STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	**:**	**DOCKET NO. 265**
PROPOSAL OF DOMINION NUCLEAR CONNECTICUT, INC. TO MODIFY THE EXISTING MILLSTONE [NUCLEAR] POWER STATION TO ESTABLISH AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION (DRY STORAGE SYSTEM) ON PROPERTY LOCATED OFF ROPE FERRY ROAD IN THE TOWN OF WATERFORD, CONNECTICUT	**:**	**FEBRUARY 13, 2004**

TESTIMONY OF KEVIN KAMPS

1. Please state your name and your title.

My name is Kevin Kamps. I have served as nuclear waste specialist at the Nuclear Information & Resource Service (NIRS) in Washington D.C. since June of 1999.

2. Please state the nature of the work carried out by NIRS.

NIRS is the information and networking center for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation and sustainable energy issues. In 2000, NIRS merged with the World Information Service on Energy (WISE) based in Amsterdam, the Netherlands, making NIRS/WISE the world's largest, most effective international grassroots organization focused on nuclear power and radioactive waste concerns, with "relay offices" in ten additional European, Asian, and South American countries.

3. What is your professional background?

Before joining NIRS, I founded and directed the World Tree Multi-Cultural Community Center for Peace, Justice and Mother Earth in Kalamazoo, Michigan from 1996 to 1999. My main work there was the Chernobyl Children's Project, which brought groups of visually impaired children from the former Soviet Union to the U.S. for medical attention and recreation.

In 1995, I took part in the Walk Across Europe for a Nuclear-Free World, a 3,500 mile international peace march from Brussels, Belgium to Moscow, Russia concerned with nuclear weapons issues and the aftermath of the 1986 Chernobyl nuclear catastrophe. In 1992, I took part in the 3,500 mile Walk Across America for Mother Earth from New York City to Nevada to end nuclear weapons testing at the Nevada Test Site.

I attended Earlham College, a Society of Friends (Quaker) school in Richmond, Indiana as well as Kalamazoo College in Kalamazoo, Michigan.

4. What are your responsibilities at NIRS?

At NIRS, my focus is on high-level nuclear waste issues, particularly government and industry efforts to store commercial irradiated fuel rods and military high-level atomic wastes on Skull Valley Goshutes Indian land in Utah and on Western Shoshone Indian land at Yucca Mountain, Nevada. Such dumps would require an unprecedented tens of thousands of shipments of high-level wastes by truck and train through 45 States, past the homes of 50 million Americans, over

the course of 30 years. Working with grassroots groups and concerned citizens along the targeted transport routes to educate about the inherent risks of nuclear waste storage, transport, and so-called “disposal” is a big part of my job.

5. What is the purpose of your testimony?

The purpose of my testimony is to provide technical information about issues related to high-level nuclear waste pertinent to these proceedings.

6. What information would you like to share with regard to the issue of radiation emissions pertinent to these proceedings?

Any exposure to ionizing radiation (such as the gamma rays and neutrons that would be given off from a dry cask filled with irradiated nuclear fuel), no matter how small the dose, carries with it some risk of health damage, be that genetic damage, initiation of a cancer, or other negative health impacts.

Failure of the dry casks, such as due to manufacturing defects in seals or welds or radiation shielding materials, or due to age-related deterioration from corrosion, thermal or radioactive impacts to the structural or shielding materials, could also lead to the eventual release of alpha-, beta-, gamma-, and neutron-radiation emitting particles into the environment, or higher doses emanating off of the dry casks, which carry additional significant health risks.

There is an ongoing debate in the U.S. and internationally about the health impacts of low level radiation exposure. NIRS just held a conference in Asheville, NC in Oct. 2002 on the subject. The nuclear industry and its advocates in government say that below a certain dose, radiation is harmless; some in the nuclear establishment even claim a little radiation does a person (or a seagull) good (the so-called "hormesis" hypothesis). But there are scientists and physicians, such as Dr. John Gofman, formerly of the U.S. Atomic Energy Commission’s Lawrence Livermore National Laboratory in Berkley, California who hold that any exposure to radiation carries a health risk, that there is no threshold of exposure below which radiation is harmless.

7. Are you able to calculate the dose that a seagull would receive if it perched atop the dry cask storage facility proposed by Dominion and, if so, can you describe the health effects which might result?

