Fax Cover Sheet

Re: Docket ID No. NRC-2012-0246

From: Kevin Kamp

To: NRC Nuclear Waste Conference
   Directorate & Secretary, US NRC

Date: 12/20/13

Re: NUREG-2157 WC DGEIS

# of pages: Cover Sheet (1) + Exhibit F (7)
            Exhibit G (2)
            Exhibit H (19)
            Exhibit I (2)

Total = 31 pages
PETITIONERS' COMMENTS AND OBJECTIONS TO PROPOSED DIRECTOR'S DECISION UNDER 10 CFR 2.206

Now come the Petitioners in this proceeding by and through counsel and set forth their comments on the “Proposed Director's Decision under 10 CFR 2.206.” The Petitioners disagree with the Director's analysis, submit that the same is flawed and that the two independent spent fuel storage installation (ISFSI) concrete pads holding dry spent fuel must be disqualified and removed from further usage immediately. Notwithstanding the Director's conclusions, the pads do not conform with NRC regulations for earthquake stability as required by 10 CFR 72.212(b)(2)(i)(B) and 72.212(b)(3) and therefore pose a hazard in case of an earthquake.

1) It is a mischaracterization for the NRC to maintain, as it does at p. 2 of the “Proposed Decision,” that the issue of slope stability analysis of the concrete pad constructed in 2003 was under review as an “unresolved item” during a dry-cask storage inspection at the Palisades site in August 2004. In fact, NMC had been cited for a violation of NRC regulations predicated on a thorough and meaningfully documented investigation by a Ph.D. in engineering following which it was oddly downgraded to a low-priority investigatory item.

2. The Region III staff has stated (at p. 4 of the “Memorandum to Marc Dapas, RIII from
Edwin Hacket, NRR re Response to Task Interface Agreement 2005-06, Regarding Licensing Basis for, and Seismic Design of, the Palisades Independent Spent Fuel Storage Installation (ISFSI) (TAC No. MC6854)", dated November 7, 2005 - hereinafter referred to as the "November 2005 R-III Memo") as follows:

Specifically, the NRC stated that the seismic acceleration should be considered to be 0.15 g at the bedrock with an amplification factor of 1.25, producing a ground acceleration of 0.2 g. It should be noted, that at the time this information was transmitted to the licensee, the NRC staff was aware of the licensee’s intention to remove the sand overburden and to site the safety-related structures on the compacted glacial till. The NRC was also aware of the seismic velocities for the overburden, excluding the sands, between the bedrock and the assumed plant grade at 590 feet.

Therefore, the development of an amplification factor that included a 50 to 100 foot layer of loose sands, that were scheduled to be removed, would not appear consistent.

Finally, the available documentation clearly indicates that both the NRC and the licensee were aware from the beginning, that the overburden of sand would be removed, that an amplification factor between the bedrock and the ‘ground’ surface would need to be evaluated in order to establish an appropriate seismic horizontal acceleration, and that the point at which the licensee planned to and applied the seismic horizontal acceleration was at the 590 foot elevation.

And in the same document, NRR responded (p. 6):

However, the sand dune materials, which usually have a relatively low shear wave velocity, would have greater potential for liquefaction during a strong seismic event based on observations from earthquake experience. Therefore, the sand dune materials should have been removed prior to the construction. (Emphasis supplied)

It has been obvious from 1967 that the seismic horizontal acceleration standard could be met only by construction of pad facilities at the glacial till elevation, and not by allowing construction at higher elevations atop a body of compacted sand or other materials dozens of feet deep, lying above competent glacial till material. The 2004 cask pad is at an elevation of 623 feet, dozens to scores of feet above competent glacial till material. It is specious for the Director to maintain that the horizontal elevation in the event of earthquake would be essentially the same at both elevations.
The Director proposes to allow NMC to proceed with cask storage based on the fiction that the same seismic horizontal calculation applies at any elevation at the Palisades site. This is a gross technical falsity. In 1995, the Nuclear Regulatory Commission issued Information Notice 95-28, expressing this wisdom, derived from the Palisades cask pad controversy of that time:

The effects of a postulated earthquake based on the earthquake ground motion used for the plant design-basis SSE is valid for the storage casks without further analysis only if the foundation geology for the cask pad is the same as that for the plant. A different soil amplification resulting from SSE ground motion at the pad site could result in exceeding the cask design basis. (Emphasis supplied).

The NRC and NMC are pursuing faith-based engineering, consisting of a passing genuflection at engineering, coupled with a heaping helping of denial of the potential for a massive radioactive waste accident at Palisades leading to a catastrophic radiation (or radioactivity) release.

The dry casks at Palisades are for storage, not transport, and as such they are vented for air flow. An earthquake at Palisades, followed by a tumble of a cask, could conceivably find the cask wholly or partially submerged in Lake Michigan, with its inner containment cracked or breached, in which circumstance it could absorb lake water, providing the neutron moderation needed to spark a chain reaction that would rapidly - and disastrously - overheat the spent fuel contents. Once a chain reaction would start, it would make emergency recovery a suicide mission. And radioactive contamination of Lake Michigan would be dramatically worsened.

