

MEETING REPORT



SUMMARY OF INTERNATIONAL CONFERENCE ON POSSIBILITIES OF ECOLOGICALLY CLEAN ENERGY PRODUCTION AND ENERGY CONSERVATION, MINSK, BELARUS, MAY 25-27, 1993

SUMMARY

The International Conference on Possibilities of Ecologically Clean Energy Production and Energy Conservation was co-hosted by the Environmental Program Centre for Citizen Initiatives, an American nonprofit agency that is working to help curtail the creation of unreliable nuclear power plants, and by the Belarussian newspaper, *NABAT* (which means alarm or bell in Russian). Belarus was heavily damaged by the radiation from the Chernobyl nuclear disaster. Belarus is being urged to build eight nuclear power plants to solve their 90% energy dependence on foreign energy sources. The people of Belarus do not want unsafe nuclear power. The purpose of the conference was to discuss energy alternatives. Cold fusion was such a major topic that a special session was devoted to it.

V. A. Filimonov (Institute of Physico-Chemical Problems) has recently received a small amount of funding for his proposed cold fusion research. He has excellent material science-type resources such as a scanning electron microscope to use. This funding will bring Belarus into the family of some 30 nations in which cold fusion research and development is being performed.

HIGHLIGHTS OF THE CONFERENCE

The 3-day conference had three morning plenary sessions followed by various presentations in three contemporaneous sessions during the afternoons on 2 days and a conference summary on the third day. In addition to general conference information, the following papers were presented at the plenary sessions:

1. "On the Problems of Heat and Power Conservation for an Industrial Enterprise of the Republic of Belarus," V. K. Sudilovsky (Ministry of Power)

2. "Advanced Energy Efficiency: Key to a Leapfrog Energy Strategy for Belarus," A. Lovins (Mountain Institute)
3. "Replacing Nuclear Energy with Alternative Sources and Energy Conservation," E. A. Smeloff (Sacramento Municipal Utility District)
4. "New Energy-Efficient Lighting Systems: Technologies, Economics, and Policies," E. Mills (Lawrence Berkeley Laboratory)
5. "Integrated Resources Planning for the Bonneville Power Administration in Northwest, USA," C. Stephens (Oregon State Department of Energy)
6. "The Number and Types of Cold Nuclear Fusion Devices and Suggested Uses," Hal Fox (*Fusion Facts*)
7. "Production, Testing, and Use of Gas Turbines for Production of Electricity and Heat," M. Axford and J. de Jager (Stewart and Stephenson Services)
8. "Fuel Elements for Future Energy Production," A. A. Vecher (Belarus State University)
9. "An Energy-Saving Strategy in the Agro-Production Complex of Belarus," L. S. Gerasimovich (Belarusian Agrarian and Engineering Academy)
10. "Energy and Ecology in Sweden: Planning for Economic Growth, Nuclear Phase-Out, and Reduction of CO₂ Emissions," E. Mills (Lawrence Berkeley Laboratory)
11. "Scientific and Methodological Aspects of Conservation of Resources and Power in Agricultural Production," M. M. Severnev (Belselkhozmechkanizatsiya Company)
12. "Dynamic of Radioactive Conditions on the Belarussian Territory from 1986 to 1993," I. I. Matveenکو (State Department of Hydrometeorology of Belarus)
13. "Translation of Sacramento to a Post Nuclear Future," E. A. Smeloff (Sacramento Municipal Utility District).

Francis U. Macy (Environmental Program Centre for Citizen Initiatives) was the deputy chairman of the organizing

committee for this conference. He was primarily responsible for getting some of the alternative energy views presented, especially cold fusion, gas turbine generation, and emphasis on conservation. Macy and his nonprofit group are dedicated to helping prevent further spread of nuclear power plants. There are strong efforts from France to get the Eastern European countries to build more nuclear fission power plants. Under the current conditions of the operation of nuclear power plants in Eastern Europe, it is predicted that there is a one-in-three chance for a nuclear disaster similar to the Chernobyl accident every year. One of the purposes of this conference was to present alternative approaches to nuclear power.

It is important to understand that Belarus suffered the world's worst engineering disaster when the Chernobyl nuclear power plant exploded. The fallout resulted in the evacuation of 100 000 people, radiation-caused health damage to at least 25% of the population, subsequent radiation-induced illness in 92% of the children, and the denial of thousands of acres of farms and villages for decades.

Because the Chernobyl disaster devastated thousands of acres of land in Belarus, there is no strong Belarussian citizen support for nuclear power. At present, there are four large nuclear power plants outside the borders but near Belarus. Belarus has no nuclear power plants and depends on importing oil and natural gas from the Russian Federation to provide power. Only 10% of the power consumed in Belarus comes from within the nation's boundaries. The result is that there is a strong perceived need for additional power generation if Belarus is to become a prosperous nation. The merit of nuclear power is that the power would be produced within Belarus and money would not have to be spent outside the nation. However, there is no good economic study of the capital costs and the long-term environmental costs for producing nuclear power in Belarus.

