Competent Policy To Fill The Vacuum:

Nuclear Energy Development Act Of 1977

We present here the text of the Nuclear Energy Development Act of 1977, as proposed by the National Coalition of Independents on Issues last week. In motivating the bill, NCII chairman Col. Thomas McCrary issued the following statement:

"The United States right now verges on a crisis situation. Our factories are closing, our workforce is largely unemployed, our farmers are threatened with a loss of credit that would deplete operations. We have come to this situation through a real crisis of leadership, proven by the fact the U.S.—formerly the most productive country worldwide and the highest energy-consuming country—now has no energy policy.

"To let the current stalemate of energy policy continue is folly; letting James Schlesinger remain energy czar is almost treason."

Title I

General Principles of Energy Policy

Congress declares that the following principles are adopted as national energy policy:

1) The basic aim of a national energy policy is to restore the United States to its long-held position as the world's greatest industrial nation and the world's leading exporter of high-technology capital goods. This restoration necessarily entails the maximum employment of the U.S. population at living standards consonant with a commitment to the maximum rate of growth of the nation's industry and agriculture through the provision of efficient, low cost energy by means of the most rapid introduction of energy-dense technologies.

Congress recognizes that the depletion of any existing energy resource by means of a fixed technology, prominently today the fossil resources of coal, oil, and natural gas, tends to force the social costs of energy upwards as the more and more scarce supplies of energy are utilized.

Congress also recognizes that under current conditions of inadequate technological progress, which are exacerbated by the demands from environmentalist groups for conservation of existing energy resources, this tendency leads to a greater proportion of the net profit being required for energy production, leaving an ever smaller amount of the net profit for investment in new sources of energy, capital formation, jobs creation in industry, and general economic growth.

Congress also recognizes that the present economic realities feature vast idle capacity, obsolescence, and shutdown in basic industry, including the nuclear sector; collapsed exports; shrinking of the skilled labor pool; and the inability of Third World countries, laboring under a crushing debt burden, to import from the U.S. as well as the rest of the advanced sector.

Congress also recognizes that this slowing of economic growth leads in turn to a slowing of the implementation of new energy producing technologies and a further aggravation of the crisis. The results of such inadequate rates of economic growth and technological progress are a vicious circle of general price inflation, economic stagnation, rising unemployment and severe energy shortages.

Congress therefore declares that new energy production technologies must be developed and implemented as rapidly as possible.

Congress finds that the basic criterion for the selection of new energy technologies is that they reduce the total social cost of energy production and thus increase the amount of total net profit available for growth in the number of skilled jobs in the revitalized national economy. In scientific terms, to the extent that energy technologies increase the 99energy flux density" of an energy source, in other words, to the extent that energy technologies increase the amount of megawatts of power per square meter, such technologies reduce the cost of energy production. By producing power more densely, these technologies, "energy dense technologies," reduce the total amount of capital and labor required to capture a given unit of energy, increase the thermodynamic efficiency of energy use, and decrease energy waste and loss.

Congress also finds that guided by a commitment to the most rapid introduction of energy-dense technologies, a national energy policy will be instrumental to ending the current economic stagnation as well as increasing the living standards of the American people and the availability of productive jobs. In the case of nuclear fission reactors, the construction of one 1,000 megawatt power plant will employ 4,000 skilled workers and 200 scientists and engineers at the plant, which would utilize 35,000 tons of steel, 300,000 tons of concrete, and 1,900 machine tools. This does not include the direct and indirect effects on other industries. Clearly, in the future, these requirements translate into full employment for the U.S. population, and significantly yearly improvements in the nation's standard of living and productive capability.

2) *At the present time, the immediate goal of a national energy policy is a more rapid implementation of nuclear energy systems and technologies, while research and development into the energy source of thermonuclear fusion is expanded to meet the goal of a fusion power based economy during the 1990s.*

Congress finds that the most energy dense production technologies known today are the technologies of nuclear fission and fusion.

A) Thermonuclear fusion power provides the highest attainable temperatures and thus energy flux densities of any known energy resource once it is fully developed. Fusion power is potentially far cheaper than any existing energy source. Fusion's high tem-

perature plasmas, a media of charged particles, can produce electricity through a direct conversion process at efficiencies of 90 percent or better. The fusion plasmas will offer in 15 to 20 years the complete solution to the problem of "limited resources" by revolutionizing industrial processes through the fusiontorch, which is capable of reducing raw materials to their basic elemental ingredients.

The fuel supplies of fusion are abundant in sea water and virtually unlimited, providing sufficient energy for hundreds of millions if not billions of years at current world rates of energy consumption.

The production of fusion power is currently in an advanced stage of research and development and can, with sufficient effort, be commercialized by 1990.

Congress, therefore, declares the primary *National Energy Policy Goal to be the development of commercial thermonuclear fusion power by 1990 and its widespread implementation as an energy source as soon as is possible after 1990.*

B) In the transition to commercialization of fusion power, nuclear fission provides the most energy dense, safest, and cheapest source of power. Presently existing fission reactors, such as the light water reactors, must be vastly expanded in use which is possible through assembly line mass production. All impediments to their construction, including licensing time, court delays and hearings over alleged safety and environmental hazards, must be removed.

Congress, therefore, set as the second *National Energy Policy Goal the production and bringing on line of 1,000 nuclear fission plants by 19900.*

C) Existing fission reactors can only consume the relatively scarce uranium-235 as fuel. Therefore, reactors which breed fissionable fuel from more abundant natural uranium and thorium must be rapidly commercialized. The Liquid Metal Fast Breeder Reactor (LMFBR) is a proven method of breeding fissionable fuel and must be brought into widespread use quickly to supplement existing uranium supplies. The LMFBR is capable of converting the now unusable "fertile" isotopes of uranium-238 and thorium-232 to fissile fuel isotopes of plutonium-239 and uranium-233, respectively. Based on known resources of these isotopes, this would increase the available fissile fuel supply by nearly 200 times the present amount.

