

U P F R O N T

What to do about



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If the United States government were suddenly to pull the plug on funding for the tokamak hot fusion program, tokamak fusion research would come to an abrupt end in this country. No one disputes that. There would be no one around to pick up the pieces.

It is well known that no commercial utility has any loyalty to tokamak research, so the tokamak effort would not be continued by private enterprise. It would be unreasonable to expect any private investor to support a multi-billion dollar program with only a very long shot at delivering a commercially viable hot fusion reactor by 2040. Uncle Sam thinks he has the tax dollars to be that investor, but we know that poor Uncle—who has gotten a bit senile as he nears his 220th birthday—is just kidding himself.

The opposite is true for cold fusion. Uncle Sam—the United States government, for those abroad who may not recognize the fond reference to our federal government—admits to spending nothing on cold fusion research. Yet, cold fusion research has continued in the United States, despite official abandonment. Private companies have gotten involved. Salt Lake City-based ENECO, the first high-profile U.S. corporation to become involved in cold fusion, has entered the arena. Thermacore and Hydro-Catalysis Power Corporation in Lancaster, Pennsylvania, are also committed to the excess-energy field, though in a different way. This has been possible because cold fusion

research—relatively speaking, “small” science—did not initially require hundreds of millions, or billions, of dollars to keep it going. Several millions of dollars per year were sufficient.

Some of the major established energy companies in the U.S. are also known to have small-scale “skunk works” research groups that are quietly exploring cold fusion out of the public eye. The research arm of the U.S. electric utility industry, EPRI (Electric Power Research Institute), has been highly visible in its support of cold fusion—particularly at SRI International, where some of the world’s most definitive work has occurred. Recently, EPRI as a whole has experienced severe financial hard times, as utilities have cut back their contributions to EPRI’s research budget. This may or may not affect EPRI’s cold fusion effort, but even if there were a cutback in that area, this research would likely find eager players ready to continue EPRI’s conservative program of cold fusion investigation.

Then, of course, there are dozens of basement tinkerers and inventors through-

porter of cold fusion research. There is also good work going on at the Naval Research Laboratory in Washington, even though officials at DOE several miles away continue to pretend that cold fusion is not a legitimate research area.

Unfortunately, many scientists working at labs with less open-minded directors were given a much harder time. Numerous instances have come to our attention of scientists being threatened with being fired if they persisted in spending research time on cold fusion. Sadly, there are also cases of professors at major universities who feared letting their involvement with or interest in cold fusion become known. Their academic careers were clearly at stake, and their funding by federal agencies might also have been in jeopardy. All this sneaking around and silence has had a suppressing effect on the field, and it hasn’t helped that most of the media were unwilling to challenge the verdict of the scientific establishment that cold fusion research was “pathological science.”

So we arrive at a big question for the cold fusion field in the United States: What to do about Uncle Sam? Would it be a good idea to try to entice him, or embarrass him into supporting cold fusion research more generally—much as many of us in cold fusion have tried to do over the last four years? Or should we just ignore the poor fellow and go on with our

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out the United States, who are exploring cold fusion. We suspect that many of these engineers and scientists will form the vanguard of an entrepreneurial energy revolution in the United States—once the field achieves its long-overdue recognition.

Even without a formally funded research program, cold fusion research has managed to eke out a Spartan existence at various federal laboratories. Sometimes laboratory directors have tacitly allowed such “heretical” work to go on, despite the formal abandonment that occurred after the Department of Energy’s infamous negative report of November 1989, which recommended no funding for cold fusion research. The Office of Naval Research (ONR) has come closest to being an active above-board sup-

business? It is remarkable how long the indifference in Washington has lasted, this pretending that cold fusion is a dead-end field, even in the face of the serious industrial effort being mounted by Japan’s Ministry of International Trade and Industry (MITI), and a host of Japanese companies. We can cite just a few highlights from a list of failures by Uncle Sam to stand up and take notice:

- More than four-hundred concerned citizens, scientists, and engineers, petitioned the House Science, Space, and Technology Committee (HSST) to hold new hearings on cold fusion. The hearings the HSST Committee held in April 1989 were far too early to have been productive. Immediately thereafter, the Congress was displaced by

Uncle Sam?



