



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 8, 2001

MEMORANDUM TO: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield

FROM: Dennis K. Rathbun, Director *DR*
Office of Congressional Affairs

SUBJECT: INTRODUCTION OF BILL AUTHORIZING FUNDING FOR
NUCLEAR SCIENCE AND ENGINEERING PROGRAMS

Senator Bingaman (D-NM) introduced S. 242, the DOE University Nuclear Science and Engineering Act, on February 1, 2001. The Senator had introduced a similar bill in December, at the end of the 106th Congress, for comment purposes (see my memorandum of December 19, 2000) and has now reintroduced the bill in the 107th Congress with the hope of gaining passage. Senator Bingaman is the ranking minority member on the Energy and Natural Resources Committee. Senator Domenici (R-NM), Chair of the Energy and Water Development Appropriations Subcommittee, and Senator Crapo (R-ID), a member of NRC's oversight Subcommittee on the Environment and Public Works Committee, are cosponsors of the bill.

This bill would address the declining number of nuclear scientists, engineering students, and university nuclear reactors by creating a Junior Faculty Research Initiation Grant Program, providing fellowships to students and sabbaticals for professors, and increasing funding for refueling and instrumentation upgrades at academic reactors.

Senator Bingaman's introductory remarks and a copy of S. 242 is attached.

Attachment: As stated

cc: SECY OCAA
 OGC OPA
 OGC/Cyr OIG
 EDO CFO
 NRR CIO
 NMSS
 RES
 OIP

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public interest in environmental protection have combined to create an atmosphere of conflicting policy interests;

(4) large-scale water conflicts continue to emerge between communities, States, and stakeholder interests in the southeastern region of the United States; and

(5) Federal support is needed to assess the utility and effectiveness of current Federal policies and programs as they relate to resolving State and local water supply needs.

SEC. 3. DEFINITIONS.

In this Act:

(1) **SECRETARY.**—The term "Secretary" means the Secretary of the Army, acting through the Chief of Engineers.

(2) **STATE.**—The term "State" means the State of Tennessee.

SEC. 4. STUDIES ON EMERGING WATER SUPPLY NEEDS.

(a) **DESIGNATION.**—The Secretary shall offer to provide assistance to the State to conduct studies under this section.

(b) **STUDIES.**—As a condition of receiving assistance under this section, not later than 1 year after the date of enactment of this Act, in consultation with the Secretary, the State shall—

(1) select a geographic area within the State having consistent, emerging, water supply needs; and

(2) conduct a study on the emerging water supply needs of the geographic area.

(c) **ADMINISTRATION.**—A study conducted under this section shall—

(1) identify Federal and State resources, assistance programs, regulations, and sources of funding for water supply development and management that are applicable to the geographic areas selected under subsection (b)(1);

(2) identify potential weaknesses, redundancies, and contradictions in those resources, assistance programs, regulations, policies, and sources of funding;

(3) conduct a water resource inventory in the geographic study area to determine, with respect to the water supply needs of the area—

(A) projected demand;

(B) existing supplies and infrastructure;

(C) water resources that cannot be developed for water supplies due to regulatory or technical barriers, including—

(i) special aquatic sites (as defined in section 330.2 of title 33, Code of Federal Regulations (or a successor regulation)); and

(ii) bodies of water protected under any other Federal or State law;

(D) water resources that can be developed for water supplies, such as sites that have few, if any, technical or regulatory barriers to development;

(E) any water resources for which further research or investigation, such as testing of groundwater aquifers, is required to determine the potential for water supply development for the site;

(F) a description of the social, political, institutional, and economic dynamics and characteristics of the geographic study area that may affect the resolution of water supply needs;

(G) incentives for cooperation between water districts, local governments, and State governments, including methods that maximize private sector participation in the water supply development; and

(H) new water resource development technologies that merit further analysis and testing.

(d) **LEAD AGENCY.**—For each study under this section, the Corps of Engineers—

(1) shall be the lead Federal agency; and

(2) shall consult with the State for guidance in the development of the study.