Therefore, Congress sets as the third *National Energy Development Goal the commercialization of LMFBRs by 1983.*

D) Given the technical limitations on the rate of fuel production in the LMFBR, and recognizing the great benefits to the research and development of fusion power of the hybrid fusion-fission breeder reactor, a ialization of such a reactor as part of the fusion program. One application of the hybrid reactor, already proven technically feasible, is the production, at high rates, of fissile fuel for fission reactors while at the same time producing net energy.

Congress, therefore, sets as the fourth *National Energy Policy Goal the commercialization of the hybrid-fission reactor by the late 1980s.*

The above two principles of a national energy policy are based on the assumption that only with a policy of energy research and development aimed at the commercialization of low cost, energy dense fuel sources e nation pursue a program of employing its citizens in productive jobs in industry and agriculture. Only on that basis can the funds from corporate profits and the federal revenue be freed from the ever more expensive production of scarcer energy resources to be invested in new energy resources, new technology, and overall economic growth.

Other proposals, not rigorously based on the introduction of new "hard" energy production technologies, such as price deregulation and the development of high-priced, low-yield, "soft" energy technologies (e.g., coal gasification, solar energy, wind, and geothermal power) cannot satisfy the principle of increasingly abundant, low-cost energy supplies. These proposals are not based on the development of energy dense technologies, and the cheapening of fuel costs for the nation's consumers and industry. The formation of capital and the increased availability of skilled labor are the critical determinants to the healthy economic development of this nation.

Title II

Nuclear Energy Research and Development Program

In order to implement the National Energy Policy Goals of Title I, Congress authorizes the Department of Energy to undertake the following programs of nuclear energy research and development:

1) *A crash program of controlled thermonuclear fusion development.*

The Department of Energy shall undertake a national crash program of basic and applied research and development, including demonstrations of practical applications, with respect to all applications of controlled fusion.

The Department of Energy shall review the current status of all U.S. and other efforts into controlled fusion and furnish a full report to the Congress and the nation within two months after the enactment of this bill.

The Department of Energy shall form a committee of the nation's leading scientists and engineers to review current and projected fusion research efforts and develop a detailed report on implementation of the crash program budgeted herein. The committee will further submit proposals for initiation and governance of the research centers budgeted herein. This report will be reported to Congress within two months of the enactment of this bill.

The Department of Energy shall under the authority of the Congress obtain all classified scientific information and other materials which relate to the development of controlled fusion (particularly laser and electron beam fusion) and make this information public.

This program is designed to bring on line by 1990 a commercial thermonuclear fusion reactor. Subsumed within this program is the development of a fusion-fissionhybrid reactor by 1987, and the development to commercialization of all fusion technologies, in par-

ticular the fusion torch method for raw material extraction and processing.

2) *A program for fission breeder development.*

The Department of Energy shall bring all facilities currently engaged in research on fast breeder nuclear fission reacotr technology under the fusion development program, and integrate breeder research facilities and personnel into the program ofr fission, fusion, and hybrid reactor systems.

The Department of Energy shall undertake a program to develop a commercial version of the LMFBR by the mid-1980s. Particularly the work on the Clinch River, Tenn. fast breeder project should be completed as rapidly as possible.

The Congress also authorizes the Department of Energy to:

1) Report all of its activities to the Congress and the nation on a monthly basis.

2) Set up a national communications and translation network to transmit scientific data and reports as rapidly as possible.

The Congress further authorizes the following appropriations for the implementation of the National Energy Policy Goals:

1) In the fiscal year of 1978, the present budget should be doubled immediately, and, as quickly as feasible, increased to $6 billion to be appropriated for the following major categories of expenditure in the program for nuclear fusion development:

A) Basic Research: $1.92 billion to set up and maintain ten National Fundamental Research Centers and adjuncts.

B) Applied Research: $1.92 billion to construct and operate approximately 30 major confinement system projects, with the choice of projects to be determined on the basis of scientific feasibility by the committee of leading scientists and engineers specified in Title II, Part 1.

C) Engineering: $948 million for technology development for reactors and experimental devices.

2) In the fiscal year of 1978 and every year thereafter unless amended by vote of Congress, $1 billion shall be appropriated for the development of standardized fast breeder reactors by 1983. These monies will be used to design, develop and test efficient and economic reactor components such as steam generators, intermediate heat exchangers, pumps, heat transfer and fuel handling systems. In addition, the floating nuclear plant concept will be developed into a practical system for the fast breeder reactor.

Title III

Nuclear Energy Development Fund

There is a critical shortage of capital for investment in the private sector nuclear fission reactor industry. Therefore, Congress hereby establishes a Nuclear Energy Development Fund to provide the credit for mass production of nuclear reactors, particularly the light water reactors that utilize off-the-shelf technoligies. The fund is to have a duration of seven years and will provide credit for production of all types of fission reactors and for the construction of mass production facilities for fission plants.

Loans made by the fund are to be long-term, typically of 20 years, with interest rates of 2.5 percent per annum. The initial capital of the fund is to be provided out of the General Revenue and is to be set at $10 billion; no more than $100 billion per year shall be lent. The capital of the fund will be increased by Congress as necessary to ensure the completion of the National Energy Policy Goal of 1,000 fission reactors by 1990.

This fund should be part of a national credit policy as provided for by the previously established act: "An Act to Establish the Third National Bank of the United States."

The Third National Bank would assume the responsibilities of the fund and provide credit for fission reactor construction, as well as for other private sector energy development industries.