It is not scientifically sound to say a dose in the range of 10 mrem per hour is a negligible dose and will have no negative health impact. A nesting seagull would be in close proximity to the surface of the container (if nesting on top, or at the bottom edge on the ground, of the cask). So 10 mrem per hour would add up over time. The gamma rays and neutrons impacting the seagull’s tissues and cells could, eventually, initiate a cancer, cause genetic damage, or lead to other radiation-induced diseases. The genetic damage, by definition, would be passed on to future generations.

The 10 mrem per hour dose refers most probably to NRC’s regulation limiting dry cask radiation emissions to 10 mrem per hour at a distance of 6.6 feet away. At the surface of the dry cask, however, NRC’s regulations allow dose rates of 200 mrem per hour. So if seagulls or other wildlife or humans come closer than 6.6 feet, their exposure rates could very well be higher than the 10 mrem per hour even if the casks perform as designed. Millstone may have institutional controls in place to prevent wildlife from nesting or burrowing near the dry casks, but these institutional controls may not remain in place for the many decades into the future that the dry casks could and very likely would remain there.

In addition, release of radioactive particles from the dry casks due to leaks over time could enter the environment and food chain. Radioactive particles do bioaccumulate or biomagnify up

the food chain, leading to higher radiation doses and worse negative health impacts for individuals and species at the top of the food chain.

8. Have you analyzed problems which have occurred involving dry cask storage?

Yes. I have reviewed U.S. Nuclear Regulatory Commission (NRC) and U.S. Department of Energy documents, as well as other federal and state and international government documents, as well as media coverage and publications of non-profit environmental organizations, regarding problems with dry cask storage of high-level radioactive waste in the U.S.A. and overseas in order to familiarize myself with and to analyze those problems.

9. What has your analysis revealed?

I have discovered many examples of defects, malfunctions, poor quality control and lack of adequate review and oversight by the NRC.

I first began to work on dry cask storage issues in Michigan in 1993. Palisades nuclear power plant on Lake Michigan was the first reactor in the U.S. to be allowed by the NRC to install dry cask storage with no Environmental Impact Statement and no public hearings (that is, NRC allowed it under the general operating license of the reactor, even though in the early 1970's, when that general operating license was issued, the concept of dry cask storage had not been evaluated). At Palisades, they built the pad on a high-risk erosion-zone sand dune, just 100 yards from the waters of Lake Michigan (the source of drinking water for tens of millions of people downstream). And they also installed casks with manufacturing defects.

10. Have you analyzed information concerning the dry cask storage facilities operated by Dominion at its North Anna and Surry reactor sites in Virginia?

Yes. I discovered that a TN-32 cask (manufactured by Transnuclear, containing 32 irradiated fuel assemblies) at the Surry nuclear plant operated by Dominion near Newport News, Virginia had developed six inch long cracks in its outer concrete shield, loose bolts, and an internal helium leak. The defects were reported by the NRC in January 2000. Helium serves as a heat transfer mechanism with the dry storage casks, and also serves to prevent the highly-radioactive fuel assemblies from deteriorating or corroding upon contact with oxygen in air.

Are you aware of whether there have been problems with NUHOMS casks?

Yes. Three NUHOMS casks, manufactured by VECTRA Technologies and fully loaded at the Davis-Besse nuclear plant in Ohio, were discovered to have been built below technical specifications: the aggregate used to fabricate the casks' outer concrete shells was poor quality, and the shells themselves were ground too thin.

In April 2001, the Sacramento Municipal Utility District halted loading of its first Transnuclear West NUHOMS dry storage cask at the Rancho Seco reactor in California due to an unexpected mishap. A faulty O-ring leaked air underwater in the irradiated fuel storage pool during loading operations, threatening to contaminate the fuel-holding inner canister with radioactive pool water.

11. Are you aware of other problems with dry cask storage installations?

Yes. Manufacturers of dry cask systems must go through the NRC's "certificate of compliance" (CoC) process. This covers a host of issues, including the development of the cask design technical specifications, operational limits, maximum radiation dose limits and the condition of irradiated fuel that can be stored inside. As of Sept. 23, 2002, NRC had approved 14 different dry cask storage systems for general use at or away from reactors (see http://www.nrc.gov/waste/spent-fuel-storage/designs.html). NRC cask certification is valid for 20-

year intervals, with reviewed extensions available. NRC has stated that dry cask storage is safe and reliable for up to 100 years.

