

NRC Commissioners Meeting on Dry Cask Storage
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From the public safety perspective, the trend in licensing dry cask storage is going completely in the wrong direction. Public confidence is shot, public trust is betrayed, and the public is left facing a technological nightmare with no legal power to intervene. The NRC's regulatory approach is not only irresponsible, but dangerous. In the tug of war between "effective versus efficient" licensing of independent spent fuel storage facilities, the public sees the current process as having swung way over toward the NRC greasing the skids for cask manufacturers and nuclear utilities at the expense of public health, trust, and involvement considerations.

CIRCUMVENTING PUBLIC PARTICIPATION

My personal involvement with dry cask storage began in the early 1990's downwind of Palisades nuclear plant in southwest Michigan, the first plant in the country to enjoy the NRC approved short cut on safety of building an independent spent fuel storage installation (ISFSI) under the plant's general operating license, without a site specific environmental impact statement, a site specific license, nor a public hearing.

At the top of the public's list of concerns is the use of the General License to circumvent public participation in the siting of nuclear waste dumps next to environmental treasures, fresh drinking water supplies, public property, and nearby communities. We understand that the Nuclear Waste Policy Act allows the use of the General License for generic casks. However, the 10 CFR 72.48 process allows the licensee to change a generic cask into a site specific cask without the need to go through the site specific licensing and public hearing process. Essentially, there's no such thing as a generic dry cask because of the licensee's ability to use 72.48. Licensee changes to a generic cask also creates the situation where the regulator can't be certain that the cask's Safety Evaluation Report continues to apply.

In short, the NRC has stripped the public of its right to an adjudicatory process, of the right to discovery and cross examination. Concerned citizens have been stripped of their legal rights to protect themselves from the environmental and public health dangers associated with dry cask storage of deadly high level atomic wastes.

There really are very good reasons to conduct site specific environmental impact statements and adjudicatory public hearings. Public involvement often leads to gems of local insight such as, in the Great Lakes, that sand dunes shift and erode, so you might not want to plunk 125 ton spent fuel storage casks on them. There's a little piece of wisdom that goes way back to the early days of the Judeo-Christian tradition, as seen by its inclusion in the Old Testament – thou shalt build your house on rock, not on sand. (It's akin to “don't build your house in a flood plain if you can help it,” which Northern States Power would have been wise to consider at Prairie Island.) Of course, the advice has metaphorical applications as well, but the NRC and the industry might attend to the literal interpretation.

Mary Sinclair of Don't Waste Michigan, who helped point out to Dow Chemical Company and the NRC that the Midland nuclear plant was sinking into the ground, also likes to remind everyone that Palisades' dry cask storage pad is built on a high-risk erosion zone. Those are the Michigan Department of Natural Resources' words, not hers. A three foot thick slab of concrete, anchored to nothing but shifting sand. The ISFSI was built under the plant's general operating license, but the Palisades reactor is built on an 8 foot thick foundation, anchored to bedrock. In a memo written to former NRC Chairman Ivan Selin, NRC staff person Ralph Landsman, pointing to the Palisades dry storage pad and casks, the shifting sand dunes around and beneath them, and the breaking waves of Lake Michigan less than 150 yards away, warned that circumventing site specific environmental impact studies will lead to catastrophic consequences. As of last summer, Landsman had still received no satisfactory response from the Commission.

THE FIRST RULE OF HOLES: WHEN YOU ARE IN ONE, STOP DIGGING

One of the major contentions raised by Don't Waste Michigan, the Lake Michigan Federation, and the State of Michigan Attorney General Frank Kelly in seeking an injunction in federal court against the loading of VSC-24's at Palisades was that no safe unloading procedure had been demonstrated. NRC and Consumers Energy's response to this challenge? They promised the judge that if anything went wrong, the loading procedure could be reversed, and the cask safely unloaded. Simple as that.

Well, the fourth cask to be loaded at Palisades was found shortly thereafter to be defective. As a sign of its commitment to public safety and the environment, Consumers announced it would unload the cask. Pretty quick, Consumers ran into unforeseen complications. They found they couldn't unload the thermally hot fuel back into the storage pool without a highly radioactive steam flash. Cask #4 still sits there today – going on six years after Consumers announced they would unload it.

Rather than re-appraise the situation, Consumers raced to load 9 more casks.

Consumers claims to have the unloading problem solved. Theoretically solved, on paper, perhaps. The best procedures often are paper ones. The NRC has approved the procedure. But what is the procedure? Consumers hides behind the cover of proprietary information – and the NRC lets them get away with it. The public is fully aware that there is no demonstrated unloading procedure – but don't sweat the small stuff, the industry's got work to do, and casks to load.

The first rule of loading dry casks must be, do not load unless you have demonstrated how to safely unload. No cask with a helium environment – that is, one that is much hotter thermally than a spent fuel pool – has ever been unloaded. The public will have no confidence that the NRC or the industry knows how to safely unload dry storage casks until it is demonstrated.

