



webserver@yucca-web1.ymp.gov on 02/28/2000 07:45:06 AM

To: EISR/YM/RWDOE
CC:

RECEIVED

FEB 28 2000

Subject: EIS Comment

February 28, 2000 07:45:06

IP address: 207.49.186.246

The Commentors Name:

--->Mr. Gary C. Vesperman

The Commentors Address:

--->3123 Trueno Road
--->Henderson, Nevada 89014-3142

Email Information:

--->vman@skylink.net
---> Add commentor to the mailing list : yes

Contact Information:

---> fax number :
---> phone number : 7024357947
---> organization : Institute for New Energy
---> position : Trustee

Comment Text :

-->Dear DOE,

1 The Yucca Mountain DEIS should consider the alternative of neutralizing radioactive waste on-site at nuclear power plants using a patented technique which has several names such as "low-energy nuclear transmutation", "plasma-injected transmutation", and "low-voltage nuclear transmutation".

Hal Fox of the Salt Lake City, Utah company Trenergy, Inc., can present a technical paper on high-density charge clusters (abstract below) and their application to neutralization of radioactive waste and as new sources of energy. By appointment, Fox can also demonstrate in Trenergy's laboratory reducing the radioactivity of radioactive thorium approximately 90% in one hour.

Fox is also able to exhibit in addition to his radioactive transmutation apparatus some aluminum foil that had been drilled with high-density charge clusters and a high-voltage power supply which will allow him to demonstrate charge clusters at atmospheric pressure.

Fox's research associate, Chinese plasma physicist Dr. Shang-Xian Jin, wrote the text on plasma physics which is used by Chinese universities.

My biography is as follows:

Gary Vesperman earned his B.S. degree in Electrical Engineering from the University of Wisconsin -Madison. He was a technical writer with 18 electronic engineering companies in Silicon Valley.

In 1986 he moved to Las Vegas to work six years with EG&G Special Projects as Senior Technical Writer, and then six years

with Film Funding, Inc., as Vice President writing business plans and initial public offerings. He is now an independent consultant.

Gary is a member of the Institute of Electrical and Electronics Engineers, Inc. and several environmental and advanced technology research organizations. He is also a member of the Board of Trustees of the Institute for New Energy (<http://www.padrak.com/ine/>).

In 1992, he teamed with the Clark County School District of Las Vegas, Nevada to submit a \$11,897,400 proposal to the New American Schools Development Corporation to build a small prototype for a computerized fiber optic school network of his design. Since 1993 he has been researching candidate technologies to be combined into an advanced self-powered electric vehicle. In 1998 he proposed a major advance which led to several first-ever patent applications for torsion field communications devices which actually work. He is actively involved with research and commercialization of radioactive waste neutralization technologies, new sources of energy, advanced self-powered electric vehicles, mineral fertilizers, and electronic medical devices.

Hal Fox's biography is next:

Hal Fox has been a meteorologist (U.S. Air Force), Missile System Engineer (Hughes and Sperry-Rand), member of the advanced engineer department for the Sperry-Rand Utah facility, and then director of the first research laboratory at the University of Utah Research Park. In 1972, Hal obtained an MBA in addition to his graduate degree in physics and math. He is a co-founder and has served as president of Trenergy, Inc., Fusion Information Center, Inc. and Emerging Energy Mutual Fund, Inc. At the present time Hal Fox is editor of the Journal of New Energy and of New Energy News. As president of Trenergy, Inc. and together with Dr. S-X Jin, they have specialized in on-site stabilization of high-level radioactive wastes.

(Abstract of Hal Fox's paper is next with references.)

ABSTRACT

An energy revolution has begun. Several new-energy devices are now being commercialized. This paper discusses one of the most promising of these new technologies: HIGH-DENSITY CHARGE CLUSTERS. An important application of this technology is the transmutation of high-level radioactive wastes in both liquids and solids. In addition, several other applications are briefly discussed. These applications of high-density charge clusters include thermal energy, direct electrical energy, and the possible production of some scarce elements from more plentiful elements.

Also here are the References:

- [1] Kenneth R. Shoulders, "Energy Conversion Using High Charge Density," U.S. Patent 5,018,180, issued May 21, 1991. This was the first patent to issue. Kenneth R. Shoulders, "Method of and Apparatus for Production and Manipulations of High Density Charge," U.S. Patent 5,054,046, issued Oct 1, 1991. Kenneth R. Shoulders, "Circuits Responsive to and Controlling Charged Particles," U.S. Patent 5,054,047, issued Oct 1, 1991.
- [2] Kenneth R. Shoulders, EV, A Tale of Discovery, c1987, published and available from the author for \$200, P.O. Box 243, Bodega, CA 94922-0243.
- [3] Personal communication with Prof. Ilyanok in Minsk, Republic of Belarus.
- [4] G.A. Mesyats, "Ecton Processes at the Cathode in a Vacuum Discharge," Proceedings of the XVIIth International Symposium on

Discharges and Electrical Insulation in Vacuum, July 21-26, 1996, Berkeley, Calif., pp 720-731, 38 refs, 10 figs, 5 tables.

[5] Robert Bass, Rod Neal, Stan Gleeson, and Hal Fox, "Electro-Nuclear Transmutation: Low-Energy Nuclear Reactions in an Electrolytic Cell," Journal of New Energy, Vol 1, No 3, Fall 1996, pp 81-87, 6 refs, 1 fig, 1 table.

[6] Hal Fox, Shang-Xian Jin (Trenergy, Inc., UT), "Operating the LENT-1 Transmutation Reactor: A Preliminary Report," Journal of New Energy, Vol 2, No 2, Summer 1997, pp 110-118, 4 refs, 4 figs.

