MFFFPEm Resource

From: Clinton Bastin [clintonbastin@bellsouth.net]
Sent: Thursday, September 20, 2007 9:15 PM
To: Yawar Faraz
Cc: Daniel Tedder
Subject: Reprocessing

Importance: High

Dear Mr. Faraz,

Thank you for the reply to my July 4 letter to the NRC about reprocessing. My greatest concern is the fact that the Department of Energy inherited the dysfunctional portions of the US Atomic Energy Commission and dismissed the portions that were not. DOE's sharing latest information on advanced recycling technologies with the NRC is the blind leading the blind, and is similar to what happened in the AEC exactly 50 years ago **(See note in bold type below)**. Other consequences of a dysfunctional DOE are described in the following, together with recommendations for change that would avoid these adverse consequences.

I had received a response from the DOE in response to my Luly 4 letter and had prepared a reply to The President, then decided to send the reply to House Speaker Nancy Pelosi and Senate Majority Leader Harry Reid. In the meantime, I reviewed the proceedings of the 2006 Russell Symposium: *Nuclear Renaissance: Implications for National Security,* Chaired by Dr. Gary Bertsch, University Professor at the University of Georgia School of Public and International Affairs and Director of the University of
Georgia Center for International Trade and Security. Senator Sam Nunn, Nuclear Energy Institute President Frank (Skip) Bowman and
Southern Nuclear Company President Barnie Beasley also participated in the symposium, which raised some of the issues discussed in my letters, and other issues related to International security aspects of nuclear technology - and in particular the problems inherent in relying on a dysfunctional
DOE.

At the end of this message is the text of an E-Mail message sent to
participants, which included text of my letter to The President, letter to
The President, House Speaker Nancy Pelosi and Senate Majority Leader Harry
Reid, and my biographical sketch. I am providing a copy of this message to Dan Tedder of NRC, a long time friend and colleague. Please feel free to share this message with Dale Klein, Pete Lyons and others at NRC

But I begin with the response of Dr. Bertsch.

"Thank you for your thoughtful and informative email and attachments. I read them with interest and benefitted greatly. I can also tell you that I personally agree with almost every point you made. You are obviously a true expert on these issues. I wish you were in Athens where I could avail myself of your knowledge on a regular basis.

"I am also pleased that you are sharing your knowledge with others. All of us, and particularly our leaders, need to hear the points you are making.

"Thanking you for sharing them with us,

"Sincerely, Gary"

>>>>> Dear Dr. Bertsch, Senator Nunn and Admiral Bowman:
>>>>>
>>>>> I recently received a copy of the proceedings of the 2006 Russell
>>>>> Symposium: Nuclear Energy Renaissance: Implications for National
>>>>> Security, have comments, but first an introduction.

>>>>>
>>>>> I had lead responsibility in the US Atomic Energy Commission for
>>>>> initial supply of “Atoms for Peace” (heavy water) from 1955 to 1957,
>>>>> and the initial program for disposition of used nuclear fuel from
>>>>> nuclear power plants from 1959 to 1962. The latter was an important
>>>>> nonproliferation initiative because it included return of used fuel of
>>>>> US origin from reactors in other nations.
>>>>>
>>>>> I was not aware that the heavy water was to moderate reactors supplied
>>>>> to other nations by Canada that were similar to the reactor operated
>>>>> by Canada to produce plutonium for US nuclear weapons under a mutual
>>>>> security agreement. I was also not aware that in 1957 another office
>>>>> in the AEC began exporting laboratory-type reprocessing technology to
>>>>> other nations - including India - that could be used to recover the
>>>>> plutonium for use in weapons. Thus the important nonproliferation
>>>>> initiative was rendered valueless prior to its implementation.
>>>>>
>>>>> I was aware that the laboratory reprocessing technology supported by
>>>>> nuclear power plant operators for used fuel reprocessing had failed
>>>>> in AEC programs, but nuclear power officials were not interested in
>>>>> that information. **(Note to Yawar and Dan: Staff of the AEC Division of Licensing was also not interested in that information.)** I was also aware (and concerned) that early nuclear
>>>>> power plant operators were told and believed that they did not need
>>>>> full understanding of nuclear technology in order to build, license
>>>>> and safely operate nuclear power plants. As Admiral Bowman points
>>>>> out, this latter has been corrected. However, most Americans do not
>>>>> know or appreciate this fact.
>>>>>
>>>>> After failure and indications of failure of commercial reprocessing, I
>>>>> provided technical leadership for AEC efforts to resolve reprocessing
>>>>> problems, which culminated in a decision to reassign management
>>>>> responsibility to DuPont, who had designed, built and operated the
>>>>> only successful reprocessing plants.
>>>>>
>>>>> In 1978, DuPont provided to the DOE designs for an integrated fuel
>>>>> reprocessing and refabrication complex that would have resolved
>>>>> problems and concerns, but the DOE rejected the designs in order to
>>>>> support reprocessing with technology that had failed and to support
>>>>> other laboratory concepts that were not viable.
>>>>>
>>>>> Which brings up my first and most important comment: No one at the
>>>>> symposium mentioned that the Department of Energy is dysfunctional and
>>>>> operates in a manner similar to that of the Ministry for Atomic Energy
>>>>> of the former Soviet Union. Since America works by competent,
>>>>> corporate enterprise, DOE management often works against America’s
>>>>> interests. At the end of this message is the text of a letter to
>>>>> President George W. Bush with an attached letter to President Bush,
>>>>> House Speaker Nancy Pelosi and Senate Majority Leader Harry Reid and a
>>>>> biographical sketch. These letters describe the importance of nuclear
>>>>> power, some of the adverse consequences of government management, and
>>>>> suggestions for a new approach to avoid these adverse consequences and
>>>>> resolve America’s long neglected energy challenges and other
>>>>> problems - including some discussed in these proceedings. The
>>>>> biographical sketch provides further perspective on problems.
>>>>>
>>>>> Following are some other comments:
>>>>>
>>>>> 1. My work with leaders of the Russian Ministry for Atomic Energy and
>>>>> Russian Nuclear Workers Union strongly supports General Habiger’s
>>>>> assessment of the importance of the Nunn-Lugar legislation and Russia’s excellent personal security for nuclear weapons and nuclear materials. My