However, problems with dry casks have surfaced not after decades or a century, but almost immediately in the first few years, raising serious questions about the NRC cask certification process itself. Evidence documents that the NRC's CoC process has been taken over by cask manufacturers' and nuclear utilities' profit-driven pressure for expediency. The consequent lack of rigorous regulatory oversight has resulted in a complete lack of field testing of cask designs, NRC approval for exemptions allowing manufacturers to build casks before receiving the certificate of compliance, and mounting evidence of poor quality assurance and quality control of cask manufacturing. Numerous technical problems with fully loaded dry casks are occurring around the country at an alarming rate, leading to charges from concerned citizens living nearby that ISFSIs (Independent Spent Fuel Storage Installations, as called by the industry and NRC) represent "nuclear experiments" in their backyards.

12. Do you have specific examples of errors or accidents involving dry cask storage?

Yes. A May 28, 1996 explosion at the Point Beach reactor in Wisconsin jolted public confidence in the dry cask storage program. While sealing shut a VSC-24 (a Ventilated Storage Cask built by Sierra Nuclear Corporation (SNC) holding 24 irradiated fuel assemblies), a welding torch ignited pent up hydrogen gas with enough force to dislodge the cask's two-ton shield lid several inches in the air and tilt it upright on top of the cask.

After allowing SNC to manufacture several VSC-24 units even before its CoC was granted, NRC certified the cask design in May, 1993. The explosion was later determined to have resulted from an electro-chemical reaction between an anti-corrosion zinc liner within the cask and the borated "spent" fuel pool water. The chemical reaction between zinc and acid to generate flammable hydrogen gas -- familiar to many high school chemistry students – somehow escaped the notice of all the "experts" at NRC, the cask manufacturer, and the nuclear utility company. Over a dozen VSC-24 casks had already been loaded around the country before the explosion. Utility employees had observed bubbles in the "spent" fuel pools during these loadings, yet had failed to understand that they were flammable hydrogen gas and did not report them to the NRC. In fact, a blue flame was observed burning within another VSC-24 loaded at Point Beach prior to the explosion, but had been shrugged off by employees as resulting from excess cleaning solvents and the incident went unreported.

The explosion led to an NRC inspection of SNC's cask manufacturing facility, revealing confusion, inadequate testing, and poor quality control. It also led to a three-year halt to the loading of VSC-24's in the U.S. while the issues were being evaluated. However, the next VSC-24 to be loaded, at Palisades in June, 1999, again experienced two separate "hydrogen burns." Again there was a breakdown in administrative controls. The NRC inspectors, trusting that all was in order, had departed before the "burns" occurred. A welder ignited a "burn" but did not report it, which led inevitably to a welder on the next shift igniting a second "burn". Days passed before NRC was notified. Within the week, a suspicious fire in the dry cask storage administrative office trailer at Palisades destroyed many documents, including those about the recent cask loadings and "burns." Concerned citizens cried foul, but NRC did not cite Palisades for any violations of regulations. In 2001, Palisades officials admitted to the NRC that the same irradiated fuel that was involved in the loadings and their hydrogen "burns" had actually cooled for fewer than the standard five years in the storage pool following removal from the reactor core. Loading the fuel into dry casks had been in violation of established practice. Suspiciously, the fuel which had cooled for less than five years was found evenly distributed between a number of casks, leading critics to charge that the "mistake" had in fact been intentional. However, records pertaining to the loading procedure had been destroyed in the earlier suspicious office fire.

13. Are you aware of any other problems with dry cask storage?

Yes. Shortly after the explosion at the Point Beach reactor in Wisconsin, a VSC-24 cask loading at the Trojan nuclear plant in Oregon had to be suspended when so many hydrogen bubbles were generated in the fuel pool that workers could not see well enough to complete the job. In June 2000, the NRC cited the VSC-24's new owner, British Nuclear Fuels, for poor quality control and assurance in cask manufacturing and maintenance. Obviously, four years since the Point Beach explosion (1996-2000) was not long enough for NRC and industry to resolve problems with the VSC-24.

