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From: w d peterson <paengineers@juno.com>
To: <dlm1@nrc.gov>
Date: Thu, Sep 21, 2000 5:52 PM
Subject: Money for 2002 Olympics, Storage of Spent Nuclear Fuel, compromise

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September 21, 2000

Senator John McCain
c\o Gretchen Post and Scott Gould
Committee for the Funding of the 2002 Olympics

Subject: Compromise, Funding for Utah improvements related to 2002 Olympics
Utah's Acceptance and Funding for Interim Storage of Spent Nuclear Fuel

Dear Senator McCain,

Why not give Utah some slack on the money for roads for the Olympics if they will accept storage of spent nuclear fuel (SNF)? With your help this might be negotiated.

The country needs a healthy nuclear power industry, which is held up on this issue. The world needs to move away from fossil fuels to limit global warming, and the only feasible alternative for the near future is nuclear. Global warming will be the twenty first century scourge, especially if we refuse to act now.

The time for decisions and planning for the Olympics is already well along--too far for a change of venue now regardless of the Salt Lake Scandall.

The time for planning for SNF storage is also far gone. It is urgent that one of the two sites in Utah be approved and built, in spite of Gov. Leavitt's opposition.

Can you help?

Sincerely yours,

William D. Peterson, Dr. Steven Barrowes
Dr. Gary Sandquist, Layne Beeney

Enc.: Nuclear Power is the Solution - Dr. Gary Sandquist
Questions and Answers - Dr. Steven Barrowes

cc: NRC, DOE, UTAH, SLOC, PSF and Goshute Indians
Senator Frank Murkowski

ERIDS-03
Add Scott Flanders (SCF)

Template ADM-013

Senator Orrin Hatch
Senator Robert Bennett
Richard Stallings, former Nuclear Negotiator, Congressman, Idaho

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The Salt Lake Tribune UTAH/WORLD Friday, November 13, 1998

Critics Say U.S. OK of Treaty Isn't Enough

THE ASSOCIATED PRESS

-- BUENOS AIRES, Argentina --The United States' signing of a global-warming accord Thursday energized last-hour talks in Argentina on how to implement the treaty's key provisions, for Cutting pollutants.

But critics said U.S. intentions, conveyed at the environmental summit by Undersecretary Of State Stuart Eizenstat, appeared short on concrete action. The United States -- the world's largest polluter -- was the last of the major industrial nations to sign the agreement reached last December in Kyoto, Japan.

The accord calls for reductions in heat-trapping gases by industrialized nations by 2012.

The U.S. signing, which took place Thursday at U.N. headquarters in New York, is largely symbolic because it still needs to be ratified by Congress,
where it faces firm opposition.

Developing nations, which are not legally bound to emissions targets under the treaty but are under pressure to participate, say the ,United States isn't taking climate change seriously enough.

The developing nations say emission controls place a greater burden on their economies than on the United States' -- and they generally oppose controls.

But on Wednesday, Argentina became the first major developing nation to promise voluntary action to curb green house gasses, a move seen as a break-through by U.S. officials.

China and India, two of the biggest contributors of greenhouse-gas pollution, have steadfastly refused to participate.

Eizenstat told representatives of more than 160 countries in Buenos Aires that Washington was promoting new energy-efficiency standards for appliances, and cleaner technologies for industry, but gave few other specifics on how the United States would cut emissions.

Alden Meyer Of the Washington-based Union of concerned Scientists praised the signing but said the united States needs to do more to cut pollution from
coal burning power plants and cars.

"If' we had to grade Eizenstat, we'd give him an 'incomplete' on [cleaning up] power plants," he said. "And he does nothing to deal with our gas-guzzling passenger-vehicle fleet."

Sen. Joe Lieberman, D-Conn., a treaty proponent, said the signing was essential for the United States if it wants to be a ,"full player" as the talks near their conclusion.

By signing the agreement, the administration confers on the United States the authority and credibility it needs to continue its leadership role," he said.

