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From: Paul Gunter [mailto:paul@beyondnuclear.org]
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Attached please find the supplement comments of Beyond Nuclear.

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March 18, 2016

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Supplemental Comments of Beyond Nuclear on US Nuclear Regulatory Commission Request on Advanced Notice of Proposed Rulemaking Regarding Regulatory Improvements for Decommissioning Power Reactors

Ms. Annette Vietti–Cook:

In response to Draft Regulatory Guide Docket ID NRC-2015-0070, Beyond Nuclear submits the following comments in supplement to its sign-on to the Joint Comments of Nuclear Information and Resource Service (NIRS) and Citizens Awareness Network (CAN) transmitted to the US Nuclear Regulatory Commission (NRC) on March 18, 2016.

1. ENTOMB: The Decommissioning Option Without Rules or Guidance

The NRC lists its decommissioning regulations in 10 CFR 20 Subpart E and Parts 50.75, 50.82, 51.53 and 51.95.

Entombment is generally recognized as a vague permanent decommissioning option where radioactive contaminants of a nuclear power station are encased in a structurally long-lived material until radioactivity decays to a level permitting for unrestricted use or restricted use imposed by the regulator.

To date, the NRC has deferred rulemaking on the entombment option to clarify its viability as an environmentally responsible decommissioning strategy. Furthermore, the NRC has not developed any rules or guidance for the ENTOMB option as currently provided to the nuclear industry.

To date, the ENTOMB option has very limited applications around the world and as a result detailed guidance on the technical and safety aspects have never been developed even within the International Atomic Energy Agency framework. At present, entombment clearly serves to only blur the distinctions between a viable decommissioning practice and hasty, irresponsible nuclear waste disposal

without oversight or the intention of future retrieval. The clearest observable benefit that entombment presently would provide is to convey a significant cost savings to negligent operators who otherwise lack financial and technological resources for the full decontamination, dismantlement and environmental remediation in and around permanently closed nuclear facilities.

Even where entombment might be considered in an “exceptional circumstance” such as the Chernobyl and Fukushima nuclear catastrophes, the present and foreseeable lack of analysis, performance criteria, oversight and enforcement policy for violations that might occur in the distant future, there is no reliable or reasonable guarantee for assuring the public health and environmental protection over institutional care periods ranging between 100 and 300 years and longer. This is particularly true in the case for reasonably assuring the protection of groundwater resources running under and away from an entombed site potentially contaminating the large surface water resources (rivers, lakes, reservoirs, and oceans) located in close proximity to every nuclear facility.

Rather than provide the nuclear industry with what amounts to no more than a back door exit strategy for liability and negligence, the option should be eliminated from the NRC regulatory decommissioning options. Such “exceptional circumstances” must be regarded more as nuclear accident consequence remediation along with the broader recovery actions, more definitively addressed on a case-by-case basis with full operator accountability and liability until remediation is achieved at the site and beyond.

2. Incorporating Qualitative Factors into the Post-Closure of Reactors and Decommissioning Activities

As nuclear power continues to lose favor in society and decommissioning activities increase, many qualitative (unquantified) factors need to be integrated into a decision-making process after reactors close so as to democratically choose decommissioning actions affecting civil society. This is no more apparent than in considering the socioeconomic, security and public safety impacts on host communities and regions that are presented by the prompt dismantlement option that can be accomplished over a ten year period and the SAFSTOR option that extends the socioeconomic and potential environmental impacts on a host community, the region and its natural resources over a sixty year period. Communities recovering from the economic losses of closed nuclear power plants need to incorporate the qualitative factors that differentiate between the impacts associated with a relatively prompt recovery and one that is substantially delayed.