(e) **PARTICIPANTS.**—

(1) **IN GENERAL.**—The United States Geological Survey and the Tennessee Valley Authority shall participate in the study.

(2) **ENTITIES SELECTED BY THE STATE.**—In consultation with the Secretary, the State shall select additional entities to participate in the study.

(3) **UNIVERSITY OF TENNESSEE.**—The University of Tennessee may elect to participate in the study.

(f) **FUNDING.**—The Federal share of each study under this section shall be 100 percent.

(g) **REPORT.**—Not later than 180 days after the completion of a study under this section, the State shall submit a report describing the findings of the study to—

(1) the Committee on Resources of the House of Representatives; and

(2) the Committee on Environment and Public Works of the Senate.

(h) **AUTHORIZATION OF APPROPRIATIONS.**—There is authorized to be appropriated to carry out this section \$1,000,000 for fiscal year 2002.

By Mr. REID:

S. 241. A bill to direct the Federal Election Commission to set uniform national standards for Federal election procedures, change the Federal election day, and for other purposes; to the Committee on Rules and Administration.

Mr. REID. Mr. President, I rise today to introduce the National Election Standards Act of 2001.

The entire nation was disgusted by the presidential election of 2000. That election revealed the flaws in our election process to the entire world. America is the greatest country—and the oldest democracy—in the world, and we can do better.

The most fundamental premise of democracy is that every vote is counted. But the reality is that votes cast in wealthier parts of the country frequently count more than votes cast in poorer areas, because wealthier districts have better, more accurate, more modern and less error-prone counting machines than poorer precincts and districts. Some counties in this nation are using voting machines and vote-counting machines that are 50, 60, 70 years old, and that have error rates of 3 or more percent. In the wealthiest nation in the world, that is simply unacceptable.

Today, I am introducing a bill that will give the Federal Election Commission the authority to issue uniform federal regulations governing registration, access to polling places, voting machines, and vote-counting procedures in federal elections across the country. Unlike some other proposals introduced this Congress, these regulations will be binding on states and localities. The Commission will also be authorized to set deadlines for states and localities to comply, and to provide the necessary federal funding to enable them to comply.

My bill will also require states to allow voters to register on the same day that they vote, and will move federal election days from the current Tuesday, to the preceding Saturday and Sunday. By simplifying registration, by allowing voters to vote on

weekends, and extending election day to two days instead of one, more voters will be able to participate in federal elections more easily. I believe these changes will go a long way toward improving our atrocious voter turnout rates, and help restore some of the confidence in our election process that many Americans lost during the last election.

I urge my colleagues to join me in this effort.

By Mr. BINGAMAN (for himself, Mr. DOMENICI, and Mr. CRAPO):

S. 242. A bill to authorize funding for University Nuclear Science and Engineering Programs at the Department of Energy for fiscal years 2002 through 2006; to the Committee on Energy and Natural Resources.

Mr. BINGAMAN. Mr. President, I rise today to introduce a bill authorizing the Secretary of Energy to provide for the Office of Nuclear Energy, Science and Technology to reverse a serious decline in our nation's educational capability to produce future nuclear scientists and engineers. This bi-partisan bill which is referred to as the "Department of Energy University Nuclear Science and Engineering Act" is co-sponsored by my colleagues Mr. DOMENICI and Mr. CRAPO. Let me outline how serious this decline is, after doing so I will outline its impact on our nation and then discuss how this bill attempts to remedy this situation.

