Testimony Of Fusion Energy Foundation On Nuclear Regulatory Commission Hearing In The Case Of Midland

To Mr. Frederick Coufal, presiding officer of the Atomic Safety and Licensing Board now hearing the case of *Consumers Power*

Dear Sir:

On behalf of the Michigan state chapter of the U.S. Labor Party, I request the right to enter a limited appearance in the matter of Consumers Power, Docket Nos. 50-329 and 50-330. This request is pursuant to the regulations of the Nuclear Regulatory Commission Sec. 2.715.

The Michigan chapter of the U.S. Labor Party has fielded candidates for public office since 1973. In the general election this past November, the Michigan Labor Party ran a presidential candidate with official ballot status as well as a senatorial candidate, congressional candidates in every district in the state, and candidates for many state offices. We have numerous members and supporters in the Midland area, and Midland, Mich. is the hometown of our 1976 vice presidential candidate R. Wayne Evans. As the official state chairman, I maintain that we have an overwhelming interest in the outcome of this hearing.

Our party has developed an authoritative political and scientific approach to energy policy. Our work in the energy field has included helping to initiate the Fusion Energy Foundation, an organization with a significant following in the international scientific community. Our national party organization is presently engaged in lobbying efforts in the Congress and various state legislatures to pass legislation to facilitate expanded energy production.

It is the Labor Party's contention that a limited appearance by party spokesmen is of crucial importance to the affected population in Michigan and to the United States population generally. We have prepared our testimony in consultation with staff members of the Fusion Energy Foundation. We respectfully submit our testimony to be read into the record of this hearing.

Fraternally,

Kenneth Dalto
Michigan State Chairman
U.S. Labor Party

The Fusion Energy Foundation is submitting this testimony as an interested party in the decision on whether to delay the construction on the power and steam generating nuclear power plants at Midland Michigan.

The key issue being argued here is whether the construction of this plant, or for that matter any electrical generating plant, is necessary at this time. The principle argument used in favor of a delay in construction and in fact in favor of a cancellation of the project by the intervenors is that energy conservation policies will eliminate the demand for the power to be produced by the Midland plant. In the July 1976 decision of Washington, D.C. Circuit Court of Appeals Judge David Bazelon in *Aeschliman et. al. vs. NRC*, Judge Bazelon ruled that "the alternative of conservation" must be considered in the construction of the plant, and remanded the matter of the Midland permits to the NRC for the present set of hearings.

As this testimony will demonstrate, there can be absolutely no question that the construction of this plant without any further delay is vitally necessary. More generally, we will demonstrate the conservation argument to be fundamentally a fraudulent one, whose aim is to maneuver courts and regulatory commissions into the position of enforcers of profoundly destructive energy policies, which endanger the very existence of the United States.

The argument of the intervenors can be simply stated. They argue that the Federal Energy Agency and other regulatory agencies have committed themselves to policies of energy conservation aimed at decreasing the energy utilization per unit of production in industry. In addition, they argue that the price of energy, and electricity in particular, will rise very sharply over the next few years. The combination of these governmental policies and price increasing will therefore lead to a sharply reduced rate of energy utilization in the nation as a whole and in Michigan in particular, or at least a sharply reduced rate of energy growth. Therefore, the intervenors argue, there is no harm in the delay or even cancellation of the Michigan project.

Even in the face of it, this is a highly circular argument. The intervenors are anticipating future governmental policies and economic developments assuming that their advocated policy of energy restriction will be carried out. Their argument amounts to no more than the assertion of the truism that if generation plants are not built, energy consumption will not rise — and this therefore justifies the decision not to build the plants!

They thus argue that if new generating capacity is not added, the price of electricity will rise and the amount consumed will not rise. If the government decides to limit the rate of growth of energy supplies by raising fuel prices, then again the results of such a policy will indeed be the restriction of energy growth. But conversely, if the government does not take the advice of the intervenors and allows the construction of large numbers of new generating plants and does not impose taxes on fuels, it is equally assured that energy consumption will grow.

Arguments based on future government policy predictions, predictions which preempt the legislative powers of Congress, cannot possibly lead to any useful conclusions as the *need* for additional energy. Is it then the case that prediction of energy growth rates are purely subjective and can have no rigorous scientific basis? Absolutely not. The level of energy growth rate necessary for the survival of the U.S. economy and its population can be quite accurately calculated. Likewise, consequences of not achieving such a growth rate can be accurately predicted.

Basic Principles of Energy Use

The principles upon which accurate prediction of energy needs are based are not complex. Any population, in order to survive, requires a definable per capita rate of material consumption — so much food, clothing, housing, and so on. This per capita rate of consumption is not arbitrary, nor is it in general equal or anywhere near the mere physical subsistance level. Instead, it is determined by the average level of productive technology in society at a given time. In other words, for a given level of technology, a definite type and amount of skilled labor is required, and the production of such skilled labor in turn requires a definite level of material culture. For example, it would be foolish to expect a starving Indian peasant to be able to work productively in a modern machinery factory in the U.S., or for that peasant's children to obtain the necessary skills for similar jobs, unless the standard of material consumption of the family as a whole was raised to something comparable to that of the U.S. worker actually employed in such skilled machining and related jobs.