Additionally qualitative considerations are needed particularly given the significant radioactive source term that remains in the onsite storage of nuclear waste, chiefly irradiated nuclear fuel, both in high-density wet storage and closely congregated dry storage casks. These qualitative factors and considerations need to be applied to analyze and address uncertainties and associated risks

arising of industry efforts to eliminate emergency planning infrastructure and drastically reduced site security despite significant radioactive inventory that remains onsite in spent fuel pools and/or Independent Spent Fuel Storage Installations. Current NRC guidance in NUREG/BR-0058, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," provides for the use of both quantitative and qualitative analysis to assess these source term risk profiles as well as the direct and indirect cost benefits for the proposed changes.

In his March 9, 2016 keynote speech to the NRC Regulatory Information Conference 2016, Commissioner Jeff Baran similarly recognized the need for a decommissioning rulemaking process that recognizes the need to incorporate qualitative analysis into the decommissioning process.

"Power plant decommissioning is another area where I believe we need to look beyond easily quantified risks. In the last few years, five U.S. reactors have permanently shut down and three more have announced plans to close in the near term. When a nuclear plant shuts down, it's a big deal for the company, for the employees, and for the community. It also changes the risk profile of the plant and the contours of NRC's regulatory oversight. But NRC does not currently have regulations specifically tailored for this transition from operations to decommissioning. As a result, licensees with reactors transitioning to decommissioning routinely seek exemptions from many of the regulations applicable to operating reactors."

These same qualitative factors and analysis need to extend beyond the former reactor site boundary to evaluate and monitor a variety of potential impacts including river, lake and ocean sediment, groundwater and aquifer quality, and indefinitely interim nuclear waste storage facilities.

3. Incorporating Hardened On-Site Storage (HOSS) of Nuclear Waste at Decommissioning Nuclear Power Plants; Preserving and Maintaining the Old On-Site Pool as an Emergency Contingency for Old, Failed Cask to New, Replacement Cask Irradiated Nuclear Fuel Transfers

Beyond Nuclear has long advocated for Hardened On-Site Storage (HOSS) for irradiated nuclear fuel, as an interim measure to significantly upgrade the currently inadequate safety, security, and environmental isolation of high-level radioactive waste stored at reactor sites, in order to protect the public and environment. While NRC attempts to treat on-site storage of irradiated nuclear fuel, and decommissioning of nuclear power plants, as two entirely separate matters, there is of course extensive, inextricable overlap between the two.

The most recently updated (March 2010) HOSS *Principles for Safeguarding Nuclear Waste at Reactors* state:

The following principles are based on the urgent need to protect the public from the threats posed by the current vulnerable storage of commercial irradiated fuel.

The United States does not currently have a national policy for the permanent storage of high-level nuclear waste. The Obama administration has determined that the Yucca Mountain site, which has been mired in bad science and mismanagement, is not an option for geologic storage of nuclear waste. Unfortunately, reprocessing proponents have used this opportunity to promote reprocessing as the solution for managing our nuclear waste. Contrary to their claims, however, reprocessing is extremely expensive, highly polluting, and a proliferation threat, and will actually complicate the management of irradiated fuel. Nor will reprocessing obviate the need for, or "save space" in, a geologic repository.

The United States has a unique opportunity to re-evaluate our nuclear waste management plan. We can make wise decisions about safeguarding radioactive waste or go down the risky, costly, and proliferation prone path towards reprocessing.

The undersigned organizations' support for improving the protection of radioactive waste stored at reactor sites is a matter of security and is in no way an indication that we support nuclear power and the generation of more nuclear waste.

Require a low-density, open-frame layout for fuel pools: *Fuel pools were originally designed for temporary storage of a limited number of irradiated fuel assemblies in a low density, open frame configuration. As the amount of waste generated has increased beyond the designed capacity, the pools have been reorganized so that the concentration of fuel in the pools is nearly the same as that in operating reactor cores. If water is lost from a densely packed pool as the result of an attack or an accident, cooling by ambient air would likely be insufficient to prevent a fire, resulting in the release of large quantities of radioactivity to the environment. A low density, open-frame arrangement within fuel pools could allow enough air circulation to keep the fuel from catching fire. In order to achieve and maintain this arrangement within the pools, irradiated fuel must be transferred from the pools to dry storage within five years of being discharged from the reactor.*