3. A review of both the "Palisades Plant - NRC Final Safety Assessment of ISFSI Support Pad," dated September 1, 1994, and the staff commentary on the issue of potential amplification effects from seismic events for the newer pad in NRC Inspection Report 05000255/2006002, dated May 11, 2006 suggests that the weight of the concrete pad, an approximately 195' X 30' X 3' concrete and steel structure, was never considered in rendering
the seismic calculation, nor was the presumed weight of the storage casks which would be placed on it. All of this was omitted from the slope stability calculations, making for a much smaller driving force on the failed slope, and an unearned higher factor of safety as a result.

The Proposed Director's Decision refers to NMC's "re-evaluation of slope stability" to, among other things, "confirm the stability of the newer pad for the possible use of a cask design heavier than that currently in service." Nowhere in the underlying documents nor in the proposed Decision is there any mention or accounting for the weight of the reinforced concrete slab, nor the weight of the casks loaded upon it.

4. The NRC staff concluded that "a minimum acceptable factor of safety of 1.15 is appropriate when considering transient loadings such as a design basis seismic event." But where is the margin of safety? It is not in the casks themselves, set on concrete slabs on below-unity or at-unity soils at Palisades. Dr. Ross Landsman, former NRC engineer with specific experience regarding the Palisades casks pads, stated in a recent declaration (at para. 4):

I noted that the licensee performed a soil-structure interaction, seismic assessment for the ISFSI pad using the SSE seismic horizontal acceleration of 0.2g. The soil-structure interaction assessment results indicated that the irradiated fuel canisters would experience 0.25g horizontal acceleration during an SSE. The irradiated fuel canister seismic horizontal acceleration design limit is 0.25g.

A copy of the declaration executed by Dr. Landsman and submitted in the recently-completed license extension proceeding for Palisades accompanies these Comments and is incorporated fully herein by reference. Thus the casks are at the outer edge of safety, without a margin, reposing on slabs which rest on soils which at least partially fall, not just below 1.15, but below unity, following calculations which did not account for the dead weight of either the casks or the slabs. In this light, the Director's conclusion that a 1.15 safety factor, faith-based though it be, seems to contradict the lesson of the Sermon on the Mount about building foundations on
sand instead of rock.¹ And the Landsman calculations were based on a lighter cask structure than NMC postulated in its 2006 study.

Moreover, the 1994 Final Safety Assessment states (p. 12) that there are several, perhaps quite large, subterranean zones which produce a factor of safety well below "unity," (1.00) - not 1.15 that the NRC requires:

Therefore, it is conservatively assumed that the SSE ground motion would cause the softer soils at depths of 12.50 meters (41 feet) and 16.15 meters (53 feet) to liquefy. Although average values of SPT blow counts indicate that part of the area under the pad will not liquefy, it is assumed for the purpose of assessing the sensitivity of adjacent slopes to liquefaction of these soils, that the entire zone of soft soils below the pad would liquefy.

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The consultant found safety factors well below unity, indicating that the slope would move if the liquefied soil lost all original shear strength and extended uniformly to great distances from the toe of the slope.

The Commission does not mention any numerical factor-of-safety values in its cover report, only that the soils are adequate to support the pad. The consultants whose report appears in the 1994 report had to assume that the liquefiable layer of sand that an NRC inspector found under the old pad was not continuous just to get the number up to 1.00, which is certainly not a conservative, public-safety-oriented regulatory stance such as the Commission purports to take.

Not only is there no rationale stated for the conclusion that there exists a 1.15 factor of safety - coincidentally the NRC minimum - but there is no evidence that factor of safety exists uniformly underneath either pad site.

¹"So, everyone who hears these words of mine and does them, will be like a smart person who built a house upon a solid Rock. And the rain came down and the rivers flood and the winds blew and it did not fall. For it was founded on that solid Rock. And, everyone hearing these words of mine and not doing them will be like a stupid person who built a house on sand. And the rain came down and the rivers flood and the winds blew and struck that house! And it fell! And the fall was great!" [Matthew 7:24-27, Holy Bible, Christian Scriptures 2001].
CONCLUSION

There are other weak assumptions in the Director's analysis. Nowhere in the underlying studies, reports, discussions and computations is there mention of the 1811-12 New Madrid earthquake, the largest in recorded history to hit the American Midwest. There is an asphalt "road" for moving and loading the casks which collars the pad and adds to the unevaluated overall weight concentration among the dunes. The NRC's vaunted conservative protectionism of the public safety takes no account of the incrementally increasing potential for a moderate or severe quake in or near that part of Michigan where Palisades is located. This latter consideration is especially important since assumptions about the "lifetime" operation of the Palisades plant were different in 1994 (40 years) than they are now (60 years with recent 20-year license extension).

Nor has the Commission in this instance departed from a troubling history of prevarication on matters related to spent fuel storage at the Palisades compound. In 1993 the NRC and NMC represented to a federal judge that the spent fuel cask loading was reversible (www.nirs.org/reactorwatch/licensing/sinclairtr020697.pdf). Just a year later, a flawed cask was discovered and that cask has sat there ever since, technologically inaccessible because, in fact, the casks cannot be unloaded without great danger and expense, if at all. Episodes such as this seem entirely consistent with later determinations by the NRC which cite, then freely ignore, regulatory standards and other criteria, which downgrade meticulously-documented violations to administrative work tasks, and which flatly compromise the practical ideal of leaving a margin of safety when handling highly dangerous materials.