A March 1997 NRC inspection report revealed another defect with VSC-24's: delayed cracking in welds intended to seal shut the multiple shield lids on casks at Palisades, Point Beach, and Arkansas One nuclear plants. Such cracks can allow the inert helium gas within the cask to escape, making the irradiated fuel assemblies vulnerable to contact with air, oxidation, and deterioration. It could also disrupt the cask's heat transfer capability, causing overheating of the irradiated fuel. Such degradation could lead to serious irradiated fuel handling and transportation problems in the future. Again, weld failure in shield lids was unanticipated and unanalyzed by industry and the NRC. And if helium gas can escape, eventually so could other, radioactive gases, and perhaps eventually radioactive particles, leaking from the wastes themselves.

14. What other problems with dry casks have you identified?

Over the past several years, NRC has identified serious problems in other dry cask systems.

In late May 2000, the NRC discovered an unreported flaw with the neutron shielding material supplied to New Jersey-based cask manufacturer Holtec International by Nuclear Assurance Corporation. Holtec hopes to deploy no fewer than 4,000 HI-STORM dry casks for use at the proposed Private Fuel Storage, LLC high-level nuclear waste dump targeted at the tiny, impoverished Skull Valley Goshutes Indian Reservation in Utah. Transportation of irradiated fuel rods to Utah in Holtech HI-STAR containers – the first dual purpose storage/transport cask to be certified by NRC -- from Eastern, Southeastern, and Midwestern reactors would traverse dozens of States, past the homes of millions of Americans, raising unprecedented safety concerns.

In Sept., 2001 an Exelon Corporation spokesman at the Dresden nuclear reactors in Illinois admitted to a visiting group of nuclear power officials touring the plant's new dry cask storage facility that the NRC had granted Dresden an exemption when its recently, poorly poured dry cask storage concrete pad did not meet specifications.

In January 2003, my organization was approached by a whistleblower who had been fired by Exelon, the largest nuclear utility in the U.S. His name is Oscar Shirani. He had worked at Exelon and its predecessor, Commonwealth Edison of Chicago, for many years as a lead quality assurance inspector for nuclear power plants and dry cask storage installations. Shirani had identified problems with "spacer bars" on Holtech dry casks proposed for use at the Dresden nuclear power plant in Illinois, catching the problem, which had been missed by Holtech International and its fabrication subcontractors as well as by the NRC, early enough that the problem could be rectified for future casks. For such high quality work, Shirani became a nationally-recognized quality assurance inspector, invited by a coalition of nuclear utilities using Holtech dry storage cask systems to lead a quality assurance audit of the manufacturing facility producing Holtech dry casks. At that audit, Shirani and his team identified nine major safety violations of quality assurance regulations and standards. These ranged from use of materials in the manufacture of the casks, the quality of which could not be verified or documented, to unauthorized and undocumented welding procedures that amounted to a major departure from the cask design. Shirani surmised that the structural integrity of the casks could not be verified.

Shirani was about to issue a stop work order against the manufacturing facility for these major quality assurance violations. But Exelon fired him shortly thereafter. Shirani alleges he was fired because his Holtech stop work order would have interfered with Exelon's production

schedule and profit margin, not to mention Exelon's public relations concerns were it to be made public there were significant problems with the dry casks. Shirani also alleges he was fired due to a previous stop work order he had initiated against a large safety systems supplier to Exelon/Commonwealth Edison (as well as to many other utilities in the nuclear power industry) which had upset upper level executives at Exelon/Commonwealth Edison and at the safety systems supplier due to its interference with production schedules, profit margins, and public relations. Shirani alleges these quality assurance violations carry significant safety risks for the environment and public. He is involved with an investigation by the NRC Inspector General's office as to why the NRC did not protect him from being fired, as he was a whistleblower putting public safety and health first and foremost, which is supposed to be the very mission of the NRC. The investigation also is looking at why the NRC's own quality assurance inspection team, which had visited the Holtech cask manufacturing plant not long before Shirani's team found nine major safety violations, had found no violations and had given the Holtech cask manufacturing process a clean bill of health.