The Salt Lake Tribune OPINION Sunday, December 20, 1998

Nuclear Power Is the Only Way for U.S. to Cut Its Greenhouse

BY GARY M. SANDQUIST

No longer able to ignore the danger of climate change, the federal government wants to increase the use of renewable energy sources to limit global warming. Yet, while there's no argument that solar, wind and other renewable energy sources should be encouraged and supported, federal policy-makes are deluding themselves if they think nuclear power should or can be ignored in controlling greenhouse gas emissions.

Even the best solar photovoltaic cells developed to date are of limited value in providing the electrical power a developed nation demands. The fact is not something federal energy officials admit, particularly since President Clinton set a goal of installing 1 million solar energy systems on buildings across the country by the year 2010. The fact is that photovoltaic and other renewable energy sources (excluding hydrdelectric power) produce less than 1 percent of the nation's electricity and will remain only small contributors to the nation's energy supply for the foreseeable future.

If the United States really expects to reduce greenhouse emissions by 40 percent within the next two decades, as required by last December's Kyoto protocol on climate change that was signed in Japan, we will need a demonstrated and assured supply of non-carbon energy. Nuclear power is the only major source of electrical power that produces no carbon dioxide emissions or other greenhouse gases and will allow us to meet the Kyoto protocol.

Yet no new nuclear plants have entered commercial service in this country for six years, due in part to extensive regulation and endless construction delays and our national failure to resolve the high-level nuclear waste issue. The refusal of the Department of Energy to take the waste is a severe hindrance to existing and future nuclear plants and is a violation of the Nuclear Waste Policy Act. In fact, we have the technology to dispose of spent nuclear fuel safely today, but we do not have the technology to process the earth's atmosphere to reduce greenhouse gases.

The irony is that we are creating the very situation that the global warming treaty was designed to avoid. If existing nuclear plants that provide over 20 percent of our electrical Power are forced to shut down prematurely because of economic pressures aggravated by the waste problem, utilities will use more coal-fired plants' to provide the necessary power. This marked increase in the use of fossil fuels in electricity production will accelerate greenhouse emissions.

The Energy Information Administration, a branch of the U.S. Department of Energy, has warned that currently 24 nuclear plants might close prematurely, reducing U.S. nuclear capacity from approximately 100 Gigawatts to about half that by 2020.

To compensate for this loss using fossil fuels will increase carbon emissions 45 Percent above 1990 levels. And far greater quantities of sulfur dioxide and nitrogen oxide would be spewed into the atmosphere. Health authorities estimate that almost 100,000 U.S. residents die prematurely from air pollution each year.

The future need not be this way. John P. Holdren, professor of environmental policy at Harvard University, has cited the environmental benefits of nuclear power. He states that the very real dangers of climatic change have caused "people inside and outside the environmental community" to reconsider their opposition to nuclear power.

Apparently, Holdren alludes to the Natural Resources Defense Counsel (NRDC), considered by many to be the nation's most influential environment organization and a leader in the battle against global warming. Earlier this of year, the NRDC reached an agreement with New Jersey's largest utility to support full recovery of utility investments in nuclear plants that might be "stranded" and lost by electricity deregulation.

NRDC said the accord with the New Jersey Electric & Gas Co. in Newark made possible by the utility's "remarkable" past support for a campaign aimed at reducing pollution from coal-fired power plants in the Midwest. NRDC's support for the recovery of nuclear casts demonstrates that it believes the continued use of nuclear power is essential if we expect to stabilize and reduce carbon dioxide emissions.

Just preventing an increase in greenhouse gases will require an enormous effort, and we do not have the luxury of abandoning any energy source that can significantly reduce our dependence fossil fuels.

Congress needs to complete action on nuclear waste legislation that would establish a central storage facility for spent nuclear fuel at the former Nevada Test Site. Furthermore, we need a national policy to maintain both the current generation of nuclear plants and continue research and development of advanced nuclear plants."

An essentials start would be to renew the original 40 year operating licenses for current nuclear plants. Duke Power's Oconee Nuclear Station in South Carolina and Southern Nuclear's Hatch plant in Georgia are excellent candidates for license renewal. Both plants have outstanding operating records and are vital, contributors to the electrical power supply in their region.

If we are to ensure clean energy capabilities for the future and a viable U.S. economy that can compete in the world market place, we must start the license renewal process for nuclear power now.