As of this year, the supply of four-year trained nuclear scientists and engineers is at a 35-year low. The number of four-year programs across our nation to train future nuclear scientists has declined to approximately 25—a 50 percent reduction since about 1970. Two-thirds of the nuclear science and engineering faculty are over age 45 with little if any ability to draw new and young talent to replace them. Universities across the United States cannot afford to maintain their small research reactors forcing their closure at an alarming rate. This year there are only 28 operating research and training reactors, over a 50 percent decline since 1980. Most if not all of these reactors were built in the late 1950's and early 60's and were licensed initially for 30 to 40 years. As a result, within the next five years the majority of these 28 reactors will have to be relicensed. Relicensing is a long, lengthy process which most universities cannot and will not afford. Interestingly, the employment demand for nuclear scientists and engineers exceeds our nation's ability to supply them. This year, the demand exceeded supply by 350, by 2003 it will be over 400. Our current projections are that in five years 76 percent of the nation's nuclear workforce can retire, the university pipeline of new scientists and engineers is moving in the wrong direction to meet this national problem.

These human resource and educational infrastructure problems are serious. The decline in a competently

trained nuclear workforce affects a broad range of national issues.

We need nuclear engineers and health physicists to help design, safely dispose and monitor nuclear waste, both civilian and military.

We rely on nuclear physicists and scientists in the field of nuclear medicine to develop radio isotopes for the thousands of medical procedures performed everyday across our nation—to help save lives.

We must continue to operate and safely maintain our existing supply of fission reactors and respond to any future nuclear crisis worldwide—it takes nuclear scientists, engineers and health physicists to do that.

Our national security and treaty commitments rely on nuclear scientists to help stem the proliferation of nuclear weapons whether in our national laboratories or as part of worldwide inspection teams in such places as Iraq. Nuclear scientists are needed to convert existing reactors worldwide from highly enriched to low enriched fuels.

Nuclear engineers and health physicists are needed to design, operate and monitor future Naval Reactors. The Navy by itself cannot train students for their four year degrees—they only provide advance postgraduate training on their reactor's operation.

Basically, we are looking at the potential loss of a 50 year investment in a field which our nation started and leads the world in. What is worse, this loss is a downward self-feeding spiral. Poor departments cannot attract bright students and bright students will not carry on the needed cutting edge research that leads to promising young faculty members. Our system of nuclear education and training, in which we used to lead the world, is literally imploding upon itself.

I've laid out in this bill some proposals that I hope will seed a national debate in the upcoming 107th Congress on what we as a nation need to do to help solve this very serious problem. It is not a perfect bill, but I think it should start the ball rolling. I welcome all forms of bipartisan input on it. I hope that my colleagues in the House Science Committee looks favorably at this worthy effort and I would suggest joint hearings so that we as a Congressional body can hear together the testimony on the serious decline that we now face. My staff has worked from consensus reports from the scientific community developed by the Nuclear Energy Advisory Committee to the Department of Energy's Office of Nuclear Science and Technology, in particular its subcommittee on Education and Training. The report is available on the Office's website. I encourage everyone to read and look at these startling statistics.

Here is an outline of what is in the bill.

First and foremost, we need to concentrate on attracting good undergraduate students to the nuclear

sciences. I have proposed enhancing the current program which provides fellowships to graduate students and extends that to undergraduate students.

Second, we need to attract new and young faculty. I've proposed a Junior Faculty Research Initiation Grant Program which is similar to the NSF programs targeted only towards supporting new faculty during the first 5 years of their career at a university. These first five years are critical years that either make or break new faculty.

Third, I've proposed enhancing the Office's Nuclear Engineering Education and Research Program. This program is critical to university faculty and graduate students by supporting only the most fundamental research in nuclear science and engineering. These fundamental programs ultimately will strengthen our industrial base and over all economic competitiveness.

Fourth, I've strengthened the Office's applied nuclear science program by ensuring that universities play an important role in collaboration with the national labs and industry. This collaboration is the most basic form of tech transfer, it is face-to-face contact and networking between faculty, students and the applied world of research and industry. This program will ensure a transition between the student and their future employer.

Finally, I've strengthened what I consider the most crucial element of this program—ensuring that future generations of students and professors have well maintained research reactors.

I've proposed to increase the funding levels for refueling and upgrading academic reactor instrumentation.

I propose to start a new program whereby faculty can apply for reactor research and training awards to provide for reactor improvements.