DOE's "Cold Fusion Panel"—and the rest is history. The furthest cold fusion research advocates ever got post-1989 was to have two cold fusion scientists appended as witnesses at an HSST Subcommittee on Energy hearing on hot fusion in 1993.

•A letter by HSST Chairman, Congressman George Brown of California, was sent to the House Appropriations Subcommittee on Energy and Water—a committee with an amazingly appropriate name under the circumstances! Brown reportedly requested several hundred thousand dollars for a National Academy of Sciences study of "Alternative Fusion"—alternative hot fusion concepts, as well as cold fusion. This modest funding was denied, we have learned, under protests from New Jersey Congressmen protective of the Princeton tokamak program.

•Failure of members of the President's Office of Science, Technology, and Policy (OSTP) to take the issue of cold fusion seriously, despite repeated overtures, including approaches to Vice President Al Gore, and President Bill Clinton himself.

This has led us to conclude that Uncle Sam will wake up from his extended nap when he is jarred from his slumber by alarm bells. If nothing else, shouldn't the government be paying attention to a field that has the potential for creating hundreds of thousands of new jobs at all skill levels? Fortunately, several Congressmen on HSST are now well-aware of the concerns of the cold fusion community. When the public profile of cold fusion has risen high enough through the efforts of private researchers, corporations, and the work in other nations, these cold fusion research supporters in Congress will be in place to recommend action by the Federal government. For now, no one in the cold fusion field is going to expend much time soliciting support from a government that appears to be largely deaf to the cold fusion issue.

When the happy day comes when cold fusion is given serious attention in Washington, what would we like to see happen? First, we'd hope for a strong dose of "Glasnost"—openness—on the subject. No federal official or scientist working in a federally-supported lab should ever feel intimidated for publicly discussing cold fusion. Then there should be an assessment of how the scientific resources of the existing national laboratories and other federally-supported labs could be brought to bear on cold fusion

R&D. What is needed is not a torrent of money thrown at the problem, just the careful attention of interdisciplinary teams of scientists. There has been much discussion about converting Federal laboratories to civilian pursuits now that Cold War tensions have abated. What a perfect alternative for "bomb scientists" to be put to work on cold fusion energy research! We understand that this diversion of weapons scientists to cold fusion is far more advanced in Russia right now than in the United States—one of the great ironies of the Cold War's demise. At least one U.S. company is funding cold fusion research at former nuclear weapons labs in Russia!

Dr. Edmund Storms, whose article, "Chemically Assisted Nuclear Reactions," appears in this issue of "Cold Fusion" is a living example of what could be. Dr. Storms, a chemist who recently retired from Los Alamos National Laboratory, performed seminal cold fusion experiments on tritium production and excess heat generation, while he was still employed at LANL. He did this work with discretionary funding from the laboratory director. Yet, the implications of his re-

tions to make this amazing [cold fusion] information available to the general staff through regular lectures. I would have thought a field having such potential importance to energy production and nuclear theory would generate more curiosity here. Although the DOE does not authorize money to study this subject, the laboratory administration has a responsibility to explore

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markable work, and that of several of his colleagues, has been ignored so far by the laboratory administration. Dr. Storms' funding was cut off when its public visibility rose too high! We repeat here a quote from a remarkable open letter that Dr. Storms published (April 3, 1994) in the *Los Alamos Monitor* local newspaper. (It appears in its entirety as a sidebar to the Storms feature article in this issue, page 50.):

"In spite of . . . positive results, the laboratory administration has ignored sugges-

ideas of potential national importance in order to educate the DOE. To my knowledge, little effort is being made to acquire this information, and no efforts are under way to educate the DOE or the

staff. When the DOE attitude eventually changes, as it must, the staff will not even be able to write useful proposals. Once accepted, a discovery of this magnitude will not suffer fools lightly."

We trust that when cold fusion energy triumphs scientifically, and in the public arena, there will be few willing to take credit for having been "fools" blocking the course of cold fusion research. So, Uncle Sam, watch out and smarten up! The wake up call for America is nigh.

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technology revolutions, says that a publication in a new technology area serves three purposes: "It speeds up technical development by providing faster and better communications between the researchers and developers in the new field; it not only helps attract new people to the field, it enables them to get up to speed much faster than they could waiting for books to be published; and, probably of even greater importance, a publication makes it possible for entrepreneurs to provide products to help the new field grow. It makes a new industry develop faster."