>>>>> assessments for many years of proliferation and proliferation threats
>>>>> worldwide indicate that the Soviet Union practiced much better
>>>>> proliferation resistance than other nations, including (particularly)
>>>>> the U.S.
>>>>>
>>>>> 2. Statements about Iran's nuclear program on the top of page 13
>>>>> suggest need for better understanding. In 1970, when the US lost the
>>>>> ability to produce enough oil to meet US demands and recognized that
>>>>> the world would lose the ability to produce enough oil to meet world
>>>>> demands in a few decades, President Richard M. Nixon made a commitment
>>>>> to full and efficient use of nuclear resources. Iran, then a strong
>>>>> US ally, made a similar commitment, was promised technology (including
>>>>> reprocessing technology) to support this commitment by the US
>>>>> Department of State, and ordered five large nuclear power plants from
>>>>> GE and Westinghouse. The AEC in 1972 denied reprocessing technology
>>>>> (Leaders of the AEC had realized by this time that technology used for
>>>>> commercial reprocessing and provided to other nations was flawed and
>>>>> inappropriate.) and was supported by President Nixon. Furious, Iran
>>>>> cancelled the orders for US nuclear power plants and ordered them from
>>>>> France and Germany, who agreed to supply reprocessing technology. Many
>>>>> believe that the oil embargo of the US in 1973 was a response to the
>>>>> denial, and of course was a much-needed warning to the US. Some
>>>>> believe that the conflict over the initial promise and the subsequent
>>>>> denial of technology was an important factor than weakened the Shah
>>>>> regime and led to its overthrow by religious extremists.
>>>>>
>>>>> Leaders of Iran have continued their strong belief in need for nuclear
>>>>> power (at $75/barrel, who would burn oil to produce electricity?), and
>>>>> may not feel comfortable relying on non-Muslim nations for materials
>>>>> and technology essential for that need.
>>>>>
>>>>> US intelligence on nuclear proliferation has been dominated by DOE and
>>>>> predecessor agency laboratory scientists and is notoriously poor. (See
>>>>> my letter in the May 2007 issue of Nuclear News.)
>>>>>
>>>>> Iran may or may not have plans and programs for nuclear weapons -
>>>>> after all, Israel does, courtesy of France and to a lesser extent,
>>>>> Canada. But its religious leaders have outlawed nuclear weapons for
>>>>> Iran.
>>>>>
>>>>> A difficult problem, but based on my experiences as technical leader
>>>>> of the US nonproliferation initiative with India during the Carter
>>>>> Administration, the problem is best approached as one whose resolution
>>>>> will likely lead to a better potential for the future, which requires
>>>>> dialogue among well-informed representatives and full appreciations of
>>>>> each others' real and perceived needs.
>>>>>
>>>>> 3. I had lead responsibilities in the AEC for US nuclear weapons
>>>>> programs and share Hans Bethe's belief that producing a multi kiloton
>>>>> nuclear weapon is not as easy as indicated by some of the panel
>>>>> members. A gun-type weapon is fairly simple, but requires about 100
>>>>> pounds of highly enriched uranium. Use of plutonium requires an
>>>>> implosion type, which is very sophisticated. It is my understanding
>>>>> that North Korea's explosive had a very small yield.
>>>>>
>>>>> 4. North Korea's nuclear power program was similar to initial
>>>>> nuclear power programs of France, Japan and Britain. North Korea had
>>>>> signed the NonProliferation Treaty and the reactor was fully
>>>>> safeguarded by the IAEA. My guess is that North Korea's withdrawal
>>>>> from IAEA safeguards and production and test of a nuclear explosive
>>>>> was a response to being lumped with others into an axis of evil, its

>>>>> long isolation and paranoia from that isolation. Dialogue is
>>>>> essential and should resolve the problem.
>>>>>
>>>>> 5. There were statements that Ukraine, Belarus and Kazakhstan
>>>>> volunteered to give up all of their nuclear weapons. Weapons in these
>>>>> nations were controlled by Soviet Military forces, which were
>>>>> controlled by Moscow. When Soviet military forces became Russian
>>>>> military forces and left Ukraine, Belarus and Kazakhstan, they took
>>>>> their nuclear weapons with them.
>>>>>
>>>>> 6. The planned repository at Yucca Mountain, like the permanent
>>>>> repository at Hanford, WA, the 100-year repository at West Valley, NY,
>>>>> and that proposed earlier for Lyons, Kansas, is in the Vadose Zone,
>>>>> and relies on distance from populations, engineering barriers and
>>>>> scientific study to assure safety. It is safe for disposal of nuclear
>>>>> wastes, but consideration should be given to disposal of future wastes
>>>>> in bedrock, which has formidable, measurable geologic barriers that
>>>>> ensure isolation. It is the only disposal method endorsed by a
>>>>> committee appointed by a state governor.
>>>>>
>>>>> 7. Mr. Cirincione expresses concern about encouraging the production
>>>>> of plutonium in the world. Each large nuclear power plant produces
>>>>> enough plutonium-239 each year to produce 25 nuclear weapons. Used
>>>>> fuel planned for delivery and storage or disposal at Yucca Mountain
>>>>> contains enough plutonium-239 for about 100,000 nuclear weapons and
>>>>> neptunium-237 for about 15,000 more. America should be focusing on
>>>>> institutions, corporations, policies, and programs for addressing this
>>>>> issue - plus using the energy source that could supply all of the
>>>>> electricity needs for America, at present usage, for hundreds of
>>>>> years.
>>>>>
>>>>> DuPont designs for a fuel reprocessing and refabrication complex would
>>>>> have if pursued avoided access to and accumulation of separated
>>>>> plutonium. The plutonium might or might not be separated from uranium,
>>>>> but would be recombined while still in the remotely operated, remotely
>>>>> maintained environment to concentrations needed for use in existing or
>>>>> advanced nuclear power plants. This facility also had formidable
>>>>> design features that precluded access to operating areas by unwanted
>>>>> persons. Costs for reprocessing would have been about one-fourth to
>>>>> one-third of current charges.
>>>>>
>>>>> 8. The process being pursued in the US and internationally for
>>>>> controlled use of nuclear fusion occurs at 50 to 100 million degrees.
>>>>> There are no materials that will withstand these temperatures. The
>>>>> processes also generate enormous forces that are contained in the Sun
>>>>> (most of the time) by enormous gravitational forces. There are no
>>>>> forces on Earth comparable to those of gravity on the Sun. The
>>>>> experiments planned, like those of the past, will demonstrate that
>>>>> fusion materials (tritium and deuterium) can be contained and their
>>>>> energy levels elevated until reactions occur - and that more energy
>>>>> can be produced than was used to heat and contain the materials prior
>>>>> to the reactions. But then the reactions are blown apart and stop.
>>>>> Not one milliwatt of usable power has been or ever will be produced.
>>>>> The experiments will not provide the science that is needed for
>>>>> nuclear fusion to generate electricity. The late Chauncey Starr,
>>>>> President for many years of the Electric Power Research Institute,
>>>>> described support for nuclear fusion as an anti nuclear action. I
>>>>> agree.
>>>>>
>>>>> 9. Admiral Hyman Rickover, father of the Nuclear Navy, stressed the
>>>>> importance of knowledge of and attention to details. My keynote