15. Please discuss the risks involved in the problems with dry cask storage which you have identified.

The 1996 explosion within the VSC-24 cask at the Point Beach reactor in Wisconsin took place immediately above 24 irradiated fuel assemblies already loaded into the cask, containing the equivalent amount of long-lasting radioactivity released by 240 Hiroshima-sized atomic bombs; the nearby spent fuel pool held the full inventory of high-level radioactive waste generated at that plant over the course of decades. Although the NRC and utility reported that no radiation was released, no damage was done to the irradiated fuel assemblies in the cask, and no one was injured by the blast, the forceful explosion occurred near the plant's spent fuel pool , not a place to "play with fire" or make mistakes with objects weighing tens of tons.

Loaded dry storage casks, weighing more than 100 tons, are among the heaviest loads moved within a reactor during reactor power operation. Human error and equipment failure raise issues of worker and public safety during cask handling and moving activities. Dropping either a loaded or unloaded cask inside the fuel pool building can severely damage plant safety equipment, jeopardizing reactor operation and the cooling of irradiated fuel in the storage pond.

On May 13, 1995, a loaded TN-40 cask (a Transnuclear cask) became stuck in the hoisted position above the Prairie Island reactor's irradiated fuel storage pool for 16 hours. This incident occurred just after the NRC had granted Northern States Power (now Xcel Energy) an exemption from regulatory requirements for reviewing cask loading procedures. Over 120 tons of metal storage cask and irradiated fuel assemblies dangled precariously above 22 years' worth of the reactor's accumulated irradiated fuel assemblies in the pool below – many more hundreds of tons of deadly nuclear waste. This dangling "sword of Damocles" risked dropping back into the pool, damaging irradiated fuel stored there, or punching a hole in the pool leading to a loss of coolant accident and potentially catastrophic consequences, such as a major fire amidst the densely packed irradiated fuel in the pool, an accident scenario that could release massive amounts of radioactivity into the environment. Luckily, nothing happened – that time.

Some reactor designs, such as in G.E. boiling water reactors, have placed the irradiated fuel storage pools several stories up in the reactor building. This is the case with regard to Millstone Unit 1. Consequently, cask movement can place heavy loads many stories high inside the reactor building. A cask drop would send the heavy load crashing down through several floors of the building, with untold safety consequences.

The quality assurance, cask loading, and cask manufacturing problems mentioned earlier raise the specter of cask malfunction, accident or failure, with untold risks for the environment and worker and public health and safety.

16. Are you aware of risks associated with unloading a dry cask storage should the need arise?

Yes. Incredibly, at least to the best of our knowledge at my organization, not a single dry storage cask, once loaded, has ever been unloaded in the U.S. This has led critics to charge that no safe unloading procedure exists.

In May 1993, local environmental groups and the State of Michigan filed for an injunction in federal court against the loading of VSC-24's at Palisades, alleging that there was no proven safe method for unloading the casks. Consumers Energy assured the judge that in an emergency, casks could be safely unloaded simply by reversing the NRC-approved loading procedure. The judge denied the injunction and allowed the casks to be loaded. Just over a year later, in August, 1994 Consumers Energy discovered that its fourth loaded VSC-24 dry cask had welding flaws. To demonstrate its commitment to public safety and the environment, as well as to live up to its promise to the judge, Consumers announced it would unload the irradiated fuel in the cask back into the storage pool. Only then were the difficulties discovered.

Reintroducing the 400 degree Fahrenheit fuel assemblies back into the 100 degree fuel pool water would result in a radioactive steam flash hazardous to workers, and would thermally shock the fuel assemblies threatening to further degrade them. Also, the welded-shut inner canister would have to be cut open in a timeframe of less than 50 hours, for the dry cask system's cooling process could not be maintained during the cutting procedure and the fuel within would begin to overheat. In addition, there was no procedure yet developed to remove steel shims that were pressure fit inside the cask lid. Consumers continued its rush to load numerous additional VSC-24's without resolving the problem. Now nearly ten years after Consumers announced it would unload the defective cask #4, it is still sitting fully loaded on the Lake Michigan shoreline, alongside more than a score of additional fully loaded VSC-24's.