There you have it, our mission: to accelerate the "cold fusion" revolution by disseminating the truth about scientific and technological developments in what will surely be one of the most significant technology upheavals in history. We will publish the latest discoveries and findings in a manner that can be understood by a broad spectrum of people. Our intended audience is not restricted to scientists and engineers, though we will certainly aim to provide these experts with timely and challenging material that will help them in their work. "Cold Fusion" will also explore the spectacular changes in store for civilization in the coming energy revolution—technological, as well as economic, social, and political.

We will also expose the strange politics of opposition to cold fusion, both past and present, which has so hamstrung research on the phenomenon. Part of that role will be to comment on how cold fusion is or is not being treated in the news media. We promise that our magazine will expose the numerous instances in which the media have ignored the facts, disparaged honest research, and stood science on its head.

Since the parallel is so striking, it is worth recalling what happened to two American inventors whose initial success occurred just over 90 years ago. On December 17, 1903, Wilbur and Orville Wright realized an age-old dream when they launched the world's first successful heavier-than-air flying machine. For five years, their millennial accomplishment went largely ignored by

the scientific establishment and the major media, even though the brothers Wright made no secret of their invention. For years leading up to a dramatic demonstration at Fort Myer, Virginia, they tested their aircraft in full view of commuters on an interurban

Formidable industries stand to lose if they are unable to adapt to the expected rapid development of cold fusion energy.

railroad near Dayton, Ohio. Yet for five years the Wrights were considered cranks by U.S. government bureaucrats who refused to take them seriously! So, in search of support the Wrights took their invention to France.

A few years ago, two other scientist-inventors, one American and one British, took another millennial invention to France: "cold fusion." Drs. Pons and Fleischmann are now working on cold fusion energy technology in the well-equipped Japanese-financed IMRA Europe S.A. laboratory near Nice, France. They left behind the scientific bigotry against their discovery that was unleashed in the U.S. The Japanese consortium of industrial giants has given them research funding. Meanwhile, in hundreds of other laboratories the world over, researchers explore an astonishing array of physical phenomena that stem from the original discovery of the cold fusion pioneers. It has been five years since the announcement in Utah, and the "Fort Myers of cold fusion" approaches—the demonstration of prototype technology.

Like flight, which we take for granted today, "cold fusion" will some day be taken for granted. But only five years into the Cold Fusion Age, as we launch "Cold Fusion" Magazine, we can hardly imagine anything nearly as exciting and pregnant with virtually infinite possibilities.

Our pages will offer much more than theories on the frontiers of science. In the exciting months to come, "Cold Fusion" will feature some of the most knowledgeable people in the world writing about what the cold fusion revolution is likely to mean for the world. How will cold fusion energy begin to replace the existing energy infrastructure? What will cold fusion automobiles be like, and the "cold fusion home"? What about the impact of water-fuel energy on agriculture, financial markets, geopolitics, and the environment? These will be a continuing focus of this magazine, in addition to detailed reports about the ongoing science, technology, and business of cold fusion. We expect that you will be thrilled with what future issues bring to you.

About the editor ...

"Cold Fusion" Editor Dr. Eugene F. Mallove brings to the magazine broad experience in high technology engineering with Hughes Research Laboratories, TASC (The Analytical Science Corporation), Jaycor Systems Division, Northrop Precision Products Division, and MIT Lincoln Laboratory. Since 1991, Dr. Mallove has worked as a consultant to U.S. corporations conducting and planning R&D in cold fusion. He is the author of three science books for the general public, including the Pulitzer-nominated book on cold fusion, "Fire from Ice: Searching for the Truth Behind the Cold Fusion Furor" (John Wiley & Sons, 1991). He has taught science journalism at MIT and at Boston University; he was Chief Science Writer at the MIT News Office when cold fusion erupted. Prior to that, he was a top science writer and broadcaster with the Voice of America in Washington, DC, and also wrote science and technology articles for magazines and newspapers, including MIT *Technology Review* and *The Washington Post*. Dr. Mallove holds a Doctoral Degree (Sc.D.) in Environmental Health Sciences (Air Pollution Control Engineering) from Harvard University, and a Master of Science Degree (SM, 1970) and Bachelor of Science Degree (SB, 1969) in Aeronautical and Astronautical Engineering from the Massachusetts Institute of Technology.