Establish hardened on-site storage (HOSS): *Irradiated fuel must be stored as safely as possible as close to the site of generation as possible. Waste moved from fuel pools must be safeguarded in hardened, on-site storage (HOSS) facilities. Transporting waste to interim away-from-reactor storage should not be done unless the reactor site is unsuitable for a HOSS facility and the move increases the safety and security of the waste. HOSS facilities must not be regarded as a permanent waste solution, and thus should not be constructed deep underground. The waste must be retrievable, and real-time radiation and heat monitoring at the HOSS facility must be implemented for early detection of radiation releases and overheating. The overall objective of HOSS should be that the amount of releases projected in even severe attacks should be low enough*

that the storage system would be unattractive as a terrorist target. Design criteria that would correspond to the overall objective must include:
•Resistance to severe attacks, such as a direct hit by high-explosive or deeply penetrating weapons and munitions or a direct hit by a large aircraft loaded with fuel or a small aircraft loaded with fuel and/or explosives, without major releases.
•Placement of individual canisters that makes detection difficult from outside the site boundary.

Protect fuel pools: *Irradiated fuel must be kept in pools for several years before it can be stored in a dry facility. The pools must be protected to withstand an attack by air, land, or water from a force at least equal in size and coordination to the 9/11 attacks. The security improvements must be approved by a panel of experts independent of the nuclear industry and the Nuclear Regulatory Commission.*

Require periodic review of HOSS facilities and fuel pools: *An annual report consisting of the review of each HOSS facility and fuel pool should be prepared with meaningful participation from public stakeholders, regulators, and utility managers at each site. The report must be made publicly available and may include recommendations for actions to be taken.*

Dedicate funding to local and state governments to independently monitor the sites: *Funding for monitoring the HOSS facilities at each site must be provided to affected local and state governments. The affected public must have the right to fully participate.*

In addition to Beyond Nuclear, hundreds of national, regional, and local grassroots environmental and public interest groups – representing all 50 states -- endorsed the HOSS *Principles for Safeguarding Nuclear Waste at Reactors* (a full list of signatories can be viewed at: http://ieer.org/wp/wp-content/uploads/2010/03/HOSS_PRINCIPLES_3-23-10x.pdf).

As irradiated fuel will likely remain stored on-site throughout the years- and decades-long decommissioning projects ahead, HOSS should be required for its storage. To do otherwise would risk catastrophic releases of hazardous radioactivity from wet storage pools, or even from inadequate, status quo dry storage casks. This would not only harm people (workers, residents downwind out to great distances, etc.) and the environment over a broad region, but would complicate required decommissioning activities in the future, as by significantly worsening radioactive contamination in need of “clean up” (re-location, as to a licensed radioactive waste dump). Of course, such significantly worsened radioactive contamination of a decommissioning nuclear power plant would result in the costs for decommissioning to increase astronomically, quickly exhausting the decommissioning fund.

Thus, in line with the HOSS principles, Beyond Nuclear advocates for the emptying of high-level radioactive waste storage pools, as soon as possible after a reactor's permanent shutdown. Irradiated nuclear fuel typically must cool for at least five years, before its thermal heat and radioactive decay has lowered enough (although still very high, dangerously so) to allow for dry cask storage. "High Burnup" irradiated nuclear fuel, as it is called, requires significantly longer thermal cool-down and radioactive decay times in storage pools, before transfer to dry cask storage is possible.