I have proposed a novel program whereby as part of a student's undergraduate and graduate thesis project, they help work on the re-licensing of their own research reactors. This program must be in collaboration with industry which already has ample experience in relicensing. Such a program will once again provide face-to-face networking and training between student, teacher and ultimately their employer.

I have proposed a fellowship program whereby faculty can take their sabbatical year at a DOE laboratory. Under this program DOE laboratory staff can co-teach university courses and give extended seminars. This program also provides for part time employment of students at the DOE labs—we are talking about bringing in new and young talent.

For the research funds allocated, I have permitted portions be used to operating the reactor during the investigation. I make this allocation provided that the investigator's host institution makes a cost sharing commitment in its operation. My intent is clearly not to make the program sim-

ply fund the operations and maintenance of university reactors; it must be tied to the bill's research. The cost sharing insures that the host institution does not simply reallocate the funds already committed to operating the reactor.

In making all of these proposals, let me emphasize that each one of these programs I have described is intended to be peer reviewed and to have awards made strictly on merit of the proposals submitted. This program is not a hand out. Each element that I am proposing requires that faculty innovate and compete for these funds. Those institutions that do not win such competitions will have the choice of funding the research reactor activities themselves or consider shutting them down.

I have outlined a very serious problem that if not corrected now will cost far more to correct later on. If the program I have outlined is implemented, then it will strengthen our reputation as a leader in the nuclear sciences, strengthen our national security and our ability to compete in the world market place.

Mr. President, I ask for unanimous consent that the text of this bill be printed in the RECORD.

There being no objection, the bill was ordered to be printed in the RECORD, as follows:

S. 242

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as "Department of Energy University Nuclear Science and Engineering Act".

SEC. 2. FINDINGS.

The Congress finds the following:

(1) U.S. university nuclear science and engineering programs are in a state of serious decline. The supply of bachelor degree nuclear science and engineering personnel in the United States is at a 35-year low. The number of four year degree nuclear engineering programs has declined 50 percent to approximately 25 programs nationwide. Over two-thirds of the faculty in these programs are 45 years or older.

(2) Universities cannot afford to support their research and training reactors. Since 1980, the number of small training reactors in the United States have declined by over 50 percent to 28 reactors. Most of these reactors were built in the late 1950s and 1960s with 30- to 40-year operating licenses, and will require re-licensing in the next several years.

(3) The neglect in human investment and training infrastructure is affecting 50 years of national R&D investment. The decline in a competent nuclear workforce, and the lack of adequately trained nuclear scientists and engineers, will affect the ability of the United States to solve future waste storage issues, maintain basic nuclear health physics programs, operate existing and design future fission reactors in the United States, respond to future nuclear events worldwide, help stem the proliferation of nuclear weapons, and design and operate naval nuclear reactors.

(4) Further neglect in the nation's investment in human resources for the nuclear sciences will lead to a downward spiral. As the number of nuclear science departments shrink, faculties age, and training reactors

close, the appeal of nuclear science will be lost to future generations of students.

(5) Current projections are that 76% of the nation's professional nuclear workforce can retire in 5 years, a new supply of trained scientists and engineers is needed.

(6) The Department of Energy's Office of Nuclear Energy, Science and Technology is well suited to help maintain tomorrow's human resource and training investment in the nuclear sciences. Through its support of research and development pursuant to the Department's statutory authorities, the Office of Nuclear Energy, Science and Technology is the principal federal agent for civilian research in the nuclear sciences for the United States. The Office maintains the Nuclear Engineering and Education Research Program which funds basic nuclear science and engineering. The Office funds the Nuclear Energy and Research Initiative which funds applied collaborative research among universities, industry and national laboratories in the areas of proliferation resistant fuel cycles and future fission power systems. The Office funds Universities to refuel training reactors from highly enriched to low enriched proliferation tolerant fuels, performs instrumentation upgrades and maintains a program of student fellowships for nuclear science, engineering and health physics.

SEC. 3. DEPARTMENT OF ENERGY PROGRAM.

