ically low in view of the enormous difficulty of the problems and the incalculable benefits which would accrue from their solution. Just in the last few years, there have been a number of advances which we regard as particularly significant, principally as a consequence of recent increases in funding: some of these are listed on the enclosed sheet.

To those scientists, like ourselves, who have devoted our professional efforts to this challenging problem for the past 20 years or more, it is clear that, notwithstanding its great promise, fusion power is unlikely to become a real option for this country if present levels of support are continued. If adequate resources were available, we are certain that fusion could succeed; the difficulty in securing such support may arise simply because, like any long term project, fusion will not come to fruition until most present politicians have left the scene. You alone, are in the position of being able to make a national commitment to this goal, somewhat analogous to President Kennedy's stirring declaration that we would land a man on the moon. Solving the fusion problem is, frankly, much more difficult than the Apollo project, but the benefits to our country, and to all of humanity, are incalculably greater. As you may know, there has been a modest worldwide effort on fusion during the past 20 years, characterized by very close cooperation, on a totally unclassified basis, between many countries, the principal efforts being in the USA and the USSR; in fact, many of the ideas being pursued in the present U.S. program, such as the tokamak, are based directly on research carried out in the USSR during the 1960s, when the Soviet program was much larger than ours. This program has been a model of collaborative international undertakings, and it seems certain that a declaration of fusion as a U.S. national goal, with appropriate support levels, would stimulate enhanced efforts in the USSR, Europe and Japan.

You have adopted goals for your administration which are literally breathtaking — controlling the federal bureaucracy, controlling the arms race, diminishing world tensions. We wish you the best of luck in these undertakings and we hope that, to your achievements in these areas, you will add the great distinction of being the man who launches the fusion program on a course which will lead to success in this century.

Sincerely yours,

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Fast Breeder Reactors — If They're So Dangerous, Why Are The Soviets Building Them?

The Soviet Communist Party paper Pravda *published an article March 27 entitled "Fast Breeder Reactors: It's Time for Serial Production," by O. Kazachkovskii, Director of the Physics-Energy Institute in Obninsk. The following are excerpts from the article:*

Atomic electricity stations are now being successfully developed in many countries. The majority of them, with thermal-neutron reactors, recommend themselves as reliable, safe, economic sources of energy on an industrial scale. However they by no means utilize the atomic fuel in the best way — only 1-2 percent of the uranium is burned up. Reactors of a totally new type — with a chain reaction of fast neutrons — are free from this deficiency. Here practically all the uranium can be used, including that which is presently wasted.

What happens is that in fast breeder reactors uranium is transformed into plutonium, which burns almost completely. Thus two processes are going on in opposite directions — the combustion of the fuel and the generation (expanded reproduction) of new supplies of it. Furthermore, the fast breeder reactors significantly surpass thermal reactors in thermal parameters and, as a consequence, in the coefficient of useful activity. The efficiency of the use of uranium in them rises accordingly.

(Research on fast breeder reactors) began in our country as early as 1949, under the scientific direction of A.I. Leipunskii. Approximately by the beginning of the 60s the necessary research had been done which made it possible to go ahead with the construction of the first electricity reactors. Now considerable experience has been accumulated and valuable data has been gained through experimental-industrial use. Thus in Dmitrovgrad, in the Ul'yanovsk region, the BOR-60 fast breeder reactor has been successfully functioning for eight years now. Since 1973, the biggest fast breeder reactor in the world, the BN-350, has been operating in Shevchenko, on the Mangyshlak Peninsula. It generates heat both for the generation of electricity and for desalination of water. In Beloyarsk in the Urals construction is being completed on an even larger fast breeder power reactor, with an electric capacity of 600 Megawatts.

The results achieved have confirmed the correctness of conceptions underlying the projections for fast breeder reactors, and demonstrated the high degree of reliability of such systems. Essentially the only problem requiring solution for large-scale use has turned out to be

the steam generator. There are not the slighest doubts about the possibility of overcoming the difficulties that have arisen here. Ways of substantially raising the reliability and efficiency of this apparatus through engineering improvements and the use of new construction materials are evident. True enough — this entails the necessity for developing the experimental basis for operating and large-scale testing of future atomic electricity stations....

As stated above, fast breeder reactors produce more new fuel than they burn. The surplus thereby achieved — after the appropriate chemical processing — can (and must) be used for fueling newly introduced fast breeder reactors. The rate of growth of the fuel is an extremely important indicator in this regard, since it determines the possible increase in the park of fast breeder electricity reactors. This rate is not unlimited. An important conclusion derives from this: we must not delay the broad construction of fast breeder reactors from the beginning. Otherwise it will simply not be possible to develop their capacitity to the necessary level in a short time.

Fast breeder reactors make it possible to meet the growing energy demands of the country for a long time. The economic advisability of this is evident, as is , furthermore, the real need to begin broad construction of large-block atomic electricity stations with fast breeder reactors, in the soonest possible time. It is precisely for this reason that the decisions of the XXV Congress of the CPSU (Communist Party of the Soviet Union — ed.) envisage speeding up this work....

The scientists of the countries of the socialist community are showing great interest in this program. This is why it makes sense, especially for the best coordination of efforts, to provide for the organization of a base for testing equipment, with the participation of specialists of interested CMEA (Council for Mutual Economic Assistance, or Comecon — ed) member countries on a cooperative basis.

as a whole, the volume of work in the area of fast breader reactors is extremely great, and its realization of course exceeds the bounds of the present five year plan. It is precisely in the 10th five year plan, however, that the decisive steps must be taken and firm foundations laid for broad development of industrial fast breeder reactors.