Gary M. Sandquist is a professor and director of nuclear engineering at the University of Utah.

QUESTIONS FOR SPENT NUCLEAR FUEL DIALOGUE

At the latest hearing on the Goshutes' plan to store spent nuclear fuel (SNF) some concerned citizens expressed the need for a panel discussion or debate to help settle the scientific issues. I applaud their willingness. The following questions, with my answers, might be a suitable starting point. The Hill Air Force question could also be raised. The more agreement we can come to on answers to these, the more we might have a clear answer regarding the safety of moving SNF and storing it at Private Fuel Storage (PFS) or at Pigeon Spur (near the ghost town of Lucin).

Transportation: How dangerous is it? A family living next to the train tracks and leaning against the back fence every time a shipping cask full of SNF came by would have to watch 19,000 of them to get the equivalent of one chest x-ray or a four-hour plane trip (each 10 milirems). Contrary to anti-nuke claims, normal operation is not harmful to any bystander, not even one. More details on this are in a Salt Lake Tribune editorial of 8/13/00.

Background radiation: How much do we get, on average? Each year Utahns get about 360 milirems or the equivalent of 36 chest x-rays of background radiation, which comes mostly from radon gas seeping into basements (180 milirems), about 60 from cosmic rays, 50 from medical treatments, 30 from rocks and soil, and 40 from inside our bodies (from food, such as carbon 14 and potassium 40). The pioneers got a little less.

Train wrecks: How many and how dangerous? In shipping 3,000 shipments of SNF over 30 years, there have been eight accidents, four with fuel and four empty. None increased radiation exposure. In moving SNF to the Goshute reservation, about 50 accidents are projected by Dr. Marvin Resnikoff, half with loaded canisters. If there were 1,000 accidents with loaded canisters, according to a study commissioned by the Nuclear Regulatory Commission (NRC), "Transporting Spent Fuel," by William R. Lahs, about six would be "severe" enough to cause minor structural damage, 2.6 of them being dented or burned bad enough to cause an increase in radiation due to damage to shielding or containment. These would be minor increases of two or three times allowed levels, and easily remedied. With only 25 accidents expected with SNF, the change of having even one accident with a slight increase in radiation while filling PFS would be about one in 15,000. A chance of one in 400,000 while PFS fills up may be assigned for an accident so severe that 20 to 30 times the allowed amount of radiation occurs.

The BIG FLAW in these odds for "severe" accidents is that they are too high, because instead of the usual rail speeds, SNF rail shipments would be limited to a speed of 30 mph, and move in dedicated trains that would not carry chemical fuel or other hazardous chemicals. A team of experts would also travel near the train to handle any emergency.

The fabled accident that requires $14 to $320 billion for cleanup is simply not credible. It would involve a cask colliding at over 75 mph with a direct hit to a hard surface (not a glancing blow), followed by a sustained fire hot enough to oxidize or burn the zirconium cladding on any exposed fuel rods. The small amount of radioactive waste on the inside surface of the cladding would thus go up in smoke and contaminate a large area with the equivalent of fallout. However, with 30 mph dedicated trains this extremely severe accident would not be possible. No radioactive dust cleanup would be needed in any credible accident.

Could a canister "leak"? No. The fuel inside the rods is solid pellets of ceramic

(uranium dioxide), each about as large as two aspirin tablets or a small rock. These are inside stainless zirconium tubes called fuel rods, welded shut. The rods are arranged into bundles and sealed inside a stainless steel canister. We usually reserve the word "leak" for liquids, gases, or powders, which might escape through a small crack. In none of the credible "severe" accidents discussed above could any pellets escape. If any ever did escape, they could be located by Geiger counter and retrieved.

How safe is it for a worker near one storage cask? On the concrete storage pad, a worker within arm's length of one storage cask must get no more than 2.5 milirem/hour, according to regulations by the NRC. In eight hours he would get 20 milirem, his maximum safe amount for one day. Of course he would spend only the minimum time necessary, to keep his dose as low as reasonably achievable (ALARA).