(a) **ESTABLISHMENT.**—The Secretary of Energy, through the Office of Nuclear Energy, Science and Technology, shall support a program to maintain the nation's human resource investment and infrastructure in the nuclear sciences and engineering consistent with the Department's statutory authorities related to civilian nuclear research and development.

(b) **DUTIES OF THE OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY.**—In carrying out the program under this Act, the Director of the Office of Nuclear Science and Technology shall—

(1) develop a robust graduate and undergraduate fellowship program to attract new and talented students;

(2) assist universities in recruiting and retaining new faculty in the nuclear sciences and engineering through a Junior Faculty Research Initiation Grant Program;

(3) maintain a robust investment in the fundamental nuclear sciences and engineering through the Nuclear Engineering Education Research Program;

(4) encourage collaborative nuclear research between industry, national laboratories and universities through the Nuclear Energy Research Initiative; and

(5) support communication and outreach related to nuclear science and engineering.

(c) **MAINTAINING UNIVERSITY RESEARCH AND TRAINING REACTORS AND ASSOCIATED INFRASTRUCTURE.**—Within the funds authorized to be appropriated pursuant to this Act, the amounts specified under section 4(b) shall, subject to appropriations, be available for the following research and training reactor infrastructure maintenance and research:

(1) Refueling of research reactors with low enriched fuels, upgrade of operational instrumentation, and sharing of reactors among universities.

(2) In collaboration with the U.S. nuclear industry, assistance, where necessary, in licensing and upgrading training reactors as part of a student training program.

(3) A reactor research and training award program that provides for reactor improvements as part of a focused effort that emphasizes research, training, and education.

(d) **UNIVERSITY—DOE LABORATORY INTERACTIONS.**—The Secretary of Energy, through the Office of Nuclear Science and Technology, shall develop—

(1) a sabbatical fellowship program for university professors to spend extended periods of time at Department of Energy laboratories in the areas of nuclear science and technology; and

(2) a visiting scientist program in which laboratory staff can spend time in academic nuclear science and engineering departments.

The Secretary may under section 3(b)(1) provide for fellowships for students to spend time at Department of Energy laboratories in the area of nuclear science under the mentorship of laboratory staff.

(3) **OPERATIONS AND MAINTENANCE.**—For the research programs described, portions thereof may be used to supplement operation of the research reactor during investigator's proposed effort provided the host institution provides cost sharing in the reactor's operation.

(f) **MERIT REVIEW REQUIRED.**—All grants, contracts, cooperative agreements, or other financial assistance awards under this Act shall be made only after independent merit review.

SEC. 4. AUTHORIZATION OF APPROPRIATIONS.

(a) **TOTAL AUTHORIZATION.**—The following sums are authorized to be appropriate to the Secretary of Energy, to remain available until expended, for the purposes of carrying out this Act:

- (1) \$30,200,000 for fiscal year 2002.
- (2) \$41,000,000 for fiscal year 2003.
- (3) \$47,900,000 for fiscal year 2004.
- (4) \$55,800,000 for fiscal year 2005.
- (5) \$64,100,000 for fiscal year 2006.

(b) **GRADUATE AND UNDERGRADUATE FELLOWSHIPS.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(1):

- (1) \$3,000,000 for fiscal year 2002.
- (2) \$3,100,000 for fiscal year 2003.
- (3) \$3,200,000 for fiscal year 2004.
- (4) \$3,200,000 for fiscal year 2005.
- (5) \$3,200,000 for fiscal year 2006.

(c) **JUNIOR FACULTY RESEARCH INITIATION GRANT PROGRAM.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(2):

- (1) \$5,000,000 for fiscal year 2002.
- (2) \$7,000,000 for fiscal year 2003.
- (3) \$8,000,000 for fiscal year 2004.
- (4) \$9,000,000 for fiscal year 2005.
- (5) \$10,000,000 for fiscal year 2006.