>>>>> address at the international conference on nuclear safety held in
>>>>> Moscow to commemorate the tenth anniversary of the Chernobyl accident,
>>>>> pointed out that:
>>>>> ● Workers - craftsmen, designers, engineers, plant operators,
>>>>> scientists, firefighters, maintenance workers, medical and safety
>>>>> personnel and others - have the detailed knowledge that is essential
>>>>> for safe, successful and environmentally benign operation of nuclear
>>>>> facilities, and management of nuclear materials to assure no
>>>>> diversion.
>>>>> ● The Chernobyl nuclear power plant and Challenger space shuttle
>>>>> accidents would not have occurred if managers had listened to and
>>>>> properly resolved concerns of engineers.
>>>>> ● DuPont achieved world safest and most successful nuclear facility
>>>>> operations at the Savannah River Plant for the USAEC because managers
>>>>> listened regularly and carefully to worker concerns and resolved those
>>>>> concerns as appropriate, and members of the DuPont Board of Directors
>>>>> listened to those most knowledgeable on projects prior to their
>>>>> approval for important changes.
>>>>>
>>>>> The Russian Ministry for Atomic Energy and Russian Nuclear Workers
>>>>> Union formally adopted my ideas for partnerships to ensure that best
>>>>> knowledge was incorporated into management decisions.
>>>>>
>>>>> America needs more knowledge and attention to details at the highest
>>>>> and other decision-making levels.
>>>>>
>>>>> Here are the letters and sketch that I mentioned. Note particularly
>>>>> the footnotes at the end of the sketch.
>>>>>
>>>>> Clinton Bastin, Chemical Engineer, US Department of Energy (Retired)
>>>>> 987 Viscount Court, Avondale Estates, Georgia 30002
>>>>> Telephone 404 297 2005 E-Mail clintonbastin@bellsouth.net
>>>>>
>>>>> September 10, 2007
>>>>>
>>>>> The President
>>>>> The White House
>>>>> Washington, DC 20500
>>>>>
>>>>> Dear Mr. President:
>>>>>
>>>>> The attached letter to you, House Speaker Nancy Pelosi and Senate
>>>>> Majority Leader Harry Reid provides additional information about the
>>>>> following energy and nuclear technology issues:
>>>>>
>>>>> ● Since the collapse of the Soviet Union, America is the only nation
>>>>> that tries to manage energy and nuclear technology by a government
>>>>> department. Government management lacks the incentive of corporate
>>>>> enterprise and incurs no penalty for failure, misinformation or other
>>>>> problems. Successful programs of the Atomic Energy Commission were
>>>>> managed by experienced corporations with corporate oversight
>>>>> comparable to that for their commercial activities.
>>>>> ● America is also the only major industrialized nation that does not
>>>>> have a high tax on gasoline as an incentive for its efficient use and
>>>>> to fund transition to use of more viable energy sources.
>>>>> o America, with 5% of the world's population, uses 25% of the world's
>>>>> oil.
>>>>> ● Nuclear power is our safest, least polluting and potentially most
>>>>> abundant energy source
>>>>> ● Reprocessing is essential for efficient use of nuclear resources
>>>>> and responsible disposal of nuclear wastes. Reprocessing by DuPont

>>>>> was successful; that by others was not. Use and export of laboratory
>>>>> reprocessing technology resulted in failure of reprocessing in the US
>>>>> and proliferation, proliferation threats and problems in other
>>>>> nations. DuPont nuclear fuel recycle facility designs provided to DOE
>>>>> in 1978 would have resolved problems. The DOE's technical plan for
>>>>> reprocessing to support Global Nuclear Energy Partnership is
>>>>> inadequate.
>>>>> ● Many energy alternatives supported by DOE have limitations such as
>>>>> low energy density and time availability or require more energy to
>>>>> produce than can be obtained from their use
>>>>> ● Coal is abundant but will be needed to produce fluid fuels and
>>>>> chemicals.
>>>>> ● There is no scientific basis for a conclusion that nuclear fusion
>>>>> can provide usable energy on earth
>>>>> ● A better approach is needed to resolve long-neglected energy and
>>>>> nuclear technology challenges and avoid the adverse consequences of
>>>>> government management. Systems needed include:
>>>>> 1. The United States Energy and Nuclear Technology Board
>>>>> 2. The United States Nuclear Materials Production and Processing
>>>>> Corporation
>>>>> 3. High-speed inter- and intracity rail powered by electricity from
>>>>> nuclear power plants
>>>>> 4. Development of coal gasification and liquefaction technology
>>>>> 5. Increased taxes on gasoline and other petroleum products
>>>>> 6. Full and accurate information to Americans about energy and nuclear
>>>>> technology
>>>>> 7. Investigation of sites where geologic formations provide
>>>>> formidable, measurable barriers that ensure long-term isolation of
>>>>> nuclear wastes
>>>>> 8. Full and efficient use of nuclear materials for energy
>>>>>
>>>>> Mr. President, government management of complex energy and nuclear
>>>>> technology has cost Americans trillions of dollars. It has resulted
>>>>> in loss of important programs and capabilities and delayed the
>>>>> transition from overdependence on imported oil. It will result in
>>>>> devastation to our children and grandchildren unless there are major
>>>>> changes. I hope that you will provide leadership for needed changes
>>>>> and would be pleased to help and provide more information. The
>>>>> attached biographical sketch provides additional perspective on some
>>>>> of the issues.
>>>>>
>>>>> Best wishes!
>>>>>
>>>>> Sincerely
>>>>>
>>>>> Clinton Bastin
>>>>>
>>>>> The President Honorable Nancy Pelosi Honorable
>>>>> Harry Reid
>>>>> The White House Speaker of the House Senate Majority
>>>>> Leader
>>>>> Washington, DC 20500 Washington, DC 20515 Washington, DC 20510
>>>>>
>>>>> Dear Mr. President, Madame Speaker and Senator Reid:
>>>>>
>>>>> Nuclear power is safe, nonpolluting and the only energy source
>>>>> available in quantities that will permit transition from
>>>>> overdependence on imported oil and natural gas (Footnote: Solar and
>>>>> wind energy are limited by their low energy density and time
>>>>> availability. Hydrogen and most biofuels require more energy to
>>>>> produce than can be obtained from their use. Hydrogen has a low energy

