To require the Secretary of Energy to develop a plan for a magnetic fusion burning plasma experiment for the purpose of accelerating the scientific understanding and development of fusion as a long term energy source, and for other purposes.

—

IN THE SENATE OF THE UNITED STATES

JUNE 28, 2001

Mr. CRAIG (for himself, Mrs. FEINSTEIN, and Mr. CORZINE) introduced the following bill; which was referred to the Committee on Energy and Natural Resources

—

A BILL

To require the Secretary of Energy to develop a plan for a magnetic fusion burning plasma experiment for the purpose of accelerating the scientific understanding and development of fusion as a long term energy source, and for other purposes.

1 Be it enacted by the Senate and House of Representa-
2 tives of the United States of America in Congress assembled,

3 SECTION 1. SHORT TITLE.

4 This Act may be cited as the “Fusion Energy

5 Sciences Act of 2001”.

6 SEC. 2. FINDINGS.

7 The Congress finds that—
economic prosperity is closely linked to an affordable and ample energy supply;

(2) environmental quality is closely linked to energy production and use;

(3) population, worldwide economic development, energy consumption, and stress on the environment are all expected to increase substantially in the coming decades;

(4) the few energy options with the potential to meet economic and environmental needs for the long-term future must be pursued aggressively now, as part of a balanced national energy plan;

(5) fusion energy is a long-term energy solution that is expected to be environmentally benign, safe, and economical, and to use a fuel source that is practically unlimited;

(6) the National Academy of Sciences, the President’s Committee of Advisers on Science and Technology, and the Secretary of Energy Advisory Board have each recently reviewed the Fusion Energy Sciences Program and each strongly supports the fundamental science and creative innovation of the program, and has confirmed that progress toward the goal of producing practical fusion energy has been excellent;
(7) each of these reviews stressed the need for the Fusion Energy Sciences Program to move forward to a magnetic fusion burning plasma experiment, capable of producing substantial fusion power output and providing key information for the advancement of fusion science;

(8) the National Academy of Sciences has also called for a broadening of the Fusion Energy Sciences Program research base as a means to more fully integrate the fusion science community into the broader scientific community; and

(9) the Fusion Energy Sciences Program budget is inadequate to support the necessary science and innovation for the present generation of experiments, and cannot accommodate the cost of a burning plasma experiment constructed by the United States, or even the cost of key participation by the United States in an international effort.

SEC. 3. PLAN FOR FUSION EXPERIMENT.

(a) PLAN FOR UNITED STATES FUSION EXPERIMENT.—The Secretary of Energy (in this Act referred to as “the Secretary”), on the basis of full consultation with, and the recommendation of, the Fusion Energy Sciences Advisory Committee (in this Act referred to as “FESAC”), shall develop a plan for United States con-
struction of a magnetic fusion burning plasma experiment for the purpose of accelerating scientific understanding of fusion plasmas. The Secretary shall request a review of the plan by the National Academy of Sciences, and shall transmit the plan and the review to the Congress by July 1, 2004.

(b) REQUIREMENTS OF PLAN.—The plan described in subsection (a) shall—

(1) address key burning plasma physics issues;

and

(2) include specific information on the scientific capabilities of the proposed experiment, the relevance of these capabilities to the goal of practical fusion energy, and the overall design of the experiment including its estimated cost and potential construction sites.

(c) UNITED STATES PARTICIPATION IN AN INTERNATIONAL EXPERIMENT.—In addition to the plan described in subsection (a), the Secretary, on the basis of full consultation with, and the recommendation of, FESAC, may also develop a plan for United States participation in an international burning plasma experiment for the same purpose, whose construction is found by the Secretary to be highly likely and where United States participation is cost effective relative to the cost and scientific
benefits of a domestic experiment described in subsection (a). If the Secretary elects to develop a plan under this subsection, he shall include the information described in subsection (b), and an estimate of the cost of United States participation in such an international experiment. The Secretary shall request a review by the National Academies of Sciences and Engineering of a plan developed under this subsection, and shall transmit the plan and the review to the Congress no later than July 1, 2004.

(d) AUTHORIZATION OF RESEARCH AND DEVELOPMENT.—The Secretary, through the Fusion Energy Sciences Program, may conduct any research and development necessary to fully develop the plans described in this section.

SEC. 4. PLAN FOR FUSION ENERGY SCIENCES PROGRAM.

Not later than 6 months after the date of enactment of this Act, the Secretary, in full consultation with FESAC, shall develop and transmit to the Congress a plan for the purpose of ensuring a strong scientific base for the Fusion Energy Sciences Program and to enable the experiment described in section 3. Such plan shall include as its objectives—

(1) to ensure that existing fusion research facilities and equipment are more fully utilized with appropriate measurements and control tools;
(2) to ensure a strengthened fusion science theory and computational base;

(3) to encourage and ensure that the selection of and funding for new magnetic and inertial fusion research facilities is based on scientific innovation and cost effectiveness;

(4) to improve the communication of scientific results and methods between the fusion science community and the wider scientific community;

(5) to ensure that adequate support is provided to optimize the design of the magnetic fusion burning plasma experiments referred to in section 3; and

(6) to ensure that inertial confinement fusion facilities are utilized to the extent practicable for the purpose of inertial fusion energy research and development.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary for the development and review of the plans described in this Act and for activities of the Fusion Energy Sciences Program $320,000,000 for fiscal year 2002 and $335,000,000 for fiscal year 2003.