Concerns about the stability of both ISFSI pads during an earthquake remain. Liquefactional lying over the past decade and a half seems only to have protected the wholly-experimental use of an untested dry cask storage system at Palisades under the first
general license permitting it, a cask system (VSC-24) that has experienced a deeply troubled
history of design and manufacturing defects and operational mishaps and accidents. The
persistent manipulation of truths and data do not satisfy public questions, nor the need for
strictest regulation in the interests of public safety.

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Counsel for Petitioners
Citizen Groups Appeal to Federal Court against Palisades Nuclear Plant Charge
High-Level Radioactive Waste Storage Violates Safety Regulations

Washington, D.C.—Atomic watchdog groups Nuclear Information and Resource Service (NIRS) and Don't Waste Michigan have filed an appeal to the U.S. Court of Appeals for the District of Columbia Circuit alleging that the high-level radioactive waste dry cask storage pads at Palisades Nuclear Power Plant near South Haven violate U.S. Nuclear Regulatory Commission (NRC) earthquake safety regulations. The three-foot thick concrete pads rest upon loose sand amidst the dunes of the Lake Michigan shoreline, with some containers of irradiated nuclear fuel just 150 yards from the water. This lawsuit marks the 15th continuous year of grassroots citizen resistance against the risks of radioactive waste generation and storage at Palisades.

The groups have exhausted all administrative remedies at NRC, and thus have turned to the federal courts for relief. They are represented, pro bono, by Toledo attorney Terry Lodge. Dr. Ross Landsman, a former NRC Midwest regional dry cask storage inspector, serves as their expert witness.

Dr. Landsman first warned NRC about the risks of earthquakes at Palisades in 1994. He wrote to the NRC chairman at the time: “Actually, it's the consequences that might occur from an earthquake that I'm concerned about. The casks can either fall into Lake Michigan or be buried in the loose sand because of liquefaction...It is apparent to me that [NRC's Nuclear Materials Safety and Safeguards division] doesn't realize the catastrophic consequences of their continued reliance on their current ideology.”

Despite repeating his warnings at every opportunity while employed at NRC, Dr. Landsman's official risk assessments were consistently ignored by his superiors until he retired over a decade later in 2005.

Palisades' two pads now hold over 30 concrete and steel casks, each weighing around 150 tons when fully loaded with irradiated nuclear fuel rod assemblies. The pads were built on sand dunes despite reports by the U.S. Army Corps of Engineers and Michigan Department of Natural Resources that the location was a high-risk erosion zone.

"Palisades' older dry cask pad violates the liquefaction section of NRC's earthquake safety regulations, while its newer pad violates the amplification section," said Dr. Landsman.

"Underwater submersion could lead to inadvertent nuclear chain reactions in the fissile materials still present in the wastes," said Kevin Kamps, nuclear waste specialist at NIRS. "Burial under sand could cause the wastes to dangerously overheat. Either way, a disastrous radioactive release could result."

"Palisades' mounting radioactive wastes put our precious Lake Michigan at risk, and thus the drinking water supply and recreational destination for millions of people downstream," said Alice Hirt of Don't Waste Michigan in Holland.

"Each of the casks contains 240 times the long-lasting radioactivity released by the Hiroshima atomic bomb," said Kamps. "The only solution to the radioactive waste problem is to stop making it in the first place, so Palisades should be shut down for good."

"There will be a multitude of high ticket and absolutely necessary remedial actions required at Palisades," said Michael Keegan of Coalition for a Nuclear-Free Great Lakes in Monroe. "When push comes to shove, and we will, this beleaguered plant will collapse in economic ruin. Our role has been to prevent environmental ruin."

For more information on concerned citizen efforts to address radioactive waste generation and storage risks at Palisades,
including Dr. Landsman's 1994 letter to NRC's chairman, see http://www.nirs.org/reactorwatch/licensing/palisades.htm
UNITED STATES COURT OF APPEALS  
DISTRICT OF COLUMBIA CIRCUIT

Nuclear Information and  
Resource Service, et al.,  
)  )
Appellants,  
)  ) Case No. 07-1212
-vs-  
)  
U.S. Nuclear Regulatory  
Commission, et al.,  
)  )
Appellees.  
)  )

* * * * *

APPELLANTS' REPLY TO 'FEDERAL RESPONDENTS'  
MOTION TO DISMISS'

Now come the Nuclear Information and Resource Service and  
all other Appellants, by and through counsel, and respond to the  
"Federal Respondents' Motion to Dismiss", filed by the Nuclear  
Regulatory Commission (hereinafter "Appellees" or "NRC").