>>>>> density and is more difficult and dangerous to use for transportation
>>>>> than liquid fuels. There is no scientific basis for a conclusion that
>>>>> fusion energy can ever be controlled for beneficial use on Earth.
>>>>> Coal is abundant but will be needed to produce fluid fuels and
>>>>> chemicals. Hydropower is among the most ecologically damaging of any
>>>>> energy source. Geothermal energy is limited by its distance and
>>>>> isolation.).
>>>>>
>>>>> Nuclear power plants were derived from US Navy nuclear propulsion
>>>>> systems, which have operated with great safety and reliability. But
>>>>> many nuclear power plant operators did not adopt the Nuclear Navy
>>>>> commitment to management excellence, which includes full understanding
>>>>> of and attention to details. Problems resulting from this included
>>>>> the accident at Three Mile Island and cost overruns in constructing
>>>>> nuclear power plants. Nuclear power plant operators responded to these
>>>>> problems by creating the Institute of Nuclear Power Operations which
>>>>> has coordinated commitment to management excellence similar to that
>>>>> used for the US Nuclear Navy. Improvement to safety, radiation
>>>>> protection and productivity have been profound. America will be well
>>>>> served by nuclear power plant operators building and operating many
>>>>> new nuclear power plants.
>>>>>
>>>>> But existing and planned nuclear power plants use less than 1% of the
>>>>> energy in uranium and do not use more abundant thorium. Also, nuclear
>>>>> wastes resulting from nuclear power plant operation must be separated
>>>>> from energy/weapons materials to permit full use of energy materials
>>>>> and disposal of waste without need for indefinite safeguards, which
>>>>> cannot be assured.
>>>>>
>>>>> Nuclear power began with full expectation that reprocessing would be
>>>>> done to permit more efficient use of nuclear resources and disposal of
>>>>> nuclear wastes. Successful reprocessing experience of DuPont at the
>>>>> Savannah River Plant gave full assurances that reprocessing of nuclear
>>>>> power plant fuels would be successful. The initial program of the US
>>>>> Atomic Energy Commission was for return of used nuclear power plant
>>>>> fuel to the SRP for reprocessing in H Canyon. In order to limit
>>>>> nuclear weapons proliferation, the AEC program also included return of
>>>>> used fuel from other nations, and clearance was received from Ports
>>>>> Authorities throughout America for the import of this fuel.
>>>>> Unfortunately, some AEC officials believed that reprocessing in the
>>>>> Idaho Chemical Processing Plant had been successful, promoted its use
>>>>> for commercial reprocessing in the US and exported its technology to
>>>>> other nations. An important AEC report published in 1957 claimed that
>>>>> ICPP productivity had been 80%, but its productivity had been less
>>>>> than 3%. The report was prepared by national laboratory scientists who
>>>>> had directed construction and initial operation of the ICPP. As a
>>>>> result of ICPP failure, H Canyon at SRP had to be modified to
>>>>> reprocess highly enriched uranium fuels to prevent disruption in
>>>>> tritium supply needed for nuclear deterrence.
>>>>>
>>>>> The AEC program for receipt and reprocessing of used nuclear fuel was
>>>>> cancelled in 1962 when nuclear power plant operators accepted
>>>>> information from the AEC about success of low-cost reprocessing
>>>>> technology that had failed.
>>>>>
>>>>> Use and export of the flawed reprocessing technology led to failure of
>>>>> commercial reprocessing in the US, proliferation in India,
>>>>> proliferation threats and problems in other nations and a model for
>>>>> other nations to follow that would lead to more threats and other
>>>>> problems.
>>>>>

>>>>> During its final years, the AEC carried out reviews of reprocessing to
>>>>> learn from its successes and failures and made changes to build on
>>>>> successes instead of failures. DuPont was asked to manage programs
>>>>> for reprocessing and recycle of nuclear power plant fuels. Integrated
>>>>> fuel reprocessing and recycle facility designs that would have
>>>>> resolved problems and concerns were completed by DuPont and provided
>>>>> to the Department of Energy in 1978.
>>>>>
>>>>> Unfortunately, after AEC programs were transferred to the Energy
>>>>> Research and Development Administration and later the Department of
>>>>> Energy, nuclear fuel reprocessing and recycle programs were reassigned
>>>>> to nuclear reactor program managers who had little understanding of
>>>>> the challenges of safe, sustained reprocessing. They rejected DuPont
>>>>> information in order to support reprocessing with flawed technology
>>>>> and development of other laboratory concepts with no potential for
>>>>> success.
>>>>>
>>>>> President Jimmy Carter's indefinite deferral of reprocessing for
>>>>> commercial nuclear fuels reflected typical lack of understanding by
>>>>> nuclear engineers of the difference between well-designed,
>>>>> well-managed reprocessing by DuPont, and that of DOE and predecessor
>>>>> agency national laboratories.
>>>>>
>>>>> The Department of Energy's program for Global Nuclear Energy
>>>>> Partnerships recognizes the need for a complete fuel cycle to support
>>>>> nuclear power, and cooperation among nations to achieve success and
>>>>> avoid nuclear weapons proliferation and proliferation threats.
>>>>> Unfortunately, DOE's technical plan for nuclear fuel cycle facilities
>>>>> to support GNEP continues the management style that has plagued use of
>>>>> nuclear technology in America for more than 50 years.
>>>>>
>>>>> The August 9 response of the DOE GNEP office to my July 4 letter
>>>>> about reprocessing is a reminder of the problem: Since the collapse
>>>>> of the Soviet Union, America is the only nation trying to manage
>>>>> energy and nuclear technology by a government department. Since
>>>>> America works through competent corporate enterprise, government
>>>>> management works against America's interests. It also lacks the
>>>>> incentive of corporate management and incurs no penalty for failure or
>>>>> other problems.
>>>>>
>>>>> This letter describes problems with the GNEP response, some of the
>>>>> adverse consequences of government management, and need and ideas for
>>>>> a new and better approach to resolve America's long-neglected energy
>>>>> and nuclear technology challenges.
>>>>>
>>>>> The GNEP office response says that "experienced process engineers
>>>>> have prepared conceptual facility designs that will help GNEP evaluate
>>>>> alternatives for industrial participation." This will be of little
>>>>> value because facility design is the domain of design engineers, not
>>>>> process engineers. The problem is made worse by limited understanding
>>>>> of the challenges of safe, sustained reprocessing of large quantities
>>>>> of used nuclear fuel by DOE managers and likely industrial
>>>>> participants.
>>>>>
>>>>> From 1964 through 1971, I participated in design reviews for
>>>>> modifications to Savannah River Plant reprocessing facilities. These
>>>>> reviews were conducted by senior design officials of the DuPont
>>>>> Engineering Department in DuPont corporate offices. I gained full
>>>>> appreciation of the importance and challenges of good facility design.
>>>>> I also learned to look carefully at designs for modifications to
>>>>> reprocessing facilities that were conducted by plant personnel, not

