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EDITORIAL

Without the U.S., It's 'Fusion Never'

The recent annual meeting of Fusion Power Associates again reminded us that the momentum toward achieving fusion power has shifted from the "traditional" fusion nations—the U.S., Europe, Russia, and Japan—to the nations in Asia. But for reasons which are much larger than the fusion program, without a fundamental change in U.S. policy, the great promise of fusion power is not going to be achieved anywhere in the world, anytime soon.

At last year's fusion meeting, Dr. G.S. Lee, who heads the fusion program in South Korea, described in detail the ambitious research and development project under way at the KSTAR tokamak.

This year, the most anticipated talk at the Washington, D.C. meeting was that of Professor Yuanxi Wan, Dean of the School of Nuclear Science and Technology in Hefei. China's EAST experiment is the first fully superconducting tokamak in the world, and, like KSTAR, is preparing the manpower and industrial expertise for the introduction of fusion energy power plants over the next decades. China is currently pursuing an ambitious nuclear fission building program, and Dr. Wan described China's multi-decade transition from fission to fusion.

By contrast, the fusion program in the United States continues to fight for its life, held together only by the resilience and optimism of its very capable scientists and engineers. Rather than push the boundaries of knowledge and accelerate the development of this revolutionary potential energy source, our Department of Energy spends tens of billions of dollars to clean up "waste," and attempt to turn back the clock to the time of pre-industrial societies, which used solar energy and wind to eke out their meager existence.

But Not Without the U.S.A.

Yet it is a delusion to suppose that the shortcomings in the U.S.A. program will

be made up for by the enthusiasm and determination of China and Korea. Given 20 to 30 years of "business as usual," it might even be possible for these nations to achieve the long-sought goal of commercially viable fusion energy. But we do not have 20 to 30 years, perhaps not even that many weeks.

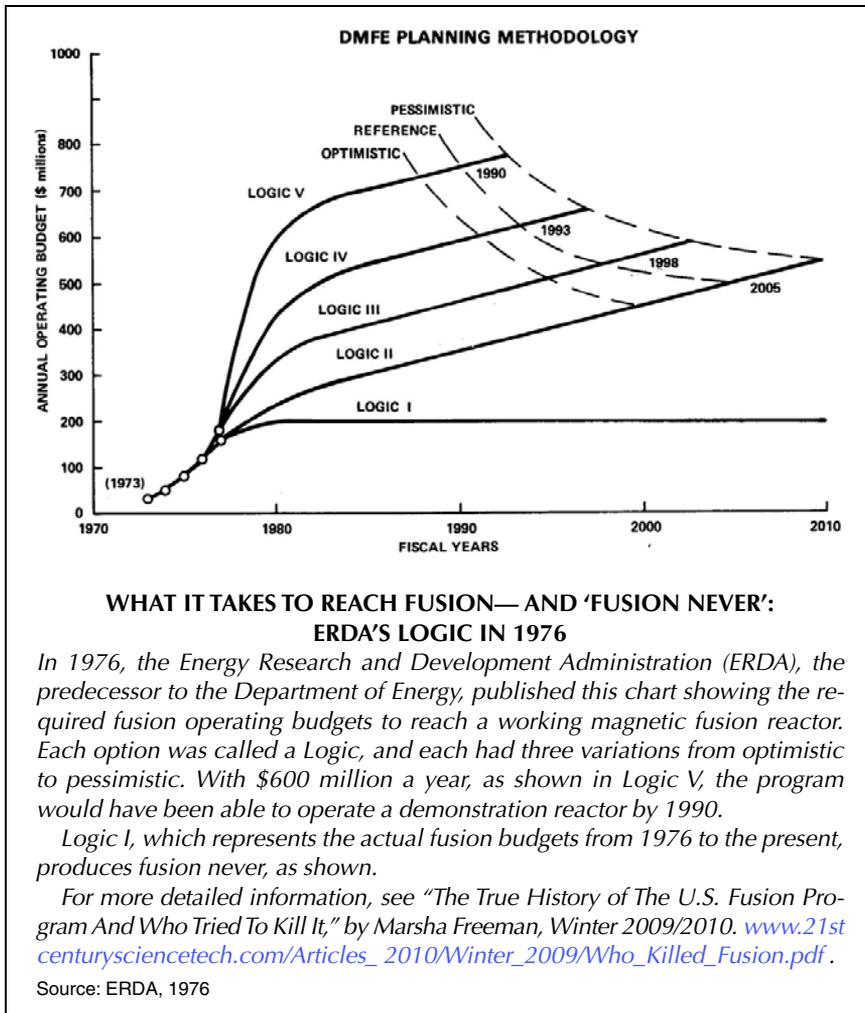
The future is being determined by a global conjunctural crisis in the world financial system for which there has been no precedent in history. Behind that crisis in paper is the physical economic fact that we are not producing sufficient means in basic industrial output, even foodstuffs to properly supply a growing world population. We need the energy flux density of nuclear fission power now, and fusion as soon as we can get it, in order to address precisely that problem.

