

107TH CONGRESS
1ST SESSION

S. 1130

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—

1 (1) economic prosperity is closely linked to an
2 affordable and ample energy supply;

3 (2) environmental quality is closely linked to en-
4 ergy production and use;

5 (3) population, worldwide economic develop-
6 ment, energy consumption, and stress on the envi-
7 ronment are all expected to increase substantially in
8 the coming decades;

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

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

17 (6) the National Academy of Sciences, the
18 President's Committee of Advisers on Science and
19 Technology, and the Secretary of Energy Advisory
20 Board have each recently reviewed the Fusion En-
21 ergy Sciences Program and each strongly supports
22 the fundamental science and creative innovation of
23 the program, and has confirmed that progress to-
24 ward the goal of producing practical fusion energy
25 has been excellent;

1 (7) each of these reviews stressed the need for
2 the Fusion Energy Sciences Program to move for-
3 ward to a magnetic fusion burning plasma experi-
4 ment, capable of producing substantial fusion power
5 output and providing key information for the ad-
6 vancement of fusion science;

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

12 (9) the Fusion Energy Sciences Program budg-
13 et is inadequate to support the necessary science and
14 innovation for the present generation of experiments,
15 and cannot accommodate the cost of a burning plas-
16 ma experiment constructed by the United States, or
17 even the cost of key participation by the United
18 States in an international effort.

19 **SEC. 3. PLAN FOR FUSION EXPERIMENT.**

20 (a) PLAN FOR UNITED STATES FUSION EXPERI-
21 MENT.—The Secretary of Energy (in this Act referred to
22 as “the Secretary”), on the basis of full consultation with,
23 and the recommendation of, the Fusion Energy Sciences
24 Advisory Committee (in this Act referred to as
25 “FESAC”), shall develop a plan for United States con-

1 construction of a magnetic fusion burning plasma experiment
2 for the purpose of accelerating scientific understanding of
3 fusion plasmas. The Secretary shall request a review of
4 the plan by the National Academy of Sciences, and shall
5 transmit the plan and the review to the Congress by July
6 1, 2004.

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

9 (1) address key burning plasma physics issues;
10 and

11 (2) include specific information on the scientific
12 capabilities of the proposed experiment, the rel-
13 evance of these capabilities to the goal of practical
14 fusion energy, and the overall design of the experi-
15 ment including its estimated cost and potential con-
16 struction sites.

17 (c) UNITED STATES PARTICIPATION IN AN INTER-
18 NATIONAL EXPERIMENT.—In addition to the plan de-
19 scribed in subsection (a), the Secretary, on the basis of
20 full consultation with, and the recommendation of,
21 FESAC, may also develop a plan for United States par-
22 ticipation in an international burning plasma experiment
23 for the same purpose, whose construction is found by the
24 Secretary to be highly likely and where United States par-
25 ticipation is cost effective relative to the cost and scientific

1 benefits of a domestic experiment described in subsection
2 (a). If the Secretary elects to develop a plan under this
3 subsection, he shall include the information described in
4 subsection (b), and an estimate of the cost of United
5 States participation in such an international experiment.
6 The Secretary shall request a review by the National
7 Academies of Sciences and Engineering of a plan devel-
8 oped under this subsection, and shall transmit the plan
9 and the review to the Congress no later than July 1, 2004.

10 (d) **AUTHORIZATION OF RESEARCH AND DEVELOP-**
11 **MENT.**—The Secretary, through the Fusion Energy
12 Sciences Program, may conduct any research and develop-
13 ment necessary to fully develop the plans described in this
14 section.

15 **SEC. 4. PLAN FOR FUSION ENERGY SCIENCES PROGRAM.**

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

23 (1) to ensure that existing fusion research fa-
24 cilities and equipment are more fully utilized with
25 appropriate measurements and control tools;

1 (2) to ensure a strengthened fusion science the-
2 ory and computational base;

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

7 (4) to improve the communication of scientific
8 results and methods between the fusion science com-
9 munity and the wider scientific community;

10 (5) to ensure that adequate support is provided
11 to optimize the design of the magnetic fusion burn-
12 ing plasma experiments referred to in section 3; and

13 (6) to ensure that inertial confinement fusion
14 facilities are utilized to the extent practicable for the
15 purpose of inertial fusion energy research and devel-
16 opment.

17 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

18 There are authorized to be appropriated to the Sec-
19 retary for the development and review of the plans de-
20 scribed in this Act and for activities of the Fusion Energy
21 Sciences Program \$320,000,000 for fiscal year 2002 and
22 \$335,000,000 for fiscal year 2003.

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