>>>>> corporate design officials.
>>>>>
>>>>> All successful reprocessing facilities in the United States were
>>>>> designed by or under the direction of DuPont design officials.
>>>>> Hanford PUREX was designed by former DuPont Company engineers who
>>>>> remained at Hanford after DuPont left. Senior corporate officials of
>>>>> General Electric Company were not involved. Hanford PUREX had major
>>>>> design flaws and was shut down in 1972.
>>>>>
>>>>> In 1974, I participated in a design review of planned modifications of
>>>>> the Idaho Chemical Processing Plant to permit demonstration of High
>>>>> Temperature Gas-cooled Reactor (HTGR) fuel reprocessing. The Atomic
>>>>> Energy Commission had made a commitment to General Atomics Corporation
>>>>> for the process demonstration to support HTGR commercialization. The
>>>>> design was carried out by process engineers. I described major flaws
>>>>> that would lead to failure of the demonstration to Alan Womack, AEC
>>>>> Director for HTGR program support. Subsequent review by an AEC task
>>>>> force and design studies by a competent engineering design corporation
>>>>> for General Atomics confirmed the problems. The planned demonstration
>>>>> was cancelled and General Atomics abandoned plans to commercialize
>>>>> HTGRs. I can provide more details. DOE Assistant Secretary for
>>>>> Nuclear Energy Dennis Spurgeon was a senior official of General
>>>>> Atomics during this time period and can also provide more details.
>>>>>
>>>>> My 1996 Global Foundation (Footnote: Center for Theoretical Studies,
>>>>> University of Miami) paper “United States Nuclear Technology - Need
>>>>> for a New Approach” describes the great benefits of nuclear
>>>>> technology, lists problems resulting from government management of
>>>>> nuclear technology and suggests ideas for a new approach based on
>>>>> lessons learned from experiences so that full benefits may be
>>>>> achieved. An update of that paper to resolve long-neglected energy and
>>>>> nuclear technology challenges is summarized on the nest two pages of
>>>>> this letter.
>>>>>
>>>>>
>>>>>
>>>>> 1. The great benefits and potential benefits of nuclear technology
>>>>> include:
>>>>>
>>>>> ● Abundant, clean, safe, cost-effective energy whose full and
>>>>> efficient use will permit an end to our dangerous addiction to
>>>>> imported oil and natural gas
>>>>> ● Medical diagnosis and treatment
>>>>> ● Exploration of deep space
>>>>> ● National and global security
>>>>> ● Many industrial and agricultural applications
>>>>>
>>>>> 2. Problems from government management of energy and nuclear
>>>>> technology include:
>>>>>
>>>>> ● Long neglect of energy challenges
>>>>> ● Thirty-three year moratorium on new nuclear power plants
>>>>> ● An excessive amount of time, money and scientific study spent on a
>>>>> nuclear waste repository
>>>>> ● Nuclear weapons proliferation and proliferation threats from
>>>>> America’s “Atoms for Peace”
>>>>> ● Failure and indefinite deferral of used nuclear power plant fuel
>>>>> reprocessing
>>>>> ● Rejection of nuclear fuel recycle concepts that would have resolved
>>>>> problems and concerns
>>>>> ● Loss of competent corporations that managed successful programs

>>>>> ● Thirty to forty year delay in use of more energy efficient
>>>>> technology for uranium enrichment
>>>>> ● No realistic plan for development of technology for full and
>>>>> efficient use of nuclear resources and responsible disposal of nuclear
>>>>> wastes
>>>>> ● Loss of capability to produce nuclear materials essential for
>>>>> medicine, space exploration, defense and other applications, and gross
>>>>> violation of good nonproliferation practice by production of
>>>>> nuclear materials for defense in nuclear power plants
>>>>> ● Wasteful expenditures for development and subsidies for energy
>>>>> systems that have little or no potential for supplying significant
>>>>> amounts of usable energy
>>>>> ● Wasteful expenditures resulting from gross exaggerations of the
>>>>> dangers of nuclear wastes stored at DOE sites in order to obtain
>>>>> funding for jobs that provide no value
>>>>> ● Flawed environmental review processes.
>>>>> ● Poor assessment of nuclear proliferation threats.
>>>>> ● Americans, their news media, political leaders, and educational
>>>>> institutions that are poorly informed about energy and nuclear
>>>>> technology issues
>>>>> ● Loss of credibility of nuclear technology with many US citizens and
>>>>> corporations
>>>>> ● Virtually no understanding of experiences that is needed to learn
>>>>> and apply important lessons
>>>>> ● No investigation or other effort for disposal of nuclear wastes in
>>>>> locations where geologic formations provide formidable, measurable
>>>>> barriers to ensure long-term isolation ● America's energy and
>>>>> nuclear policies are not based on best technology
>>>>> ● Huge trade and budget deficits
>>>>> ● Inability to learn from experiences
>>>>> ● "Stove-pipe" organizations that are largely isolated from senior
>>>>> officials. An example is initial supply of US "Atoms for Peace."
>>>>> The US supplied heavy water to India to moderate a reactor supplied by
>>>>> Canada that was similar to one used to produce plutonium for US
>>>>> nuclear weapons, under a mutual security agreement. The US then
>>>>> provided ICPP reprocessing technology and a plant design that India
>>>>> used to recover plutonium for its nuclear explosive test in 1974.
>>>>>
>>>>>
>>>>> 3. New systems that are needed by America to resolve long-neglected
>>>>> energy and nuclear technology issues include:
>>>>>
>>>>> ● The United States Energy and Nuclear Technology Board. This
>>>>> nine-member board with ex-officio members and those appointed by you
>>>>> with the advice and consent of The Senate would meet periodically to
>>>>> review energy and nuclear policies and programs to ensure that they
>>>>> address America's needs and are functioning on a sound basis,
>>>>> recommend changes as appropriate and ensure that Americans are
>>>>> provided full and accurate information about energy and nuclear
>>>>> technology issues. Staff of this board would facilitate its
>>>>> activities, but would not attempt to manage energy or nuclear
>>>>> programs.
>>>>> ● The United States Nuclear Materials Production and Processing
>>>>> Corporation. DuPont designed, built and operated the world's safest
>>>>> and most comprehensive complex for production and processing of
>>>>> nuclear materials for the US Atomic Energy Commission at the Savannah
>>>>> River Plant in South Carolina. DuPont also conducted the only
>>>>> investigation for disposal of nuclear wastes in which geologic
>>>>> formations provided formidable, measurable assurances for isolation
>>>>> for geologic periods or time, and the only disposal plan that was
>>>>> endorsed by a committee appointed by a state governor. Materials