How safe is it near a whole array of storage casks? The exposure is almost 7.5 milirems per hour, so the worker should limit his time inside the array to under 2.5 hours per day. Heavy lifting would of course be done by remote-handled cranes or cranes with the operator adequately shielded. Full-time residents in the Goshute village 4.5 miles away would get the equivalent of one chest x-ray every 20 years.

Could lightning or anything else cause a cask to melt down or explode? No. Nuclear fission reactions are not set off by heat, light, chemicals, electric sparks, lightning, or anything else except neutrons. The fuel rods are shipped with some neutron-absorbing materials built into the "basket" that holds the rods in place inside the canister. In addition to the fuel being partially used up ("spent") and there being no "moderator" to slow down the neutrons, this material stops more than enough neutrons to prevent and/or stop any chain reaction.

If a cask fell over in an earthquake, what could happen? The cask would lay there like a large boulder with a heat source inside. The air would not flow through naturally as it did, so it would heat up unless turned upright or fitted with a small fan to force cooling air through it. There would be at least seven days to stand it up or install a fan before any structural damage could begin.

Do SNF rods remain lethally radioactive for 10,000 years? No. The most radioactive isotopes decay quickly; others take longer. By 600 years or less, according to Max W. Carbon in Nuclear Power: Villain or Victim? the rods would be no more radioactive than uranium ore, which could be safely picked up and handled.

Does reprocessing make the waste problem easier? Yes. The SNF is dissolved in acid, allowing separation of the uranium and plutonium, to be used in new fuel rods. The fission products, the real waste, can be melted into glass, making it very unlikely to ever contaminate water or soil. Even counting the glass, the volume of waste is less (about half), while storage for 600 years will render it harmless. Our allies now do reprocessing, having learned from us.

Is radiation from a SNF cask comparable to bomb test fallout? No. The radioactive materials in a SNF cask do not leak out. Once the cask has passed by, no radioactive material is left behind and the area is as clean as before. The gamma ray dosage received as the cask goes by is gone like the light from a flash bulb, with no residue. By comparison, an

above-ground bomb test produces large quantities of dust mixed with radioactive isotopes, "fallout" which settles out over the countryside. We end up eating, breathing, and drinking this radioactive dust, where it can attack our tissues from inside our bodies. The intensity drops off as various isotopes decay, but the damage may already be done.

Global warming: How strong is the evidence? The people in Texas believe, with Spring 2000 the hottest on record in the U.S. The ice cap at the north pole has thinned as much as 40 percent in 30 years. Greenland ice is thinning. Over the last 150 years, 26 northern hemisphere lakes and rivers have been observed to freeze later in the fall and to break up earlier in the spring, now shortening the frozen period by 18 days. Scientific evidence continues to accumulate. What is surprising is that with the carbon dioxide we have added to the air, it hasn't happened faster; but some have found evidence that the delay is because the oceans have been soaking up the extra heat. Sea levels could eventually rise 20 feet as ice caps melt from Greenland and Antarctica. Globally, 1998 was the hottest year since records began in 1880; the next hottest were 1997, 1995, 1990, and in fifth place, 1999. What do you think?

Can global warming be reversed? No, not by man. But it can be limited by stopping all fossil fuel burning. Renewable energy sources like wind and solar are still several times as expensive as nuclear. Nuclear is the only source that can do the job without causing economic chaos.

If we can agree that the above answers are correct or even close, then we would have little reason to fear interim storage of SNF. It is to the credit of opposition leaders that they have agreed to a panel discussion to air differences and seek agreement. Assuming that agreement is within reach, perhaps we can agree that interim SNF storage would be good for our state, good for meeting U.S. electrical needs, and our country's best step to limit further global warming.

Steven C. Barrowes, Ph.D., of Salt Lake City
Member, Scientists for Secure Waste Storage, Sept. 20, 2000

Dr. Steven C. Barrowes has taught physics at several universities and is a member of Scientists for Secure Waste Storage. (U of Utah, LSU in Louisiana, MSU in Mississippi, and ISU in Illinois. You may contact Richard Wilson, Mallinckrodt Prof. of Physics at Harvard, on SSWS, at 617-495-3387.) Ph. 801-467-0354, 2961 S 500 E, SLC UT 84106

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