It is evident that there is a strong interest in alternative energy sources. Although conservation is supported by words, it is unlikely that Belarus has the national will and leadership to greatly reduce its energy consumption by conservation. The per capita consumption of energy in Belarus is far lower than in the United States. There is a strong desire by Belarussians to become more energy affluent and not to have to continue the "have-not" aspects currently endured. Therefore, there could be a rapid buildup in the use of alternative energy devices. There is no robust source of solar energy (too far north), wind energy (low-lying hills), nor hydroelectric energy (low elevation, slow meandering rivers). The only national energy resources are peat and forest biomass. Any reasonable use of cold fusion or other enhanced-energy devices could be readily acceptable energy alternatives.

COLD FUSION PAPERS

The following cold fusion papers were presented in a special cold fusion session:

1. "The Surface Dynamic Concept – Basis for a Reproducible Cold Fusion Process," Peter Glück (Cluj-Napoca): The key to the technological future of cold fusion is the achievement of a completely reproducible process. The Surfodyn concept states that the nuclear phenomena take place on the surface of some metallic hydrides in very restricted areas and are triggered by the surface dynamics. Cold fusion represents an extreme case of heterogeneous catalysis in accord with the principles of Gryaznov et al. On this basis, a rational expla-

nation for the problems of reproducibility and an efficient way for the development of the field can be found.

2. "Possibilities of Self-Vibration Quantum Mechanics for Describing Cold Nuclear Fusion," A. V. Buliga (Belarusian Social-Ecological Union "Chernobyl"): Possibilities of self-vibrational quantum mechanics developed earlier for describing cold nuclear fusion with excess energy release are discussed. The effect of the superposition of certain quantum movement of hydrogenlike atoms and their classical movement, which is able to cause resonant self-vibrations of these atoms and significantly reduce their nuclear potential barriers and cold nuclear fusion, is easily justified in the framework of the proposed model.

3. "Possibilities of Cold Fusion with a Positive Energy Balance," V. A. Filimonov and E. N. Naumovich (Institute of Physico-Chemical Problems): The model of synergetic activation of physicochemical processes in solids for highly non-equilibrium systems as applied to cold nuclear fusion of helium deuterium promotes a principal possibility for intense cold fusion implementation in crystalline lattice of solids at usual temperatures, pressures, and component concentrations.

4. "Fundamental and Applied Aspects of Cold Fusion: Correlations and Experiments in the Field and Modeling," P. I. Golubnichy (Lugansk Mechanical Engineering Institute): Special correlation experiment results obtained by using a highly effective automatic measuring and computing complex are shown. The experiments were made by using different types of deuterated solid "nuclear" targets to establish temporal and magnitude correlations between fast and slow neutrons, X-ray, beta, gamma, and electromagnetic and acoustic emission detector signals. Results are discussed from the point of view of conventional cold fusion models.

5. "Influence of Electrochemical Treatment of Single-Crystals on Reproducibility of Nuclear Reaction Implementation Under Reaction of Deuterium with Sodium-Tungsten Bronzes," A. L. Samgin (Institute of High-Temperature Electrochemistry RAN): It is shown that using a new electrochemical method of sodium-depleted layers in sodium-tungsten bronze single-crystal specimens promotes enhanced neutron emission. The method is anodic treatment of single crystals in 1 N sulfuric and water solution electrolyte instead of anodic treatment in vacuum at high temperatures. As a result, the conditions for reproducible nuclear reaction implementation during the interaction of deuterium with sodium-tungsten bronzes are satisfied.

6. "Study of Excess Heat Release in the Case of Glow Discharge Deuterium Gas," A. B. Karabut and Irina B. Savvatimova (SRI Scientific and Industrial Association LUCH): Experimental results of the heat balance study of dynamical calorimetry method in the case of glow discharge in deuterium medium with palladium cathode are presented. A significant excessive heat release was observed in ~50% of experiments. The largest extra heat values reached up to 500%. Stable correlations between extra heat release and nuclear radiation production were noted. Control runs in protium media produces neither excess heat nor nuclear radiation. The nuclear reaction mechanism is still not clear.

7. "Reproducible Anomalous Heat Release of Non-nuclear Nature and 'Cold Fusion' in Pd/PdO Heterostructure Saturated with Hydrogen (Deuterium), An Electrochemical Method," B. V. Lyakhov, A. G. Lipson, D. M. Dakov, and

B. V. Deryaguin (Institute for Physical Chemistry): An anomalous pulse heat release was found in a Pd/PdO heterostructure saturated with hydrogen (deuterium). The reproducibility of the effect is very high. Neutron emission was detected in the same experiments, but there were no temporal correlations between neutron emission and extra release.

8. "Initiation of Cold Fusion by Light Impurities," S. A. Tsvetkov (Sverdlovsk Branch of SRC INF for Energy Technique): A new approach to the cold nuclear fusion phenomenon based on deuterium interaction with light impurities is considered. Experiments carried out by other authors are analyzed from the indicated point of view. Results of valuations experiments on enhanced frequency and magnitude of detected neutron pulses are presented.

The two most interesting papers were the one by Karabut and Savvatimova and the one by Samgin, who are currently being modestly funded by an American company.

Several Belarussian scientists are intensely interested in the developments of cold fusion and other enhanced-energy devices. They have requested organizational support for an international conference on enhanced energy systems to be held in the spring of 1994.

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