>>>>> produced or produced and processed included deuterium, deuterium oxide
>>>>> (heavy water), tritium, helium-3, calcium-41, cobalt 60, tin-121,
>>>>> cerium-138, cerium-139, europium-152, holmium-166, thulium-170,
>>>>> polonium-210, neptunium-237, uranium-233, plutonium-238,
>>>>> plutonium-239, plutonium-242, plutonium-244, americium-243,
>>>>> curium-244, berkelium-247 and californium-252. During the high flux
>>>>> operation of C-reactor to produce transcalifornium isotopes, a world
>>>>> record of seven quadrillion neutrons per second per square centimeter
>>>>> was set. The Multi-Purpose Processing Facility was built in F-Canyon
>>>>> to recover transcalifornium elements, but the program was terminated
>>>>> by AEC Chairman James Schlesinger in order to focus on production of
>>>>> plutonium for weapons - which were not needed. Chairman Schlesinger
>>>>> also terminated the investigation for disposal of nuclear wastes in
>>>>> bedrock in order to protect a planned but non-viable facility for
>>>>> production of weapons plutonium from a political attack. DuPont also
>>>>> designed facilities for reprocessing and recycle of used nuclear power
>>>>> plant fuels that would have resolved concerns that led to indefinite
>>>>> deferral of reprocessing. America needs much of the capability that
>>>>> was provided by DuPont. Leaders of America and the nuclear power
>>>>> industry should ask DuPont to help create and/or manage this
>>>>> corporation the way it managed AEC programs.
>>>>> ● High-speed inter-and intracity rail powered by electricity from
>>>>> safe, clean nuclear power plants. These are needed to end our
>>>>> addiction to imported oil, reduce atmospheric pollutants and carbon
>>>>> dioxide and relieve congestion in our airports and skies and on our
>>>>> roads and highways.
>>>>> ● Gasification and liquefaction of coal. Coal, our most abundant
>>>>> fossil fuel, will be needed to produce fluid fuels and chemicals.
>>>>> Development of technology for this was America's highest priority
>>>>> during the 1970s and should be a high priority for national security.
>>>>> ● Increased taxes on gasoline and other petroleum products. This is
>>>>> needed to pay for the transition from overuse of imported oil and as
>>>>> an incentive for its efficient use.
>>>>> ● Full and accurate information to Americans about energy and nuclear
>>>>> technology
>>>>> ● Investigation of sites where geologic formations provide
>>>>> formidable, measurable barriers that ensure long-term isolation of
>>>>> nuclear wastes
>>>>> ● Full and efficient use of nuclear materials for energy
>>>>>
>>>>> Mr. President, Madame Speaker and Senator Reid, government management
>>>>> of complex energy and nuclear technology has cost Americans trillions
>>>>> of dollars. It has resulted in loss of important programs and
>>>>> capabilities and delayed the transition from overdependence on
>>>>> imported oil. It will result in devastation to our children and
>>>>> grandchildren unless there are major changes. I hope that you will
>>>>> provide leadership for needed changes and would be pleased to help and
>>>>> provide more information. The attached biographical sketch provides
>>>>> additional perspective on some of the issues.
>>>>>
>>>>> Best wishes!
>>>>>
>>>>> Sincerely
>>>>>
>>>>> Clinton Bastin
>>>>>
>>>>> cc: The Vice President, The White House
>>>>> Honorable Sam Bodman, The Secretary of Energy
>>>>> Honorable Dennis Spurgeon, Assistant Secretary for Nuclear Energy, DOE
>>>>> Mr. Edward Sproat, Director, Office of Civilian Radioactive Waste
>>>>> Management, DOE