The NRC has attempted to camouflage a complete regulatory  
abdication and meltdown in the mundane language of routine,  
urging that Appellants' 10 CFR § 2.206 petition for enforcement  
questions the exercise of discretionary authority by the NRC, and  
that as such it must be summarily dismissed based on Heckler v.  
Chaney, 470 U.S. 821 (1985). By deflecting all reasoned crit-  
icism, the NRC thus trivializes the need for maximum protection  
from earthquake of the high-level radioactive waste storage casks

-1-
located a few hundred feet up-slope from Lake Michigan. As the discussion below reveals, the agency has sanctioned storage of ultra-dangerous material on pads which are highly likely to fail during a moderate earthquake which will probably occur during the coming century of high-level radioactive waste storage at Palisades.

**SIGNIFICANT FOUNDATIONAL FACTS**

The factual allegations must be accepted as true

Since the legal sufficiency of the Court's jurisdiction is being challenged, the Court should take Appellants' factual allegations as true and determine whether they bring the case within the exception to the *Heckler v. Chaney* presumption of unreviewability. See, e.g., *Saudi Arabia v. Nelson*, 507 U.S. 349, 351, 361 (1993) (disputed allegations forming basis for suit presumed true for purposes of deciding motion to dismiss); *Princz v. Federal Republic of Germany*, 26 F.3d 1166, 1172 (D.C. Cir. 1994) (same). Moreover, since the Federal parties are seeking "summary disposition" ("Federal Respondents Motion to Dismiss" p. 11), the Court must construe all facts and inferences from the facts in their light most favorable to the Appellants.

The facts that matter

Appellants' petition challenges the earthquake adequacy of two concrete-with-reinforced steel slabs, each roughly the size of a basketball court and 3' thick, weighing hundreds of tons.
These two slabs were built, one in 1993 and one in 2004, on a 55' to 65'-deep sand dune on the site of the Palisades Nuclear Power Plant on the Lake Michigan shoreline in Covert, Michigan. These two slab facilities are at a higher elevation than the power plant, having been constructed on sand, while the power plant itself was set directly on bedrock after a large area was excavated in the 1960's for its foundation.

The purpose of the slabs is to hold, for perhaps a century or more\(^1\), dozens of concrete-and-steel casks, each weighing more than 250,000 pounds. These casks are designed as onsite repositories for highly-radioactive and dangerous spent nuclear fuel rods which are a waste byproduct of electricity generation. When pulled from the reactor after several years' fissioning, the spent fuel, which is fabricated in long, thin rods of enriched uranium, is initially maintained in a large, constantly-circulating pool of treated water for several years to control and remove "decay heat" which continues to be emitted after nuclear fissioning. The fuel rods, which are in bundles, are then removed from the water and stored on racks inside the spent fuel storage casks. One type of cask stored on the pads, the NUHOMS, is approximately 20 feet long, 15 feet high and 10 feet wide and are constructed at the reactor site. A second type, the VSC-24,

\(^1\)The NRC licenses the casks initially for 20 years, allows relicensing up to five (5) times for increments of 20 years, and then allows 20 years for the casks to be removed – for a total of up to 140 years.
stands vertically and is about 11 feet wide and 17 feet tall.

It is potentially dangerous for human beings to be exposed to the radiation from the casks for a prolonged time. While the casks have radiation shields to block some of the most harmful radiation from being absorbed by workers, the NRC regulates exposures. One may be exposed to up to 10 millirem/hour of radiation at 6 feet away (equal to 1 chest x-ray per hour at 6 feet away). At the cask's surface, 200 millirem per hour emission is permitted by the NRC, equal to 20 chest x-rays.

Presently, there are over thirty (30) loaded storage casks on the slabs, including the defective Cask #4, which was loaded in June 1994 and shortly thereafter found to have faulty welds. In 1993 representatives of the NRC and Consumers Power Company, then owner of Palisades, represented to a federal judge that the spent fuel cask loading was reversible\(^2\), but the technology for unloading these huge cylinders has never been demonstrated, and so Cask #4 has never been unloaded.

The Appellants contend in their § 2.206 petition\(^3\) that neither of the two concrete slab facilities were built in conformance with NRC specifications and likely cannot withstand a moderate earthquake such as have historically occurred from time to time within the Great Lakes basin. Appellants' petition was

\(^2\)www.nirs.org/reactorwatch/licensing/sinclairltr020697.pdf

\(^3\)Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML060960061.
supported before the NRC by the work and the written Declaration
of Dr. Ross Landsman, a Ph.D. in engineering and retired former
NRC inspector at Palisades. Dr. Landsman set out these expert
conclusions in his declaration⁴:

> that both pads were built, impermissibly, on compacted
sand and other subsurface materials, several dozen feet above
bedrock, instead of being installed in contact with bedrock; this
means that in the event of an earthquake, the slabs (and as a
result, the casks) will be shaken at a higher intensity than if
they were set on bedrock, and probably will shatter;

> The older (1993) pad is in violation of NRC “liquefaction”
standards under 10 CFR § 72.212(b)(2)(i)(B)⁵ and the 2004 pad,
located somewhat further inland, violates NRC “amplification”
requirements contained within the same regulation. See Landsman
Declaration, ¶¶ 3-13. Each violation putatively violates 10 CFR
§ 72.212(b)(3)⁶.