(d) **NUCLEAR ENGINEERING AND EDUCATION RESEARCH PROGRAM.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(3):

- (1) \$8,000,000 for fiscal year 2002.
- (2) \$12,000,000 for fiscal year 2003.
- (3) \$13,000,000 for fiscal year 2004.
- (4) \$15,000,000 for fiscal year 2005.
- (5) \$20,000,000 for fiscal year 2006.

(e) **COMMUNICATION AND OUTREACH RELATED TO NUCLEAR SCIENCE AND ENGINEERING.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(b)(5):

- (1) \$200,000 for fiscal year 2002.
- (2) \$200,000 for fiscal year 2003.
- (3) \$300,000 for fiscal year 2004.
- (4) \$300,000 for fiscal year 2005.
- (5) \$300,000 for fiscal year 2006.

(f) **REFUELING OF RESEARCH REACTORS AND INSTRUMENTATION UPGRADES.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(c)(1):

- (1) \$6,000,000 for fiscal year 2002.
- (2) \$6,500,000 for fiscal year 2003.
- (3) \$7,000,000 for fiscal year 2004.
- (4) \$7,500,000 for fiscal year 2005.
- (5) \$8,000,000 for fiscal year 2006.

(g) **RE-LICENSING ASSISTANCE.**—Of the funds under subsection (a), the following

sums are authorized to be appropriated to carry out section 3(c)(2):

- (1) \$1,000,000 for fiscal year 2002.
- (2) \$1,100,000 for fiscal year 2003.
- (3) \$1,200,000 for fiscal year 2004.
- (4) \$1,300,000 for fiscal year 2005.
- (5) \$1,300,000 for fiscal year 2006.

(h) **REACTOR RESEARCH AND TRAINING AWARD PROGRAM.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(c)(3):

- (1) \$6,000,000 for fiscal year 2002.
- (2) \$10,000,000 for fiscal year 2003.
- (3) \$14,000,000 for fiscal year 2004.
- (4) \$18,000,000 for fiscal year 2005.
- (5) \$20,000,000 for fiscal year 2006.

(i) **UNIVERSITY—DOE LABORATORY INTERACTIONS.**—Of the funds under subsection (a), the following sums are authorized to be appropriated to carry out section 3(d):

- (1) \$1,000,000 for fiscal year 2002.
- (2) \$1,100,000 for fiscal year 2003.
- (3) \$1,200,000 for fiscal year 2004.
- (4) \$1,300,000 for fiscal year 2005.
- (5) \$1,300,000 for fiscal year 2006.

By Mr. JOHNSON (for himself, Mr. BINGAMAN, Mr. DASCHLE, Mr. INOUE, Mr. COCHRAN, Mr. BAUCUS, Mr. REID, Mr. AKAKA, and Mr. CAMPBELL):

S. 243. A bill to provide for the issuance of bonds to provide funding for the construction of schools of the Bureau of Indian Affairs of the Department of the Interior, and for other purposes; to the Committee on Indian Affairs.

Mr. JOHNSON. Mr. President, I, along with Senators BINGAMAN, DASCHLE, CAMPBELL, INOUE, COCHRAN, REID, AKAKA, and BAUCUS am introducing legislation to establish an innovative funding mechanism to enhance the ability of Indian tribes to construct, repair, and maintain quality educational facilities. Representatives from tribal schools in my State of South Dakota have been working with tribes nationwide to develop an initiative which I believe will be a positive first step toward addressing the serious crisis we are facing in Indian education.

Over 50 percent of the American Indian population in this country is age 24 or younger. Consequently, the need for improved educational programs and facilities, and for training the American Indian workforce is pressing. American Indians have been, and continue to be, disproportionately affected by both poverty and low educational achievement. The high school completion rate for Indian people aged 20 to 24 was 12.5 percent below the national average. American Indian students, on average, have scored far lower on the National Assessment for Education Progress indicators than all other students.

By ignoring the most fundamental aspect of education; that is, safe, quality educational facilities, there is little hope of breaking the cycle of low educational achievement, and the unemployment and poverty that result from neglected academic potential.

The Indian School Construction Act establishes a bonding authority to use