[7] Hal Fox and Shang Xian Jin, "Low-energy Nuclear Reactions and High-density Charge Clusters," presented at the annual meeting of the American Nuclear Society, Nashville, Tennessee, June 9, 1998, Journal of New Energy, Vol 3, No 2/3, pp 56-67, 16 refs, 9 figs, 3 tables.

[8] Shang-Xian Jin and Hal Fox, "Characteristics of High-Density Charge Clusters: A Theoretical Model," Journal of New Energy, Vol 1, No 4, Winter 1996, pp 5-20, 16 refs, 2 figs.

[9] Shang-Xian Jin and Hal Fox, "High-Density Charge Cluster Collective Ion Accelerator," Journal of New Energy, Vol 4, No 2, Winter 1999, pp 96-104, 47 refs, 4 figs, 3 tables.

Vesperman's paper on low-voltage nuclear transmutation follows next:

My father taught my high school biology course. The first day of class, I clearly remember him telling us to study nature, not books. No other teacher or engineering college professor gave me that short little lesson. Yet so profoundly important was the truth of his lesson I have given my own father the credit for being the finest teacher I ever had. Accurate interpretations of natural phenomena can ultimately only be derived by seeing for yourself what is actually happening.

The first airplane was flown by the Wright brothers on December 17, 1903. From that time on, people could see for themselves that flying machines are possible. Did you know that it took the experts five years to stop reading their books and look up in the sky? Oh! Look at the all airplanes flying around! Do you suppose we need to rewrite our books?

I will try to persuade the DOE that books explaining that safe, inexpensive neutralization of radioactive waste is impossible are absolutely wrong. For about three years, my good friend Hal Fox has been demonstrating low-voltage nuclear transmutation in his Salt Lake City laboratory. In one hour, his low-voltage nuclear transmutation apparatus reduces the radioactivity of thorium by approximately 90%.

I will try to explain how low-voltage nuclear transmutation works in simple terms by using ping pong balls and bowling balls.

An atom has negatively charged electrons, represented by the ping pong ball, whirling around a nucleus of neutrons and positively charged protons. Protons, represented by bowling balls, have a mass 1836 times the mass of electrons. A neutron is a combination of an electron and a proton with zero net electrostatic charge. An atom's number of protons and its equal number of electrons determine its type of element.

If a proton is fired at the nucleus of an atom, the electrostatic repulsion of the protons that are already in the nucleus will cause the proton to bounce off or deflect to one side. For many decades, physicists have assumed that transmutation of elements always requires high energies. Elaborate machinery generating 9 million volts was required to accelerate a proton to a high enough energy to overcome the electrostatic repulsion of an atom's nucleus and penetrate its interior. Once a proton got inside a nucleus, the atom is then transmuted to another element.

Hal Fox and his colleagues have invented a much easier way to accelerate protons, using high-density charge clusters, to the same very high energy needed for them to penetrate the nuclei of atoms. We have here a battery (box on table with plus and minus signs) which has made this wall (with large plus sign taped to wall) positively

charged and that wall (large minus sign taped to wall) negatively charged.

Each ping pong ball is negatively charged and when released at the negative wall, electrostatic repulsion/attraction will cause the ping pong ball to fly across the room to the positive wall. Each bowling ball is positively charged, and when released at the positive wall, it will roll very slowly in the opposite direction to the negative wall.

Both the ping pong ball and the bowling ball have an equal but opposite electrical charge. So therefore they both draw the same amount of electrical energy from the battery as they fly or roll from one wall to the opposite wall. But because the ping pong ball is so much lighter than the bowling ball, the ping pong ball will strike the opposite wall at a much greater speed than the bowling ball. For you folks who know physics, the equation is
 $E \text{ for energy in joules} = e \text{ in coulombs times } V \text{ in volts or joules per coulomb} = \text{one-half times mass times velocity squared. (Equations reproduced below.)}$

Now assume that 1,000,000 ping pong balls are released as a high-density charge cluster at the negative wall. Embedded in the ping pong ball cluster are 10 bowling balls.

Because there are so many more negatively charged ping pong balls, the positively charged bowling balls are going to stick with the ping pong balls and ignore the attraction of the negative wall and the repulsion of the positive wall. So therefore, the bowling balls hitch a free ride along with the ping pong balls. When the bowling balls hit the positive wall along with the ping pong balls at the same speed as the ping pong balls, the bowling balls will hit the positive wall with 1836 times as much as energy than if they had hit the negative wall, rolling slowly alone, in the opposite direction.

If 9,000,000 volts is divided by 1836 times the mass of the electron, we find that only a little less than 5,000 volts are needed to transmute elements. That is why I call the process Low-Voltage Nuclear Transmutation, or LVNT for short. Hal Fox calls the process Low-Energy Nuclear Transmutation or LENT.

2 The life-cycle cost of the Yucca Mountain nuclear waste dump has been projected by the Department of Energy to be 150 billion dollars. I ask you the DOE and the American people to agree that the Yucca Mountain project is a monumental waste of time and money.

Low-Voltage Nuclear Transmutation (LVNT) equations:

To penetrate nucleus, proton has to be energized to 9,000,000 electron volts of kinetic energy.

$E = eV = 9,000,000 \text{ electron-volts} = 1/2MpV(\text{squared})$

Mass of proton = 1836 times mass of electron.

Electron to same speed = $9,000,000 \text{ volts}/1836 < 5,000 \text{ volts.}$

Protons hitch free ride in high-density electron charge clusters to reach kinetic energy needed to transmute atoms.

LVNT means a Yucca Mountain nuclear waste dump is not needed!!!

Gary C. Vesperman
 Henderson, Nevada