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⁴Appended to Docket No. 50-255, 72-7(2.206), NRC’s ADAMS
Accession No. ML060960061.

⁵[The general licensee shall perform written evaluations,
prior to use, that establish that]: Cask storage pads and areas
have been designed to adequately support the static and dynamic
loads of the stored casks, considering potential amplification
of earthquakes through soil-structure interaction, and soil
liquefaction potential or other soil instability due to
vibratory ground motion.

⁶[The general licensee shall]: Review the Safety Analysis
Report (SAR) referenced in the Certificate of Compliance and the
related NRC Safety Evaluation Report, prior to use of the
general license, to determine whether or not the reactor site
parameters, including analyses of earthquake intensity and
tornado missiles, are enveloped by the cask design bases
> As a nuclear safety engineer and dry cask storage inspector for the NRC, Dr. Landsman proposed to cite the utility owner of the two cask pads for violations of NRC regulations because they could not withstand projected moderate earthquake events postulated by regulation. Landsman’s superiors changed the violations to “unresolved safety items”, which allowed the utility in 2004 to proceed to load casks onto the new pad, while at the same time blocking Landsman from filing a formal protest called a “differing professional opinion” because open regulatory items are not deemed final agency actions with which one may formally differ. Landsman Declaration ¶ 3.

> Upon reviewing the utility’s mathematical computations of the earthquake stability of the slabs, Dr. Landsman discovered that instead of meeting the 0.2 g standard of rapid motion required by NRC regulations, the projected force of a moderate quake would be higher, at 0.25 g. The dry casks are built to withstand a maximum earthquake motion of 0.25 g, at best. Declaration ¶ 4.

> Dr. Landsman further discovered that the calculation of potential earthquake motion up to 0.2g on the slabs was what he (in low-key engineering parlance) called “nonconservative”. In the 1960's, Consumers Power Company committed to build all heavy

considered in these reports. The results of this review must be documented in the evaluation made in paragraph (b)(2) of this section.
facilities immediately atop bedrock.\(^7\) While at that time the contemplation was that there would be no long-term onsite storage of high-level radioactive waste, the storage policy has changed utterly. Palisades' construction of latter-day heavy slab facilities derogates the licensee's clear commitment in the 1960's that all heavy facilities such as storage slabs would be in contact with bedrock. Landsman Declaration ¶¶ 5-13. This is especially disturbing since the stability of the most dangerous nuclear material onsite is involved. Dr. Marvin Resnikoff of Radioactive Waste Management Associates in New York City has calculated that each dry cask at Palisades holds the long-lasting

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\(^7\)From p. 4 of the internal NRC "Memorandum to Marc Dapas, RIII from Edwin Hacket, NRR re Response to Task Interface Agreement 2005-06, Regarding Licensing Basis for, and Seismic Design of, the Palisades Independent Spent Fuel Storage Installation (ISFSI) (TAC No. MC6854)"", dated November 7, 2005 (Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML061110268):

Finally, the available documentation clearly indicates that both the NRC and the licensee were aware from the beginning, that the overburden of sand would be removed, that an amplification factor between the bedrock and the 'ground' surface would need to be evaluated in order to establish an appropriate seismic horizontal acceleration, and that the point at which the licensee planned to and applied the seismic horizontal acceleration was at the 590 foot elevation.

Also from the same document (p. 6):

However, the sand dune materials, which usually have a relatively low shear wave velocity, would have greater potential for liquefaction during a strong seismic event based on observations from earthquake experience. Therefore, the sand dune materials should have been removed prior to the construction. (Emphasis supplied).
radiological equivalent of 240 up to 320 Hiroshima-grade atomic bombs in their irradiated fuel assemblies, depending on cask type.

Besides Landsman's information, a review of the administrative record ("Palisades Plant - NRC Final Safety Assessment of ISFSI Support Pad," dated September 1, 1994, and NRC staff commentary on the issue of potential amplification effects from seismic events for the newer pad in NRC Inspection Report 05000255/2006002, dated May 11, 2006, that the weight of the concrete pads (including the 2004 structure, 19' X 30' X 3' and weighing hundreds of tons) was never considered in rendering the seismic calculation, nor was the weight of the storage casks which would be placed on them, conservatively estimated at 3,500 tons, nor was the weight of the concrete radiation shields erected around sub-arrays of the casks on the pads contemplated. The exclusion of these weights from the slope stability calculations resulted in a much smaller driving force on the failed slope in the event of earthquake, and an unearned higher factor of safety as a result.

While the NRC considers a 15% safety margin to be adequate, there is none - 0% margin - present. The slabs are generously

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8Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML060480234.

9Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML061350371.
but unscientifically believed to be exposed only to a projected 0.2 g earthquake shock (the maximum shaking for which the slabs are supposedly designed), but the conceivable earthquake will shake the casks to the extreme limits of their ability to withstand an earthquake (i.e., 0.25 g).

An official NRC guidance manual, NUREG-0800, sets forth the criterion for earthquake safety of plant facilities. At Section II, Acceptance Criteria, p. 6 of Section 3.7.1 of NUREG-0800 Revision 3 (identified online at www.nrc.gov as ML070640306):

"[t]he design basis shall reflect appropriate consideration of the most severe earthquakes that have been historically reported for the site and surrounding area with sufficient margin for the limited accuracy, quantity, and period of time in which historical data have been accumulated."