Without a commitment to high-technology economic progress within the United States and the leading technological powers of Europe, there is no future worth thinking about for the entire human race. There is only a descent into a new dark age of disease, hunger, and holocaust. To avoid that, we must immediately reverse more than 30 years of destructive "green" policies respecting energy, industry, and science as a whole. It means adopting the essential points of LaRouche's policy, including a financial reorganization based on the Glass-Steagall separation of deposit banking from speculative activity, and a fixed-exchange rate monetary system (New Bretton Woods).

Losing Our Credibility

The present course of the United States respecting fusion is illustrative of the problem which infects every aspect of essential scientific policy.

Addressing the Fusion Power Associates meeting, Dr. Edmund Synakowski, a scientist with two decades of experience in fusion research, who now heads the



Office of Fusion Energy Sciences at the Energy Department, laid out in stark terms, the dire situation that is facing the U.S. fusion program.

The "present investment is a fraction of what is needed," in terms of government funding, he stated. But there is no possibility, in the current budget climate, which he described as the "tension between science and deficits," that there will be support for a next-generation U.S. fusion machine. As a result, the U.S. will have little to offer for cooperation. And if there is not any "serious engagement" with the rapidly-advancing Asian nations, we could "lose our leadership position" in fusion, Synakowski warned.

Considering the effort that is being made, particularly in China, India, and South Korea, and the fact that there is no funding planned for new, more advanced experimental facilities in the U.S., Synakowski concluded that, the U.S. is "only

one breakthrough away from losing credibility" in the international fusion community. This, for a nation to which every developing nation, including China, historically turned for assistance in fusion research.

The United States, as is increasingly clear, is not the only nation facing dissolution of its financial system, as part of the global breakdown now occurring. As ITER costs have increased, the European Union, which, as the host institution must provide 45 percent of the funding for the nearly \$20 billion project, has been unable to agree on how to meet that commitment. Do not look to Europe for great advances, Synakowski stated. The "EU financial system has been in flames over the last half year."

Fusion 'Never'

Dr. William Brinkman, Director of the overall Office of Science at the Department of Energy, reported at the FPA meet-

ing that the European Union is now outspending the U.S. in all physical science research. "We need to double the science budget," he stressed, while at the same time reporting that last year, Congress cut the budget for all energy science funding.

For magnetic fusion energy research, the fiscal year 2009 budget enacted was \$394.5 million. Later, an additional \$91 million was pumped in for a one-time boost from the Recovery Act. In FY10, which ended on October 1, 2010, the funds appropriated were \$426 million. Considering that the magnetic fusion energy budget was higher than that in 1982, in real terms, the fusion budget is nearly half its mark of nearly thirty years ago.

Last February, the Administration's fusion request for FY11 was \$380 million, down \$100 million from two years ago; and this, nearly a year before the new Congress—dominated, with help from the White House, by an irrational, and destructive hysteria over cutting federal funding to "balance the budget"—even takes their assigned seats.

Thirty-five years ago, fusion scientists and government officials laid out a multi-decade plan to achieve the operation of fusion energy power plants. Funding profiles were provided, indicating the level of support that would be required, to build and operate the experiments and new engineering facilities to reach that goal.

The higher the funding level, the more rapid the progress. At \$600 million per year, a demonstration fusion reactor was projected to be operating by 1990. At the lowest funding level, of about \$200-300 million per year (in 1976 dollars), fusion would be reached "never."

Since the mid-1980s, the fusion program has generally hovered around the "fusion never" funding level.

The world has no choice, but to move toward a qualitatively superior energy platform, which has a virtually infinite fuel supply, and can provide electricity, high-quality heat, plasma for industrial processing, and a range of frequencies of radiation across the electromagnetic spectrum for applications to everything from medicine to space travel. The alternative is a future so hideous as to be unthinkable.

—Marsha Freeman