Nor is the level of technology as measured by average labor productivity, arbitrary. The level of productivity of labor, or per capita production, is most directly related to the level of per capita consumption.

If our society is to survive, it must advance. Any given level of technology tends to exhaust the relatively finite resources available to that technology. The exploitation of present-day resources requires the development of new resources, new technologies, higher labor productivities, and thus higher per capita consumption. This process leads us to exhaust the present day resources still more rapidly, necessitating the development of still higher technologies.

These are the considerations which determine the necessary rate of energy growth. ***Energy use per unit production must continually tend to increase as society progresses***, since it is this increase which allows for higher labor productivity and, higher standards of living and the necessary more rapid technological innovations. Energy density is empirically very closely related to labor productivity. Given this relationship, and the foregoing explanation of the necessity to develop new forms of technology, the necessary rate of growth can be calculated.

It can be demonstrated that any attempt to either lower the standard of living, or labor productivity, or the per unit use of energy, will inevitably lead to a self-feeding destruction of our society's ability to survive. Drops in standard of living leading to declining productivity and still further deterioration of consumption, will culminate in a general collapse of the economy and the environment which in our epoch is directly dependent on human intervention for its maintenance.

Calculating Our Energy Needs

We can positively state that the immediate consequence of the implementation of the energy conservation policy proposed by the cited FEA guidelines, would necessarily be a fall in labor productivity and standard of living.

Second, we can apply these general principles in actually calculating the necessary energy growth rate for the United States as a whole and Michigan in particular.

The energy resources problem is extremely well known. The world as a whole and the U.S. in particular now rely predominantly on oil and natural gas as energy resources. These resources are limited. If world consumption for one year is referred to as W, and U.S. energy consumption for one year as U, then world oil and gas reserves amount to only about 60-80 W, and U.S. oil and gas reserves amount to only about 50 U. It is clear that a transition to some new energy source is necessary in the coming decades. The problem posed is to exhaust the current energy resources in such a way as to prepare for that transition before world oil and gas reserves run out.

Over the long term, there is only one alternative energy source that can supply future energy needs — controlled thermonuclear fusion power. Fusion is the only source of energy which can be considered essentially unlimited for the foreseeable future, with world reserves of deuterium, the basic fusion fuel, in ocean water having an energy content of at least 10 billion W.

Solar energy, the only other proposed long-term alternative, cannot be seriously considered because it involves a tremendous *drop* in energy density throughput which involves a similar tremendous drop in labor productivity.

In addition, only fusion power can provide the basis for processing of raw materials by plasma process (process based on the use of extremely high-temperature ionized gases). Only such plasma processing will make possible the exploitation of low-grade mineral ores, ores which will necessarily be used once current high-grade ore supplies, are exhausted. Such high-grade ore supplies exist in approximately 300 year supply at current rates of depletion.

A fusion-based, plasma-processing economy, which must be achieved at the end of the transition from a predominantly oil-and-gas-using economy, will require a work force much more skilled than even that of the present day America. This is due to the much higher levels of technology which will be involved, and concomitantly higher levels of per capita energy throughput. Very conservatively, it can be estimated that material per-capita consumption levels will have to rise two-fold and per unit of production energy use approximately three-fold once a plasma-fusion economy is achieved. This will occur despite the fact that *efficiency* of energy use will considerably increase at the much higher temperatures involved in a plasma economy means both higher energy consumption per unit consumption and greater thermodynamic efficiency.

If world resources of *all* fossile fuels and conventional fission fuels, including the full-scale utilization of coal (very probably a grossly optimistic assumption) are estimated at about 300 W, then it can be easily calculated what minimal rate of growth of energy use will enable us to arrive at the levels of energy production necessary for a fusion economy before fissile fuels run out?

It is essential to base our calculations on the global energy situation to determine the growth rate of the U.S. This is because the U.S. is fully dependent on the rest of the world for an entire array of vital materials and goods. If the rest of the world were to run out of energy and thus be engulfed in a spiral of collapsing standards of living, famine, and epidemics, the U.S. would not be spared.

Since the overall level of per capita consumption we will need is six times current U.S. levels, or about 30 times current world per capita levels, it is easy to see that a plasma economy must be achieved in approximately 25 years at most. On this basis we can calculate the absolute necessity of annual growth rates in the vicinity of 20 per cent. For the United States, starting from a considerably higher base, the overall rate of growth will be somewhat less, but the rate over the next ten years, during which the rest of the world will be heavily dependent on U.S. capital goods exports will reach at least 20 percent.