The failure to safely unload dry casks has concerned other neighbors next to reactors. The Prairie Island Mdewakanton Dakota Tribe in Minnesota petitioned the NRC to prohibit Northern States Power from loading any more TN-40 (Transnuclear) casks until a safe unloading procedure had been demonstrated, but to no avail. 17 dry casks sit fully loaded just several hundred yards from the nearest homes and a tribal child care center on this tiny island on a flood plain in the middle of the Mississippi River. Prairie Island has experienced two floods just in the past decade that were expected to occur just once in an entire century, that is, two "one-hundred-year floods" in the past decade alone. This flooding required sand bagging and active water pumping to prevent flooding at the nuclear power plant itself.

Adding further to worries about cask unloading, corrosion between the metallic inner canister and the metallic lining of the outer shell of VSC-24's could cause a bonding together that would be very difficult to pry apart. Even if the casks were to malfunction, or the waste to leak, or a repository to open that could accept the wastes, it remains unclear whether dry casks could be safely unloaded back into fuel storage pools or into transport casks for shipment off-site.

17. Are you familiar with the Department of Energy plans to construct a facility at Yucca Mountain, Nevada for long-term storage of spent nuclear fuel?

Yes. As a member and later board member of Don't Waste Michigan and as a member of Palisades Watch, two non-profit environmental protection groups in Michigan, from 1993 to 1999, I was already actively involved in the Yucca Mountain issue on a local, regional, and national level. From 1999 to the present I have worked as the Nuclear Waste Specialist in the Radioactive Waste Project of Nuclear Information and Resource Service in Washington, D.C. I have been actively engaged on the national level in the Yucca Mountain proposal, its evaluation and decision-making processes, from the federal government level to the grassroots level across the country.

18. In your opinion, what is the prospect that the Yucca Mountain facility will open within the next 10 years?

It is very unlikely that the Yucca Mountain dump will open in the next decade. Although the U.S. Department of Energy (DOE) states it will begin accepting wastes at Yucca in 2010, the General Accounting Office (the investigative arm of Congress) reported in the early 2002 that Yucca most likely would not open till 2015 at the earliest.

Since that time, numerous lawsuits by the State of Nevada and by a coalition of national and grassroots environmental and public interest organizations, have been launched against the various federal agencies involved in the Yucca Mountain Project (NRC, DOE, and the Environmental Protection Agency, EPA), as well as against the executive and legislative branches of the federal government itself. We are, for example, cautiously optimistic, based on our oral arguments before the U.S. Court of Appeals for the District of Columbia Circuit on January 14, 2004 that our lawsuit against the EPA (for its woefully inadequate Yucca Mountain radiation release regulations, which amount to an unprecedented undermining of the Safe Drinking Water Act that threatens public health and safety and the environment) will succeed, that the court will require EPA to strengthen its Yucca Mountain regulations. This in turn would require NRC to change its licensing rules for Yucca Mountain, and very well could require DOE to change its design for the dump. All of this would amount to major delays, or even a final stoppage of the Yucca Mountain Project, for if the dump were required to meet stringent environmental and public health protection regulations required everywhere else in the U.S., the site would be disqualified from further consideration because it cannot do so due to its unsuitable geology and hydrology.

19. Assuming that the Yucca Mountain facility is built as presently planned, will it have adequate capacity to store all the nuclear waste generated at the Millstone Nuclear Power Station during the current license terms of Unit 2 (2015) and Unit 3 (2025)?

The Yucca Mountain dump has a legal capacity limitation of 63,000 metric tons of commercial high-level radioactive waste. There is already over 45,000 metric tons of commercial high-level radioactive waste in existence and stored at reactors across the U.S. Given that about 2,000 metric tons of commercial high-level radioactive waste are generated every year by the nuclear power industry, by the year 2011, there would already be 63,000 metric tons in the U.S. Thus, even if Yucca were opened in 2010, it would already be full, only the wastes would still have to be transported there. DOE predicts this transport would take 24 to 38 years. Thus, even Millstone's waste that is included in the 63,000 tons that would go to Yucca would remain at Millstone for at least an additional 24 to 38 years after Yucca opens, which DOE optimistically predicts will be in 2010, while GAO reports 2015 at the earliest. Lawsuits and court decisions and other delays could postpone Yucca's opening still further. Currently, Nevada's U.S. Senator Harry Reid, Assistance Democratic Leader of the Senate, is calling for an indefinite work stoppage at Yucca Mountain due to recently revealed lung diseases in Yucca workers due to harmful substances such as silica and erionite in the work tunnels there, so that State of Nevada inspectors can study Clean Air Act violations at the site and determine what dangers exist for workers and persons living downwind. We and many others hold that nuclear waste should never be buried at Yucca due to its geologic unsuitability. Where Millstone nuclear power plant's high-level radioactive waste generated after Yucca Mountain's 63,000 metric ton limit is surpassed would go is highly uncertain. The 1982 Nuclear Waste Policy Act requires that a second dumpsite in the eastern U.S. would be required. New England was a prime candidate in the early 1980's for this eastern dumpsite. But the Yucca proposal is already decades old, so how long it would take to open such a New England dump is highly uncertain.