>>>>> Honorable Jeff Bingaman, Chair, Senate Energy and Natural Resources
>>>>> Committee
>>>>> Honorable Pete Domenici, Ranking, Senate Energy and Natural Resources
>>>>> Committee
>>>>> Honorable John Dingell, Chair, House Energy and Commerce Committee
>>>>> Honorable Joe Barton, Ranking, House Energy and Commerce Committee
>>>>> Honorable Saxby Chambliss, United States Senate
>>>>> Honorable John Isakson, United States Senate
>>>>> Honorable Hillary Clinton, United States Senate
>>>>> Honorable John McCain, United States Senate
>>>>> Honorable Barack Obama, United States Senate
>>>>> Senator Fred Thompson
>>>>> Mr. Newt Gingrich, former Speaker of the House
>>>>> Honorable Dale Klein, Chairman, US Nuclear Regulatory Commission
>>>>> Honorable Pete Lyons, Commissioner, US Nuclear Regulatory Commission
>>>>> Dr. Dan Tedder, US Nuclear Regulatory Commission
>>>>> Honorable Sonny Purdue, Governor of Georgia
>>>>> Dr. G. Wayne Clough, President, Georgia Institute of Technology
>>>>> Mr. Joe Irvin, Vice President and Executive Director, Georgia Tech
>>>>> Alumni Association
>>>>> Dr. Don Giddens, Dean, College of Engineering, Georgia Tech
>>>>> Dr. Ron Rousseau, Chair, School of Chemical and Biomolecular
>>>>> Engineering, Georgia Tech
>>>>> Dr. Nolan Hertel, Professor of Nuclear Engineering, Georgia Tech
>>>>> President Jimmy Carter, The Carter Center
>>>>> Mr. Charles O. Holliday, Jr., Chairman of the Board and Chief
>>>>> Executive Officer, DuPont
>>>>> Mr. Frank L. (Skip) Bowman, President and CEO, Nuclear Energy
>>>>> Institute
>>>>> Mr. J. Barnie Beasley, Jr., President, Southern Nuclear Company
>>>>>
>>>>> Biographical Sketch of Clinton Bastin
>>>>>
>>>>> Clinton Bastin is listed in the 2007 Edition of Who's Who in America,
>>>>> is Vice President for the USA of the World Council of Nuclear Workers,
>>>>> Chair of the Georgia Section of the American Nuclear Society and
>>>>> President of the Kiwanis Club of Northlake Golden K in Decatur, GA. A
>>>>> retired chemical engineer and nuclear scientist, he writes and talks
>>>>> to community groups and others and teaches courses at the Emory
>>>>> University Lifelong Learning Center about energy, the environment and
>>>>> nuclear technology.
>>>>> Mr. Bastin worked from 1955 to early 1972 as a chemical engineer for
>>>>> the US Atomic Energy Commission at the Savannah River Plant in Aiken,
>>>>> SC with lead responsibilities for
>>>>> ● heavy water production and supply to other nations (first US Atoms
>>>>> for Peace (footnote 1) (1955-57),
>>>>> ● quality assurance for tritium weapon components (1957-58),
>>>>> ● (As participant in a 1958 summer seminar for chemical engineering
>>>>> faculty on reprocessing and nuclear waste at AEC's Hanford site, he
>>>>> conducted tests that confirmed suitability of Hanford soils for
>>>>> permanent disposal of nuclear wastes (footnote 2) and learned about
>>>>> Hanford PUREX problems.)
>>>>> ● production and processing of plutonium-238 for space exploration
>>>>> (1958-61),
>>>>> ● disposition of used fuel from nuclear power plants in the US and
>>>>> other nations ((1959-61);
>>>>> ● successful reprocessing programs and storage and studies for
>>>>> disposal of nuclear waste (1962-72),
>>>>> ● tritium production, processing and loading into weapon components
>>>>> (1962-70),
>>>>> ● gas centrifuge development, including member of the AEC Steering

>>>>> Committee (1962-72),
>>>>> ● recovery in SRP facilities of plutonium from scrap generated at
>>>>> other AEC sites (1970-72),
>>>>> ● US coordinator for reprocessing technology exchange with the United
>>>>> Kingdom (1962-72),
>>>>> ● host for visits from other nations for limited technology exchanges
>>>>> on reprocessing (1962-72);
>>>>> ● briefings for Central Intelligence Agency staff on Worldwide
>>>>> Reprocessing Experience and Plans (1970-72),
>>>>> ● AEC point of contact for commercial reprocessing and that in other
>>>>> nations (footnote 3) (1966-72)
>>>>> ● Receipt of the first shipment of used fuel returned to the US from
>>>>> abroad, at Savannah GA (1964)
>>>>> ● Receipt at the Charleston Navy Yard and disposition at SRP of
>>>>> plutonium contaminated debris from the US Air Force nuclear weapons'
>>>>> accident at Palomares, Spain (1966)
>>>>> ● host for favorable review by General Accounting Office of nuclear
>>>>> waste management practices at the SRP - but final GAO report after AEC
>>>>> headquarters staff input was unfavorable (footnote 4) (1967-68)
>>>>> ● Disposition of plutonium contaminated debris from US Air Force
>>>>> nuclear weapons' accident at Thule, Greenland (1968)
>>>>> ● Participant in team for briefing of Nova Scotia's Premier about
>>>>> the Glace Bay, NS, heavy water plant failure (1969)
>>>>> ● Team leader for AEC plutonium facilities' safety review after
>>>>> major fire at Rocky Flats (1970)
>>>>> In 1972, he was asked to transfer to AEC headquarters to provide
>>>>> leadership for resolution of reprocessing plant problems, identified
>>>>> major problems with reprocessing programs at Hanford PUREX, Idaho
>>>>> Chemical Processing Plant, General Electric plant at Morris, IL and
>>>>> Allied-General plant in Barnwell, SC, and advised senior AEC officials
>>>>> of the problems. His work as chairman of an AEC task force on
>>>>> reprocessing culminated in a 1974 AEC decision to build on successes
>>>>> instead of failures and assignment of management for reprocessing
>>>>> programs to DuPont (footnote 5)
>>>>> Responsibilities at the headquarters office of the Energy Research and
>>>>> Development Administration and Department of Energy included:
>>>>> ● Chief, light water reactor fuel reprocessing branch (footnote
>>>>> 5)(1975-76)
>>>>> ● lead technical consultant to the International Atomic Energy
>>>>> Agency, Vienna, on its study of Regional Fuel Cycle Centers (1976)
>>>>> ● technical leader for US nonproliferation initiative with India
>>>>> (1977-79)
>>>>> ● consultant to national security agencies on proliferation threats
>>>>> (1970-83)
>>>>> ● headquarters program manager for Fast Flux Test Facility at Hanford
>>>>> (1978 and 1987)
>>>>> ● headquarters program manager for ORNL reprocessing and remote
>>>>> technology development (1979-82)
>>>>> ● Principle US Coordinator for collaborative nuclear fuel recycle and
>>>>> remote technology development with Japan Power Reactor and Nuclear
>>>>> Fuel Development Corporation (1982-94)
>>>>> ● Technical Program Manager for University and Small Business
>>>>> Innovation Research for robotics systems and advanced nuclear fuel
>>>>> recycle (1984-92)
>>>>> ● member of the Office of Nuclear Energy team that reviewed
>>>>> Challenger Space Shuttle Accident for lessons learned (1986)
>>>>> ● met with engineers from the Kurchatov (Reactor Design) Institute in
>>>>> Moscow who had complained to Soviet authorities about dangers of the
>>>>> Chernobyl Nuclear Power Plant (1986)
>>>>> ● member of the faculty for seminars on nuclear technology for future
>>>>> flag officers at the Industrial War College of the US Armed Forces