This criterion, if met, tells NRC license reviewers that General Design Criterion 2 in Appendix A to 10 CFR Part 50 has been satisfied. Criterion 2 of the General Design Criteria for Nuclear Power Plants (found at 10 CFR Part 50, Appendix A, entitled "Design bases for protection against natural phenomena") requires that:

Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The design bases for these structures, systems, and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site
and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena and (3) the importance of the safety functions to be performed. (Emphasis supplied)

Hence the Nuclear Regulatory Commission's acceptance criteria for a safe nuclear power facility call for installations such as spent fuel storage cask pads to be "overbuilt" or "over-engineered" to provide a hedge in case an actual earthquake is worse than projections. The regulations require that a safety margin be built into the facility unless the historical and projected earthquake data are flawless, complete, and utterly perfect. Perfect data, of course, are a mere fictional aspiration in the fields of seismology and engineering.

The NRC has compounded the imperfect data by betting the public's health and safety upon the troubling results of its mathematical computations of the seismological possibilities and inadequate capabilities of the concrete slab pads. In their "Petitioners' Comments and Objections to Proposed Director's Decision Under 10 CFR 2.206\textsuperscript{10}," Appellants noted that the NRC's own analysis revealed that the ground acceleration caused by an earthquake if the slabs were situated on bedrock instead of on a 50 to 70 foot deep sand dune would be precisely at the outer limit of acceptability - 0.2 g - and that the ground acceleration

\textsuperscript{10} Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML070390210.
would be greater (and exceed the NRC limit for stability) if the slabs were constructed on sand. *Id.* p. 2.\textsuperscript{11}

**LEGAL ARGUMENT**

For a comparatively paltry amount of utility money the sand dune could have been excavated and public safety better assured by building the slabs on bedrock, lowering the vibrational force from an earthquake. Instead, Palisades' owner and the NRC have indulged the faith-based, post hoc rationale that by clinging only tenuously to the frontiers of NRC regulations, they can ignore the Biblical injunction of the Sermon on the Mount\textsuperscript{12} and thereby better serve the public. And the NRC has the temerity to insist that it may use the *Heckler v. Chaney* rule to conceal its conscious policy of de-regulation of earthquake safety.

An exception to *Chaney's* unreviewability doctrine appears when an agency has adopted a "general policy ... so extreme as to amount to an abdication of its statutory responsibilities." See

\textsuperscript{11}Quoting from p. 4 of the "Memorandum to Marc Dapas, RIII from Edwin Hacket, NRR re Response to Task Interface Agreement 2005-06, Regarding Licensing Basis for, and Seismic Design of, the Palisades Independent Spent Fuel Storage Installation (ISFSI) (TAC No. MC6854)", dated November 7, 2005.

\textsuperscript{12}"So, everyone who hears these words of mine and does them, will be like a smart person who built a house upon a solid Rock. And the rain came down and the rivers flood and the winds blew and it did not fall. For it was founded on that solid Rock. And, everyone hearing these words of mine and not doing them will be like a stupid person who built a house on sand. And the rain came down and the rivers flood and the winds blew and struck that house! And it fell! And the fall was great!" [Matthew 7:24-27, *Holy Bible*, Christian Scriptures 2001].
Heckler v. Chaney, supra, 470 U.S. at 833 n.4. The Chaney court cautioned that the presumption of unreviewability was rebuttable:

We of course only list the above concerns to facilitate understanding of our conclusion that an agency's decision not to take enforcement action should be presumed immune from judicial review under 701(a)(2). For good reasons, such a decision has traditionally been 'committed to agency discretion,' and we believe that the Congress enacting the APA did not intend to alter that tradition. Cf. 5 Davis 28:5 (APA did not significantly alter the 'common law' of judicial review of agency action). In so stating, we emphasize that the decision is only presumptively unreviewable; the presumption may be rebutted where the substantive statute has provided guidelines for the agency to follow in exercising its enforcement powers. (Emphasis supplied).

Id. at 832-33. The Chaney court also suggested that in a reviewable case, the reviewing court has the power to decide whether the agency's action is contrary to the statute or applied the statute in a manner that was arbitrary or capricious. See id. at 833-35.

The D.C. Circuit in Safe Energy Coal. of Mich. v. NRC, 866 F.2d 1473 (D.C. Cir. 1989) suggested that it might review an NRC denial of a § 2.206 enforcement petition if the denial amounted to a complete "abdication" of the agency's statutory duty "to ensure adequate protection of the public health and safety."

Id., 866 F.2d at 1477; Union of Concerned Scientists v. NRC, 824 F.2d 108, 120 (D.C. Cir. 1987).

The NRC must, under the Atomic Energy Act, ensure that "the utilization or production of special nuclear material . . . will provide adequate protection to the health and safety of the
public." 42 U.S.C. § 2232(a). The AEA further authorizes the NRC to regulate in various formats as it "may deem necessary or desirable . . . to protect health or to minimize danger to life or property." 42 U.S.C. § 2201(b); see also id. § 2201(i)(3) (NRC authorized to regulate as it finds necessary "to govern any activity authorized pursuant to this chapter, including standards and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property").