20. Assuming that the Yucca Mountain facility is built as presently planned, will it have adequate capacity to store all the nuclear waste generated if Units 2 and 3 are given 20-year license extensions?

An additional 20 years of high-level radioactive waste generation at Millstone would only greatly exacerbate the problem of where that waste would go. Yucca Mountain would have surpassed its legal limit for accepting wastes in about the year 2011. Wastes generated after that point at Millstone would be excess to Yucca's legal limit.

21. What are your recommendations to the Siting Council with regard to Dominion's dry cask storage application?

High-level nuclear waste presents us with an unprecedented dilemma – poisons that remain deadly for hundreds of thousands of years. If dry cask storage is so problematic, why not keep the wastes in wet storage pools? Wastes are dangerous there too, for cooling pumps must operate 24 hours per day, 7 days per week, for decades. Without pumps circulating cooling water, the thermally hot waste could boil away the pool water in a matter of days if not hours, depending on the circumstances. A recent NRC report admitted that even decades-cooled irradiated fuel could spontaneously combust if overheated or put in contact with air. A pool fire could release disastrous amounts of radioactivity to the environment. A puncture of a pool and consequent loss of water could lead to similar catastrophic consequences. So could a simple loss of power, causing the cooling pumps to stop working. A raccoon at the Fermi reactor in Michigan once caused such a loss of power to the cooling pumps. For these reasons, many see dry cask storage as safer than wet pool storage. Dry casks have no moving parts, and individually contain smaller amounts of high-level waste than densely packed pools. The word "safer" is relative, for high-level nuclear waste is dangerous no matter how or where it is stored.

If irradiated fuel rods are dangerous in pools and dry casks, then why not ship them to the proposed Yucca Mountain site in Nevada for burial? For one thing, Yucca Mountain is not a scientifically suitable site. Yucca Mountain is an active earthquake zone, prone to volcanic activity. Yucca leaks water like a sieve into the aquifer below, the sole source of drinking water for nearby farming communities downstream. If waste were buried there, it would eventually leak into that drinking water, harming people downstream. In addition, shipping many tens of thousands of irradiated fuel casks cross country through 43 States, through major metropolitan areas and America's breadbasket, past the homes of 50 million Americans carries unprecedented risks. The transport containers have been inadequately safety tested, most emergency responders are poorly trained and equipped for dealing with a radiation accident, and the health and economic impacts of a radiation release would be immense. Going forward with Yucca Mountain and such cross country transportation is ill-conceived and would make the nuclear waste dilemma worse, not better.

An ounce of prevention is worth a pound of cure. The U.S. must stop generating radioactive waste. There are currently more than 45,000 tons of irradiated nuclear fuel rods piled up at nuclear reactors across the U.S. If currently operating reactors continue generating waste until the end of their 40 year licenses, the mountain of waste will more than double in size. If NRC continues to allow old reactors to extend their operating lifetimes from 40 to 60 years, the amount of waste will increase still more. If new nuclear reactors are built, as Dominion wants to do at its North Anna nuclear power plant in Virginia, yet more waste would be produced. Nuclear power must be phased out and replaced with safer, cheaper, cleaner ways to meet our electricity needs: conservation, efficiency, and renewable sources such as wind, solar, and fuel cells.

In terms of dry cask storage proposed for Millstone, public health and safety and environmental protection, for the near and long term, must be given priority over Dominion's profits and production schedules. Rigorous environmental and public health and protection safeguards must be established and enforced regarding the storage of high-level radioactive waste at Millstone.

22. Does this conclude your testimony?

Yes. Thank you for the opportunity to provide testimony on these proceedings.

I declare the foregoing to be true under penalty of perjury.

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Kevin Kamps