>>>>> (1988), and for nuclear journalists at the Knight School of Journalism
>>>>> at the University of Maryland (1989)
>>>>> ● testified before House Commerce Subcommittee on Oversight and
>>>>> Investigations (Ed Markey, D, MA, Chair) that a report on reprocessing
>>>>> prepared by Bechtel for Japan was not a compromise of good
>>>>> nonproliferation practice and that claims to the contrary by US
>>>>> General Accounting Office and DOE were inaccurate (footnote 6) (1990)
>>>>> ● National Security Agency briefings on Worldwide Reprocessing
>>>>> Experience and Plans (1990-96)
>>>>> ● developed criteria for evaluation of a planned demonstration of
>>>>> so-called "proliferation resistant" nuclear fuel cycle technology
>>>>> based on pyroprocessing (footnote 7) (1991)
>>>>> ● President of the Federal Employees Union (National Treasury
>>>>> Employees Union Chapter 228) representing DOE headquarters employees
>>>>> and editor of its award-winning newsletter (1983-96)
>>>>> ● testified before House Commerce Subcommittee on Energy (Joe Barton,
>>>>> R, TX, Chair) that DOE headquarters employee union partnership efforts
>>>>> with Energy Secretary Hazel O'Leary for major downsizing of DOE was
>>>>> being properly done to minimize adverse impact on employees and was in
>>>>> America's best interests (1996)
>>>>> ● delivered keynote address at international conference on nuclear
>>>>> safety in Moscow to commemorate tenth anniversary of the Chernobyl
>>>>> accident on "Importance of Labor-Management Partnerships to Safe
>>>>> Operation of Nuclear Power Plants and Nuclear Facilities" (1996)
>>>>> ● At retirement in March 1997 he received
>>>>> 1. the DOE's Distinguished Career Service Award recognizing him as
>>>>> "the U.S. authority on reprocessing and an advocate and initiator of
>>>>> total quality management and partnering agreements;
>>>>> 2. a note from Energy Secretary Hazel O'Leary saying "Thanks for the
>>>>> wonderful and productive partnership," and
>>>>> 3. a message from leaders of the Russian Ministry for Atomic Energy
>>>>> and Russian Nuclear Workers Union informing him that they had adopted
>>>>> his ideas for their plan to improve safety for nuclear activities
>>>>> through partnership and inviting him to address delegates to the first
>>>>> national convention of the 900,000-member Nuclear Workers Union.
>>>>> After delivery of the paper "Workers and Managers as Partners in
>>>>> Nuclear Programs - an Essential Key to the Future Greatness of Russia"
>>>>> in April 1997, delegates voted to adopt the plan
>>>>> ● Clinton Bastin's published papers include
>>>>> 1. "Nuclear Fission: Doomsday or Dream" (Chambersburg, Pennsylvania;
>>>>> Torch Club International runner up award for best paper of 1986)
>>>>> 2. "United States Nuclear Technology - Need for a New Approach"
>>>>> (Miami, 1996)
>>>>> 3. "Principles of Quality for Nuclear Technology: Essential for
>>>>> Sustainable Energy in a Clean Environment" (Washington, D.C., 1997)
>>>>> 4. "Nuclear Technology: Need for New Vision" (Washington, D.C., 1999)
>>>>> 5. Letter in MIT's Technology Review, April 1989, refuting false
>>>>> allegations of great danger of DOE stored radioactive wastes (footnote
>>>>> 8).
>>>>> 6. Letter in Issues in Science and Technology, Summer 1994, which
>>>>> points out that permanent disposal of unreprocessed spent fuel would
>>>>> be irresponsible
>>>>> 7. Letter in Science, August 18, 2000, which explains why reprocessing
>>>>> and fast reactor operation are essential for best nuclear
>>>>> nonproliferation practice, responsible programs for disposal of
>>>>> nuclear wastes and efficient use of nuclear resources. This letter
>>>>> also points out that DOE leaders in the late 1970s and early 1980s
>>>>> rejected Du Pont facility designs based on best technology that would
>>>>> have assured meeting these objectives and resolving major problems
>>>>> 8. "Criteria for Partitioning and Transmutation of the Fissionable
>>>>> Material Byproducts of Nuclear Power," coauthored with Daniel W.

>>>>> Tedder, Associate Professor of Chemical and Biochemical Engineering at
>>>>> Georgia Tech, presented at the American Nuclear Society Winter Meeting
>>>>> on November 17, 2003, and published in the proceedings of the meeting.
>>>>> Clinton Bastin was a US Marine during World War II and an instructor
>>>>> in chemistry for the Marine Corps Institute. He graduated as a
>>>>> Chemical Engineer from the Georgia Institute of Technology in 1950.
>>>>> From June 1950 until September 1955 he worked as a fire protection
>>>>> engineer for South-Eastern Underwriters Association inspecting special
>>>>> fire protection installations, evaluating municipal fire fighting
>>>>> capability and investigating fires and accidents. He lives in
>>>>> Avondale Estates, GA with his wife Barbara; they have two sons, two
>>>>> daughters and one grandson
>>>>> September 6, 2007
>>>>>
>>>>> NOTES
>>>>>
>>>>> 1 Heavy water was supplied to other nations - including India - to
>>>>> moderate reactors supplied by Canada that were based on that operated
>>>>> by Canada to produce plutonium for US weapons. The US provided
>>>>> reprocessing technology and a design to India that was used to recover
>>>>> plutonium used in its 1974 nuclear explosive test.
>>>>> 2 False claims that off-site personnel could be exposed to significant
>>>>> amounts of radioactivity from this repository have resulted in
>>>>> wasteful expenditures of scores of billions of dollars and plans to
>>>>> waste many more.
>>>>> 3 This program was cancelled in 1962 when nuclear power plant
>>>>> operators excepted gross misinformation from the AEC about the success
>>>>> of a laboratory reprocessing concept that had failed. See endnote 1.
>>>>> 4 See Endnote 2. These claims were made and false claims of others
>>>>> not corrected in order to justify jobs, promotions, etc. See also
>>>>> endnotes 6 and 8.
>>>>> 5 The assignment to DuPont and my assignment as Chief, LWR Fuel
>>>>> Reprocessing Branch were cancelled when nuclear program managers of
>>>>> ERDA decided to support non-viable laboratory concepts, and
>>>>> development of other laboratory concepts that were not viable.
>>>>> 6 The false claims were made to justify a larger organization - jobs,
>>>>> promotions, etc.
>>>>> 7 No one has ever challenged assessment of the non-viability of this
>>>>> technology, but the DOE continues to fund and claim proliferation
>>>>> resistance.
>>>>> 8 False information from the original article in MIT's Technology
>>>>> Review was published in but never corrected by The Washington Post.
>>>>> Scores of billions of dollars have been wasted for dangerous work that
>>>>> has no value.
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Created By: clintonbastin@bellsouth.net

Recipients:
"Daniel Tedder" <DWT1@nrc.gov>
Tracking Status: None
"Yawar Faraz" <Yawar.Faraz@nrc.gov>
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