In fact, the assumptions used here are undoubtedly too conservative on growth rates and too optimistic on fuel reserves. The problems involved with full utilization of all fossil fuel reserves, especially the use of coal, are substantial, and a more realistic estimate of necessary growth rates would probably be in the vicinity of 25 percent per annuum. (The utilization of fission breeder reactors rather than light-water reactors would not substantially change this estimate, because the breeding rate, or rate of expansion of fuel in fission breeders is at maximum only eight to nine percent per year. Thus, large amounts of fuel would not be bred in comparison with the overall rate of growth of the economy.)

Michigan, as one of the nation's leading industrial states, must participate fully in the overall 20 percent rate of growth of U.S. and global energy production. From this perspective, the estimates of a five percent rate of growth made by consumers Power of Michigan is absurdly conservative. There can be no doubt that not only the Midland nuclear plant, but many more nuclear, oil, gas, and coal-fired plants will have to be built in Michigan in a very short period of time.

To make this point absolutely clear, it is necessary to consider the consequences of pursuing an energy growth policy substantial lower than that required for a transition to fusion. The two obvious alternatives would be a scenario in which a very low rate of growth was maintained (scenario II), similar to the current 3-5 percent per annuum, implying a gradual transition to coal as the basic energy source over the intermediate term, as oil and gas are exhausted.

The second is the scenario implied by the intervenors (scenario III), a zero or negative rate of energy growth enforced by conservation and high energy prices, and a transition to some combination of coal and, ultimately, solar energy.

These two scenarios converge on the same intermediate term result: by the mid-1980s, if these policies are put into practice, a long-term solution to the energy problem will have been closed off. The capital labor and scientific resources would not exist to make possible a successful transition to fusion power. The U.S. would be doomed to cease to exist as an industrial nation capable of supporting its population. This would be the case because the low rate of energy growth, even in the case of Scenario II, would be wholly absorbed in the costs of conversion toward coal and coal gassification, and virtually nothing would be available for real economic growth or even maintenance of the present economic potential. The current low rate of energy growth is domestically incapable of maintaining either capital or labor potentials. In the past seven years, during which the rate of growth of electricity production has been 7 percent per year, the total employment in manufacturing has actually dropped by more than 7 percent, and the total proportion of the nation's equipment rated as obsolete has risen by more than 10 percent to more than

Carter Justice System: Feudal Law For A Zero Growth Society

At the American Bar Association Convention in Seattle early this month, Attorney General Griffin Bell and Supreme Court Justice Warren Burger unveiled proposals which — if carried out — would constitute the dismantling of the United States court system. Right after the convention, Bell appointed a team of young men trained in the Institute for Policy Studies to fill key positions in the United States Department of Justice and on Feb. 23 the Burger Court rang the death bells on industrial progress by certifying industrywide application of the Clean Air Act.

Coming Next Issue!

25 percent of all industrial capacity. Another seven years of such slow growth, or a much shorter period of negative energy growth, will bring this proportion to the region of 35-40 percent, threatening the capital goods of the U.S. with total breakdown. The simultaneous decline in standards of living, which would amount to more than two to three percent a year even at current rates of energy growth and 8-10 percent per year at zero energy growth would lead to a general destruction of skilled labor supplies, thus eliminating the possibility of reversing the process.

Proposals for limited or zero growth energy policies that will lead our nation down the path of industrial and economic ruin can be called treasonous in the precise sense of the word. The U.S. Constitution, the bedrock of our nation's system of law, was designed by its framers to ensure national conditions for individual and scientific development.

The closing of the Midland plant on the pro-conservation terms set by Judge Bazelon's court ruling, would signal the beginning of national adoption of an energy policy running directly counter to the fundamental tenets of the Constitution, and would threaten to reverse 200 years of national growth based on our founding fathers' right to provide the United States of America with the institutions necessary to scientific, industrial, and cultural progress.

Yet even more profound would be the effects of such zero energy growth "conservation" policies on the global environment. The stagnation or continued contraction of the U.S. economy and U.S. export capabilities will lead to much more severe contraction of energy resources and use among developing sector nations dependent mainly on U.S. capital goods exports. Conservation practices carried out in these countries will, and in fact already have, had devastating ecological consequences which are reflected back on the U.S. The most striking example is the case of Brazil, where energy conservation practices have led to the substitution of primitive agriculture for intensive, energy-rich farming, and the substitution of charcoal for coal in steel manufacture. The result of this "conservation" has been the destruction of some 100,000 sqare miles of Amazon and adjacent forest areas, leading in turn to the creation of a self-feeding drought. The large-scale changes in global weather circulation patterns induced by this drought has led to the creation of drought condition in the U.S. West and this winter's severe and energy-costly cold spell in the East and Mid-West. Such ecological disruption can only be expected to become more severe as energy flows in the economy, and thus in the ecology as a whole, decrease.