"The NRC is charged under the AEA . . . with primary responsibility to ensure, through its licensing and regulatory functions, that the generation and transmission of nuclear power does not unreasonably threaten the public welfare. Consistent with its administrative mandate, the NRC is empowered to promulgate rules and regulations governing the construction and operation of nuclear power plants." County of Rockland v. U.S. Nuclear Regulatory Comm'n, 709 F.2d 766, 769 (2d Cir.), cert. denied, 464 U.S. 993 (1983).

The District of Columbia Court of Appeals has observed that 42 U.S.C. § 2232(a) requires the NRC to ensure "adequate protection" of public health and safety, not "absolute" protection. Union of Concerned Scientists v. U.S. Nuclear Regulatory Comm'n, 824 F.2d 108, 114 (D.C. Cir. 1987); see also id. at 118 ("The level of adequate protection need not, and almost certainly will
not, be the level of 'zero risk.' This court long has held that the adequate-protection standard permits the acceptance of some level of risk"). So collectively, the statutory provisions require that the NRC insure adequate protection of public health and safety from risks associated with nuclear plants. The NRC can be viewed as abdicating its statutory duties, then, if it has established a policy not to protect adequately public health and safety with respect to nuclear plants and associated facilities such as the cask storage pads.

It is not realistic to expect the NRC to admit that it has cynically bypassed its own regulatory requirements to de facto de-regulate earthquake safety. Rather, the court must generalize from the anecdotal regulatory failures such as have occurred at Palisades with earthquake protections and the failure to sanction Palisades' owner for the perpetuation of the defective Cask #4. "By definition, expressions of broad policies are abstracted from the particular combinations of facts the agency would encounter in individual enforcement proceedings." Crowley Caribbean Transp., Inc. v. Peña, 37 F.3d 671, 677 (D.C. Cir. 1994). And the facts at bar - where the slab facilities only facially comply with regulations because of a sleight-of-hand maneuver to ignore that they are built on sand instead of bedrock - support the conclusion that, per Heckler v. Chaney, the agency has adopted a "general policy ... so extreme as to amount to an abdication of
its statutory responsibilities."

The NRC maintains, of course ("Federal Respondents' Motion to Dismiss" pp. 2-3) that "Discretion is the hallmark of this [broad NRC] authority, for the Atomic Energy Act is 'virtually unique in the degree to which broad responsibility is reposed in the administering agency, free of close prescription in its charter as to how it shall proceed in achieving the statutory objectives.'" The agency is actually saying that it has sole discretion to determine what and how to enforce, calling to mind Humpty Dumpty's scornful insistence that "When I use a word it means just what I choose it to mean - neither more nor less."\(^{13}\) The NRC's assertion that it is completely above the law and immune from accountability through the courts, in light of its easy trampling of its own safety margins, equals "Humpty Dumpty de-regulation", all the attendant technical rituals of regulation with a result of no regulatory enforcement, where explicit regulations mean only what the NRC intends for them to mean.

**CONCLUSION**

And so the NRC hopes the Court will agree that a shallow inquest into the facts affords it no jurisdiction.

Appellants suggest, however, that instead of dismissal, the Court should allow further briefing on the merits, to closely scrutinize the NRC's audacious denial of the request to take

\(^{13}\)http://en.wikipedia.org/wiki/Humpty_Dumpty
serious enforcement steps against the owners of the illegal cask storage slabs. If the Court believes at this juncture it has enough information, on the other hand, then Appellants urge that the Court award summary disposition to them and remand this matter to the NRC with specific orders as to how the agency should proceed.

Beyond the dry talk of computations and engineering projections, it remains that there are no safety margins left in either the cask storage pads or the radioactive waste storage casks at Palisades. Yet according to the U.S. Geological Survey, the probability for an earthquake of magnitude 6.0, 7.0 or greater in the New Madrid zone is higher than 90% by the year 2045.\textsuperscript{14} Measurable, serious tremors could reach into central Michigan.\textsuperscript{15} The largest quake in recent times originating within Michigan registered 4.6 on the Richter scale in August, 1947.\textsuperscript{16}

Even in a moderate earthquake, something far less than the (8.0 Richter) New Madrid disaster\textsuperscript{17}, the storage casks will tumble downslope from the shattered pads into Lake Michigan, or become buried, or will breach. If they do not breach from the

\textsuperscript{14}http://quake.wr.usgs.gov/prepare/factsheets/NewMadrid/.

\textsuperscript{15}See map at http://hsv.com/genlintr/newmadrd/.


\textsuperscript{17}The New Madrid quake reportedly generated tidal waves on a windless day on the Great Lakes.
tumble, the casks will still pose an enormous threat to public health, safety and the environment. Spent fuel rods could break up and come into contact with one another, threatening the external environment with radiation. If casks roll into Lake Michigan and water seeps into them, there would be the nightmarish spectre of uncontrollable nuclear chain reactions. If they become buried in sand, unacceptable overheating could occur, encouraging damage to the casks and possible breach of containment.