Beyond Nuclear opposes NRC's permissiveness at allowing nuclear utilities to continue to store irradiated nuclear fuel in wet storage pools for years, or even decades, into the future, after permanent reactor shutdown, as part of decommissioning processes. This exacerbates various risks, including leakage of radioactivity from storage pools, as well as the risk of irradiated nuclear fuel storage pool fires, whether due to sudden cooling water drain downs, or slower motion boil downs. The U.S. Court of Appeals for the District of Columbia Circuit, in its June 2012 *New York v. NRC* ruling, in favor of Beyond Nuclear *et al.*, affirmed the significance of such risks as pool leaks and pool fires. And, given the Court's concern about the risk that a repository might not even be opened in the U.S., it is clear that irradiated nuclear fuel allowed to be stored in pools indefinitely long into the future, means risks of leaks and fires could extend not just for years, but for many decades, if NRC were to allow this. This is unacceptable. NRC's decommissioning regulations should require "expedited transfer," as it has been referred to, of irradiated nuclear fuel, from wet storage pools, into HOSS dry cask storage, as soon as possible, as a vital matter of homeland security, safety, health and environmental protection. NRC Chairman Dr. Allison Macfarlane agreed with this, as reflected by her vote in 2013 in the "Expedited Transfer of Spent Nuclear Fuel" proceeding.

Along similar lines, Beyond Nuclear decries NRC's practice of rubber-stamping nuclear utility requests to do away with emergency preparedness, and even security, requirements at decommissioning nuclear power plants. So long as irradiated nuclear fuel remains in vulnerable wet storage pools, and even in vulnerable, inadequate (that is, non-HOSS) dry casks, then the danger remains of a large-scale release of hazardous radioactivity. Emergency preparedness and adequate safety and security precautions are thus vitally needed.

In 2014, at U.S. Senate Environment and Public Works oversight hearings chaired by U.S. Senator Barbara Boxer (D-CA), she, as well as U.S. Senator Bernie Sanders (I-VT) and U.S. Senator Ed Markey (D-MA) strongly urged the U.S. Nuclear Regulatory Commissioners to not grant exemptions from safety, security, and emergency preparedness requirements at permanently shutdown, decommissioning nuclear power plants. While their concerns were focused in the near-term on permanently shutdown, decommissioning nuclear power plants in or nearby their own states – San Onofre, CA, and Vermont Yankee (located in Brattleboro, VT but just eight miles upstream of the Massachusetts state line on

the Connecticut River) – such concerns extend to all decommissioning nuclear power plants, such as Kewaunee, WI, Crystal River, FL, Zion, IL, etc.

The NRC can't have its cake and eat it too. During the 2013 "Expedited Transfer of Spent Nuclear Fuel" proceeding, NRC staff assumed that deaths and injuries resulting from an irradiated nuclear fuel storage pool fire would be few to none, by assuming that evacuations would go well, removing downwind/downstream populations out of harm's way. But at the same time, as pointed out by U.S. Senators Boxer, Sanders, and Markey in the summer 2014 oversight hearing, NRC has repeatedly rubber-stamped requested exemptions for nuclear power plants to do away with emergency preparedness during decommissioning, as if the risks had gone away. With irradiated nuclear fuel stored in vulnerable wet pools, or vulnerable status quo (non-HOSS) dry casks, the risks have not gone away. The NRC can't have it both ways, and must stop allowing nuclear utilities to do away with emergency preparedness, as well as safety and security precautions. Whether due to operator error, age-degraded system/structure/component failure, natural disaster, or intentional sabotage/attack, wet storage pools and status quo, inadequate (non-HOSS) dry casks holding irradiated nuclear fuel can still unleash catastrophic amounts of hazardous radioactivity. Evacuations downwind and downstream of such a catastrophe cannot be assumed to go well, if emergency preparedness was discontinued months, years, or even decades earlier.

While Beyond Nuclear is advocating for expedited transfer of irradiated nuclear fuel out of storage pools, into HOSS dry cask storage, as a vital matter of homeland safety, security, health and environmental protection, Beyond Nuclear is also advocating for preservation of the storage pool, even after the irradiated nuclear fuel has been completely emptied into HOSS dry casks. That is, Beyond Nuclear opposes the dismantling of pools during decommissioning, so long as irradiated nuclear fuel dry cask storage remains on-site.

