its program to perform irradiation studies of pressure vessel materials. The objective of the irradiation studies is to provide a thorough, quantitative assessment of the effects of neutron irradiation on the material behavior, and in particular the changes in fracture toughness properties of typical pressure vessel steels as they relate to light-water RPV integrity. A variety of tests are performed to analyze the effects of irradiation on a wide range of fracture properties. Results are incorporated into codes and standards that are directly applicable to resolving major regulatory and safety issues that involve RPV irradiation embrittlement. Understanding the factors that impact RPV integrity and aging effects

is of particular importance as commercial nuclear power plant licensees seek license renewal for an additional 20 years of operation beyond the original 40-year license.

The NRC is evaluating impacts on affected research programs if the capability of performing irradiations at the FNR is eliminated entirely. The staff has investigated other test reactor facilities which operate within acceptable environmental conditions for simulating RPV embrittlement damage. Based on these operating requirements, three U.S. test reactors were selected for further investigations: the MITR-II at the Massachusetts Institute of Technology; the University of Missouri Research Reactor (MURR) at the University of Missouri; and the Rhode Island Nuclear Science Center (RINSC) at the University of Rhode Island. Each of these test reactors presents significant drawbacks or restrictions. The reactor design at the MITR-II necessitates test conditions that would be significantly different and less flexible than those at the FNR and that create irradiation conditions that are not representative of those in the reactor pressure vessel of a commercial nuclear power plant. The physical configuration of the MURR is not conducive to the design of the FNR facilities. A costly major new design effort would be required. The operating times of the RINSC are a crucial obstacle because the reactor currently operates only 7 hours/day, 5 days/week, whereas the FNR operates 24 hours/day for 10-day periods. Daily temperature cycling of the specimens would invalidate the data.

The possibility of performing irradiations at test reactors in Canada and Europe was also investigated. Again, each location poses significant drawbacks or restrictions. Moreover, logistics and quality assurance (QA) become additional complexities in considering the foreign test reactors.

In sum, the number of test reactors with the potential for performing test irradiations in support of NRC research programs is quite limited, and each presents drawbacks or limitations. The FNR has unique capabilities for the conduct of irradiation studies of RPV materials.

Question 5: What is the status of research reactors?

Response:

The U.S. Nuclear Regulatory Commission (NRC) currently licenses fifty-five research and test reactors. Of these, thirty-six are operating in twenty-three states, twelve are in the process of removing radioactive material from the facility (decommissioning), and seven have licenses to possess radioactive material but not to operate (possession only). A list of currently licensed research and test reactors is attached. Since 1958, NRC and its predecessor, the Atomic Energy Commission, have decommissioned seventy-three research and test reactors. The Department of Energy (DOE) also has several of these reactors, which the NRC does not license. NRC is not aware of any plans to construct a new research or test reactor in the United States.

Research reactors are typically located at educational institutions and other organizations where laboratory research or training in the nuclear sciences is conducted. The reactors are used as a source of radiation for experiments or for technical studies. For example, at some facilities, the neutrons produced are used in a research program aimed at developing a treatment for cancer. Neutrons are also used in neutron activation analysis to determine the elemental composition of materials for environmental and radiochemistry studies.

Research reactors also support the industry by subjecting materials to conditions prototypic of operating reactors. The effect of radiation on polymers and engineering materials has been studied. These data have been used to support the agency's license renewal program.

Determining the effect of radiation on materials has also helped advance the space program, including in particular satellite technology.

The reactors are also used to produce byproduct material necessary in other industries. They are vital to the medical industry through the production of radiosotopes for nuclear medicine.

Currently Licensed Research and Test Reactors (36)
(licensee, location, maximum steady state power)

Aerotest Operations Inc., San Ramon, CA., up to 250 kilowatts (kW) thermal
Armed Forces Radiobiological Research Institute, Bethesda, MD., up to 1100 kW thermal
Cornell University, Ithaca, NY., up to 500 kW thermal
Dow Chemical Company, Midland, MI., up to 300 kW thermal
General Electric Company, Sunol, CA., up to 100 kW thermal
Idaho State University, Pocatello, ID., up to 5 watts thermal
Kansas State University, Manhattan, KS., up to 250 kW thermal
Massachusetts Institute of Technology, Cambridge, MA., up to 5000 kW thermal
National Institute of Standards and Technology, Gaithersburg, MD., up to 20,000 kW thermal
North Carolina State University, Raleigh, NC., up to 1000 kW thermal
Ohio State University, Columbus, OH., up to 500 kW thermal
Oregon State University, Corvallis, OR., up to 1100 kW thermal
Penn State University, University Park, PA., up to 1000 kW thermal
Purdue University, West Lafayette, IN., up to 1 kW thermal
Reed College, Portland, OR., up to 250 kW thermal
Rensselaer Polytechnic Institute, Schenectady, NY., up to 100 watts thermal
Rhode Island Atomic Energy Commission, Narrangansett, RI., up to 2000 kW thermal
Texas A&M University, College Station, TX. (two reactors), one 5 watts and one 1000 kW thermal
University of Arizona, Tucson, AZ., up to 100 kW thermal
University of California-Davis, Sacramento, CA., up to 2000 kW thermal
University of California, Irvine, CA., up to 250 kW thermal
University of Florida, Gainesville, FL., up to 100 kW thermal
University of Maryland, College Park, MD., up to 250 kW thermal
University of Massachusetts, Lowell, MA., up to 1000 kW thermal
University of Michigan, Ann Arbor, MI., up to 2000 kW thermal
University of Missouri, Columbia, MO., up to 10,000 kW thermal
University of Missouri, Rolla, MO., up to 200 kW thermal
University of New Mexico, Albuquerque, NM., up to 5 watts thermal
University of Texas, Austin, TX., up to 1100 kW thermal
University of Utah, Salt Lake City, UT., up to 100 kW thermal
University of Wisconsin, Madison, WI., up to 1000 kW thermal
U.S. Geological Survey, Denver, CO., up to 1000 kW thermal
U.S. Veterans Administration, Omaha, NE., up to 20 kW thermal
Washington State University, Pullman, WA., up to 1000 kW thermal
Worcester Polytechnic Institute, Worcester, MA., up to 10 kW thermal

Research and Test Reactors Under Decommission Orders or License Amendments (12)

These research and test reactors are authorized to decontaminate and dismantle their facility to prepare for final survey and license termination:

CBS Corporation, Waltz Mill, PA.
General Atomics, San Diego, CA. (two reactors)
Georgia Institute of Technology, Atlanta, GA.
Iowa State University, Ames, IA.
Manhattan College, Riverdale, NY.
National Aeronautics and Space Administration, Sandusky, OH. (two reactors)
University of Illinois, Urbana, IL.
University of Washington, Seattle, WA.
University of Virginia, Charlottesville, VA. (two reactors)

Research and Test Reactors With Possession Only Licenses (4)

These research and test reactors are not authorized to operate the reactor, only to possess the nuclear material on-hand. They are permanently shut down and include:

Cornell University Zero Power Reactor, Ithaca, NY.
General Electric Company, Sunol, CA. (two research and test reactors)
State University of New York, Buffalo, NY.