FABRICATION BEFORE CERTIFICATE OF COMPLIANCE: BUILD 'EM FIRST, ASK QUESTIONS LATER

The NRC's decision to allow cask manufacturers to build casks "at their own risk" before they receive their certificate of compliance has further undermined public confidence. Once casks are built, and lots of money has been spent, the pressure will be on NRC to help "fix" any problems that are discovered, rather than prevent them in the first place. Certainly, forbidding the use of casks that have been fabricated is out of the question. The public fears that cheap, quick fixes are replacing rigorous regulation. We're talking about high level radioactive wastes, some of the deadliest stuff on Earth. There's no room for short cuts on safety to save a buck for the industry. The public is outraged that this is happening. To discover that casks have problems after they've been loaded with irradiated fuel rods is scandalous – a clear sign of a dangerously irresponsible licensing process. Every time the NRC gives the green light to cask manufacturers to fabricate casks before they have their certificate of compliance begs the question, in the public's mind, when will something go wrong? When will defects be discovered? After the casks have already been fully loaded? That's a little late.

BUBBLE, BUBBLE, TOIL AND TROUBLE: CRACKS, CORROSION, AND EXPLOSIONS

Who would've ever guessed that a VSC-24 could explode? Certainly not the "experts" at the NRC, the utility companies, and the cask manufacturer – all of whom missed that chemical reaction between the zinc anti-corrosion cask liner and the boric acid in the irradiated fuel storage pool water. Let's see, zinc plus acid yields hydrogen gas. Hydrogen gas plus a spark yields an explosion. Oh, an "ignition event," sorry – an "ignition event" that dislodged a three ton cask lid. The May 1996 Point Beach explosion came as a surprise to everyone, except perhaps the public, which has come to expect just about anything from the nuclear establishment.

What defies comprehension is that the NRC and industry would repeat the same mistakes again and again. The June 1999 hydrogen "burns" at Palisades showed that even after three years of supposedly getting their act together with the VSC-24, there was still a serious breakdown of administrative controls. The suspicious fire soon thereafter at Palisades in the dry cask storage document storage shed did not escape public awareness. The fire inspector's report could not rule out arson as a cause of the fire. The original documentation about the burns which had recently occurred may have been lost – the NRC and the public will never know what was lost in that fire. Then the bubbles at Trojan – so many hydrogen bubbles generated in the irradiated fuel storage pool that the cask loading procedure had to be halted due to poor visibility.

These repeat performances show clearly that paper reviews are not adequate. Real tests are not an absolute guarantee against unforeseen problems, but they would certainly help. Before casks are manufactured, full scale testing must be done. Full scale, real life tip, dip, drop and chemical interaction tests under real life conditions are in order. For transport casks, full scale testing under real life accident scenarios must be conducted. The pat response from the highest levels of the NRC is that the transport casks will be safe – we'll make sure of it. Trust us. Well, the public does not trust the NRC, nor the nuclear industry – we haven't for a long time now, and for very good reason.

For this reason, a genuinely independent third party that deserves the public's trust must be an integral part of the testing.

It's ironic that lead test assemblies and tritium test rods are required before production mode is allowed to proceed, but the same approach is short-cut with dry storage casks. Trial and error is certainly not in the public's interest, and in the long run, neither is it in the industry's, the cask manufacturer's, nor the NRC's best interest. As it is, the public sees the present on-the-job training/innocent until proven defective licensing process as nuclear experimentation in their back yard, or front yard as the case may be.

The NRC promised the public by granting licenses to ISFSI's that they would operate safely for 20 years. This is ever-more obviously not true. Failures have developed within a few years, not decades. A TN 40 cask at Surry Nuclear plant in Virginia has suffered a helium leak and cracks in its concrete outer shield. VSC-24's at Palisades and Arkansas One have suffered weld flaws and helium leaks, not to mention the hydrogen "ignition events". There has been failure in Quality Assurance/Quality Control of the concrete aggregate with the Vectra NuHoms casks. There have been repeated chemical failures, premature aging, degradation, and deterioration. When is a comprehensive review of the cask licensing process in order? The public believes right now.

A MODEST LIST OF PUBLIC PROPOSALS

- 1) Elimination of the general license short cut. There's no such thing as a generic dry cask because of the licensee's ability to use 10 CFR 72.48.
- 2) In the absence of eliminating the general license (thereby making every ISFSI application an application for a site specific license which requires the opportunity for a public hearing) the siting of any ISFSI using a general license must be preceded by a local public hearing convened by the NRC.
- 3) Prior to the transfer of control of irradiated nuclear fuel at any ISFSI from the licensee to the DOE, the NRC must convene a local public hearing and prepare an EIS.
- 4) Prior to the transfer of control of irradiated nuclear fuel at any ISFSI from the licensee to a nuclear management company (which may intend to store irradiated nuclear fuel from storage deficient reactors at an ISFSI under its control) the NRC must convene a local public hearing to address the management company's regulatory capabilities and plans regarding the control and storage of irradiated nuclear fuel.
- 5) The public should be provided with a local public hearing for applications by a licensee to renew the certificate of a cask.
- 6) Prior to NRC's certification of a dry cask, an independent third party must test the cask under live conditions (loading and unloading of irradiated nuclear fuel) as well as

evaluate the vendor's Safety Analysis Report. No exemption should be granted for the construction of a cask, even at the vendor's own risk, until the third party has completed its evaluation and submitted its report to the NRC.

7) The public should be provided access to changes done to casks through the 72.48 process.