The reason is, this way, at least the pool remains, to turn to in an emergency situation, if one or more casks must transfer their contents into new replacement casks. Even if dry cask problems unfold over "long" time periods (such as measured in weeks or months), even that "long" a time period would make it difficult to build an *ad hoc* dry hot cell for radiation shielding and radioactivity containment in an unfolding emergency situation, even a "slowly" unfolding one, let alone a quickly unfolding one. A new wet pool, if needed, would take a lot longer than weeks or months to build -- especially considering the price tag, likely measured in the tens or even hundreds of millions of dollars. But a dry hot cell would also be very pricey to build in a great big hurry – and it could well be practically impossible to build one in the short time period allowed by an unfolding crisis with one or more dry casks fully loaded with irradiated nuclear fuel, and somehow failing or failed – be it due to intentional sabotage/attack, natural disaster, human error, or simply age-related degradation or dry cask design/fabrication failures.

Maintaining an existing pool, even an empty one, would be much more cost-effective, and practical, than having to replace it with a new wet pool, or new dry transfer system. As stated, building a new wet pool or dry transfer system, could prove impossible to do, in the short time period allowed before failing dry casks unleash catastrophic amounts of hazardous radioactivity. Time could well be of the essence, making the presence of the old, long-emptied pool essential for the safe transfer of the irradiated fuel from the failing/failed dry cask into a new replacement dry cask.

Most permanently shutdown plants in recent years have chosen SAFSTOR for 60 decades -- San Onofre 2 & 3, CA, Vermont Yankee, Kewaunee, WI, etc. – with NRC's blessing. (Even Zion, IL, which permanently closed in 1998, only very recently began to actively dismantle its facilities.) These decommissioning plants then plan on keeping the irradiated fuel stored, largely to entirely, in the wet pools, for years (as at Vermont Yankee; Entergy has pledged to transfer all the irradiated nuclear fuel out of the wet storage pool, into albeit non-HOSS dry cask storage, by 2020), or perhaps even many decades, in order to defer dry cask storage costs as far as possible into the future.

Entergy spokesman Mike Twomey has even stated that, come the 60-year mark at Vermont Yankee, whatever decommissioning work remains undone, would be walked away from by Entergy. He indicated that the State of Vermont could sue Entergy, if it had a problem with that (thus earning the nickname "So Sue Me Twomey").

If other nuclear utilities (or even Entergy, at its other reactors as they permanently close down and enter decommissioning phases) share Twomey's attitude, then decades-long enough procrastination on transferring irradiated nuclear fuel from pools into dry casks could become a ploy, for nuclear utilities to avoid dry cask costs altogether, and force ratepayers and/or taxpayers to pick up the tab, under DOE action and/or court order. Already, nuclear utilities have been suing DOE for the better part of two decades, and have been awarded about $500 million per year, for the past several years now, with no end in sight, by the federal courts, for breach of contract by DOE, under the "Standard Contracts" signed by DOE beginning in 1983, under the provisions of the Nuclear Waste Policy Act, as Amended, for removal of irradiated nuclear fuel from nuclear power plants, to a national dump. DOE was supposed to start taking the irradiated nuclear fuel in January 1998. Of course, that has not happened. And there is no dump in sight. DOE is now predicting a dump won't be available until 2048, at the earliest.

So if pools can be maintained full of waste for 60+ years, as NRC's decommissioning regulations allow, then they could also be maintained emptied of waste, for that long a period. And they should be, as a vital emergency contingency, in the event that one or more dry casks must unload their irradiated nuclear fuel into a new replacement cask.