And yet, the NRC requires either no earthquake safety margins, or even less than zero margins, at Palisades - a sharp departure from the NRC's long-standing requirements that there be safety margins by design. The Commission's decision not to enforce is less and exercise of "prosecutorial discretion" than abdication of all pretense to concern for public health and safety. De-regulation sets up the scenario for Humpty's potentially great fall.

If there ever were a Heckler v. Chaney footnote-exception to the presumption of agency discretion and judicial nonreviewability, this is it. The Court must intrude here precisely because the regulatory agency has abandoned the role of regulator with its policy and, de facto, has de-regulated the storage of spent fuel, all to the detriment of the public health and safety which the NRC is statutorily obliged to protect. The ludicrous
assertion by the NRC (Motion p. 11) that even "[r]eal ... inadequate enforcement ... does not constitute a reviewable abdication of duty,"\(^{18}\) makes the Court's choice quite obvious: it may either duck its lawful responsibility and refuse to intervene in a clear case of illegal de-regulation by an indifferent, rogue regulator, or it may re-establish the rule of law over the handling of the most dangerous substances in the world and require the NRC to fulfill its bright-line obligation to protect the public.

**WHEREFORE,** Appellants pray the Court *deny* the "Motion to Dismiss," or alternatively, that the Court award Appellants summary disposition predicated on the absence of issues of fact, coupled with the controlling statutes and regulations.

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Terry J. Lodge  
Counsel for Appellants

**CERTIFICATION**

I hereby certify that on the 17th day of August, 2007, I sent a copy of the foregoing "Appellants' Reply to 'Federal Respondents' Motion to Dismiss" to the following counsel of record via email (to Molly Barkman) and regular U.S. mail, postage prepaid (to all counsel) as follows:

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FOR IMMEDIATE RELEASE

August 23, 2007

Palisades Nuclear Plant Critics Warn Court about Catastrophic Earthquake Risks

Covert, MI—Atomic watchdog groups have told a federal appeals court that even a moderate earthquake affecting the Palisades atomic reactor could spell radioactive catastrophe for Lake Michigan and communities downwind and downstream.

In the face of a motion filed by the U.S. Nuclear Regulatory Commission (NRC) to dismiss the lawsuit, citizen groups have defended their appeal to the U.S. Court of Appeals for the District of Columbia Circuit. The suit alleges that the high-level radioactive waste storage facilities at Palisades, on the Lake Michigan shore near South Haven, violate governmental earthquake safety regulations. "Palisades' mounting radioactive wastes put our precious Lake Michigan at risk, and thus the drinking water supply and recreational destination for millions of people downstream," said Alice Hirt of Don't Waste Michigan in Holland.

In early August, the U.S. Nuclear Regulatory Commission (NRC) moved to dismiss the citizen groups' appeal to the U.S. Court of Appeals for the District of Columbia Circuit. Earlier this year, NRC rejected the groups' petition urging the agency to enforce its own regulations at Palisades.

Palisades now has over 30 concrete and steel silos holding deadly irradiated nuclear fuel rods. The silos, called dry casks, rest upon two concrete pads. The concrete slabs are located upon loose sand amidst the dunes of the Lake Michigan shoreline. Some containers of radioactive waste are just 150 yards from the water. The environmental coalition's attorney, Terry Lodge of Toledo, said: "The NRC's numbers racket is a big fraud, endangering public health and the Great Lakes. We've exposed the hidden de-regulation of earthquake safety by the NRC. This is not 'inadequate enforcement,' it is zero enforcement."

"The NRC's so-called experts pretend in their calculations that the slabs holding the casks are sitting on relatively stable clay," Lodge added. "But in fact they sit on highly unstable sand dunes, which would amplify the vibrations from an earthquake. NRC didn't count the thousands of tons of steel and concrete represented by the slabs and casks in their number-crunching. As a result, they're denying the very serious risk that these slabs, and possibly even the casks, will shatter in the event of an earthquake and release catastrophic amounts of radioactivity. Earthquakes capable of doing that have hit the Great Lakes region before."

NRC will almost certainly file a rebuttal within the next week. Palisades' owner, Entergy Nuclear of New Orleans, may also seek to have the case dismissed. The federal court will then take the case under advisement, meaning it will review both sides' arguments and then render a decision at some point in the future.

"Each of the casks contains 240 to 320 times the long-lasting radioactivity released by the Hiroshima atomic bomb," said Kevin Kamps of Beyond Nuclear, a national watchdog group. "We must stop Palisades from generating any more of these forever deadly radioactive wastes, and safeguard and secure what's already piled up on the beach against accidents, attacks, and leaks."

The groups' expert witness, Dr. Ross Landsman, can be contacted upon request. Dr. Landsman formerly served as NRC dry cask storage inspector at Palisades. He repeatedly raised warnings within the agency about the earthquake risks for over a decade, until his retirement in 2005.

For more information on concerned citizen efforts to address radioactive waste generation and storage risks at Palisades, including the most recent legal filing as well as Dr. Landsman's original 1994 letter to NRC's chairman, see http://www.nirs.org