What is truly incredible, is that NRC has allowed the dismantling of storage pools at numerous decommissioning nuclear power plants (Big Rock Point, MI, Maine Yankee, Connecticut Yankee, Zion, IL, etc.), with no plan for the ability to transfer irradiated nuclear fuel from a failing dry cask into a new replacement dry cask, in the event of an emergency. But then again, NRC has not required the U.S. nuclear power industry to even demonstrate that such a transfer is possible, and that the companies involved are capable of doing it, even under normal conditions, let alone emergency conditions. Such a transfer of irradiated nuclear fuel, from a dry cask once loaded, into another dry cask, has yet been carried out in the United States, since the beginning of dry cask storage, to the best of our knowledge. This does not bode well for emergency transfers, or even routine transfers (as due to eventual age-related degradation of dry casks), in the future. Especially so, if safe, secure, radiation shielded, and radioactivity isolating, wet or dry transfer systems, structures and components must be designed and built, from the ground up, given the expense and logistical difficulties that will undoubtedly be encountered. This is all the more reason to require that the old pools be maintained on-site, so long as irradiated nuclear fuel remains stored there in HOSS dry casks (even more so for non-HOSS dry casks for that matter), as a form of emergency transfer capability. Fukushima Daiichi and Chernobyl are both cautionary tales, that emergency response should not be created on the fly, *ad hoc*, in reaction to a catastrophe already under way.

And of course, not just slow motion crises, but also fast-breaking emergencies are possible. Intentional attacks, natural disasters, etc. come to mind. Unfortunately, the current status quo, non-HOSS dry casks in the U.S., following a "lowest cost" philosophy, do not have intentional sabotage/attacks in mind in their design and fabrication. Nor would they be able to withstand severe enough natural disasters. As but one example, the dozen or so casks on the older dry cask storage pad at Palisades (a reactor that will, one day, permanently close, and enter decommissioning), the one nearer Lake Michigan (about 150 yards or less inland), are very vulnerable to earthquake liquefaction of the 55-feet of loose sand beneath the concrete cask pad. Even the newer dry cask storage pad, further inland, is vulnerable to earthquake transmission. So much so, it is in violation of NRC earthquake safety regulations for dry cask storage. Dr. Ross Landsman, now retired dry cask storage inspector for NRC Region III, who has served as an expert witness on this matter a decade ago for Don't Waste Michigan and Nuclear Information and Resource Service, has been warning about these risks since February 1994. Since Palisades' dry cask storage will likely remain right where it is, for many decades to come, these earthquake risks there will persist as well.

NRC or nuclear power industry arguments that the wet storage pools must be dismantled, along with the reactor buildings, turbine buildings, and other nuclear power plant facilities, systems, structures, and components, during decommissioning, in order to free up the land for "unrestricted re-use," do not hold water. The irradiated nuclear fuel, albeit in dry cask storage, will likely

remain on-site for years, or even decades, to come. No “unrestricted re-use” of the nuclear power plant site can take place, with dry cask storage of irradiated nuclear fuel at the heart of it. Big Rock Point, MI is a case in point. Decommissioning ended in 2006. All structures, including the wet storage pool, were dismantled. An empty field (albeit still with significant lingering radioactive contamination, in the soil, groundwater, and surface water sediments, as well as in the flora and fauna) is all that is left behind to behold – except for the dry cask storage installation, containing both irradiated nuclear fuel, as well as highly radioactive, so-called “Greater Than Class C” “low-level” radioactive wastes (mostly reactor internals). Even though NRC has already granted “unrestricted re-use” status to the Big Rock Point site, it cannot be put back to productive re-use, so long as the high-level radioactive waste dry cask storage remains. (Nor should it, given the lingering radioactive contamination.) And it will likely remain there for years, or decades to come.

In fact, such storage could well continue for centuries. NRC itself has admitted this. Under court order, in its Continued Storage of Spent Nuclear Fuel EIS and Rule, NRC holds that on-site dry cask storage could continue indefinitely (that is, forever) into the future, if a dump is never opened in the U.S. NRC attempts to maintain that such indefinite, on-site, dry cask storage would be safe and sound. In violation of the National Environmental Policy Act, as well as the Atomic Energy Act, NRC simply assumed safety and security would be maintained forevermore. NRC never addressed the risks, nor the consequences if something goes badly wrong, its legal burden and duty under NEPA. NRC assumes that Dry Transfer Systems (DTS) can and will be designed and built, allowing for the transfer of irradiated nuclear fuel from old, failing dry casks, into new, replacement dry casks. But these DTSs are fictitious. They have never been built, let alone operated, in the U.S. NRC simply assumes that not only will dry casks be replaced, in this way, once per century, but also that the dry cask storage pads, and even the DTSs themselves, will likewise be replaced, once per century. This is, of course, all very fanciful. For one thing, NRC has not even addressed where the large-scale funding would come from, to do this.

To add to the urgency of retaining wet storage pools, so long as irradiated nuclear fuel remains stored on-site in dry casks at decommissioning nuclear power plant sites, are the documented cases of poor quality design and/or fabrication of dry casks already in use across the U.S.

Oscar Shirani of Commonwealth Edison/Exelon, and Dr. Landsman of NRC Region III, blew the whistle over a decade ago, on just how dangerously in violation of quality assurance were, and almost certainly still are (since nothing was done about their revelations, other than for Exelon to fire Shirani and blacklist him from U.S. nuclear power industry for the rest of his life), the Holtec storage/transport casks.

Similarly, VSC-24 (Ventilated Storage Casks holding 24 Pressurized Water Reactor irradiated nuclear fuel assemblies), deployed at such sites as Point

Beach, WI and Palisades, MI (both on the shore of Lake Michigan, headwaters of the Great Lakes downstream, and drinking water supply for 40 million people in two countries), as well as at Arkansas Nuclear One, have such infamous design and fabrication defects, that their further use was phased out in the 1990s. A VSC-24 cask with defective welds, loaded with irradiated nuclear fuel at Palisades in June 1994, has never been unloaded, and its irradiated nuclear fuel transferred into a new replacement cask, despite the nuclear utility's promise – and even sworn oath in federal court – that any problematic casks would be unloaded back into the storage pool. Of course, such unloading could not take place, if the storage pool has been dismantled during decommissioning.

Similarly, at Davis-Besse, Ohio, a Transnuclear dry cask was shown to have walls ground too thin, in violation of technical specifications.

These are but a few examples, the list could go on and on. They show that age-related degradation, and ultimate failure, of dry casks, to isolate radioactivity and provide radiation shielding, could occur not centuries from now, but much sooner than that.

DOE, in its February 2002 Yucca Mountain Final EIS, warned that dry cask storage of irradiated nuclear fuel, if abandoned at reactor sites, and allowed to age-degrade, and ultimately fail due to erosion under the elements, could unleash catastrophic amounts of hazardous radioactivity into the environment.

As Mary Sinclair of Don't Waste Michigan warned in the late 1990s, these nuclear power plants, and hence their on-site dry cask storage of irradiated nuclear fuel, are located on the shorelines of the Great Lakes, on the edges of other lakes, and the banks of rivers of our nation – the fresh drinking water supplies of our nation – as well as on the sea coasts. They cannot be allowed to fail. They cannot be allowed to unleash their forever deadly contents into the environment.

For these reasons, NRC's decommissioning regulations should require that the old wet storage pool be retained, albeit empty, as an emergency contingency location, where cask-to-cask transfers of irradiated nuclear fuel can take place, in both emergency situations, as well as in more routine situations – as when age-related degradation of the old casks, makes it necessary, some years or decades in the future, to transfer the irradiated nuclear fuel into new, replacement dry casks.

The HOSS statement calls for wet storage pools at operating reactors to be thinned to low-density configurations. Beyond Nuclear does call for wet storage pools at permanently shutdown reactors to be entirely emptied, their irradiated nuclear fuel transferred to HOSS dry casks as soon as possible. But Beyond Nuclear opposes the unwise dismantlement of the wet storage pools during decommissioning. Beyond Nuclear calls for the old, wet storage pools to be

preserved, and maintained, even after emptying, for all of the reasons listed above.

-------/s/-------
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