

UNITED STATES OF AMERICA
BEFORE THE NUCLEAR REGULATORY COMMISSION
Before the Executive Director for Operations

_____)	Docket No. 50-255-LR
In the Matter of)	
NUCLEAR MANAGEMENT COMPANY)	
PALISADES NUCLEAR GENERATING)	April 4, 2006
STATION)	
_____)	

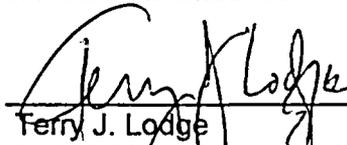
**PETITION PURSUANT TO 10 CFR 2.206 FOR ENFORCEMENT ACTION
TO TERMINATE USE OF DRY CASK STORAGE PADS
AT PALISADES NUCLEAR POWER PLANT**

TO: Luis A. Reyes, Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Reyes:

Pursuant to § 2.206 of Title 10 of the Code of Federal Regulations and on behalf of the five (5) organizational and thirty (30) individual Petitioners listed herein, I petition the Nuclear Regulatory Commission to take enforcement action in the form of condemning and forcing a halt to the use of the two (1993 and 2004) concrete pads holding dry casks storing used nuclear fuel at Palisades Nuclear Power Plant, owned by Consumers Energy, operated by Nuclear Management Company and located in Covert Township, Michigan on the eastern shore of Lake Michigan. The pads do not conform with longstanding NRC requirements for earthquake stability standards. Both were built on compacted sand and other subsurface materials, dozens of feet above bedrock and well above the ground elevation of the nearby Palisades Nuclear Power and pose a distinct hazard in the event of earthquake.

A detailed Memorandum in Support of Petition is attached.


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MEMORANDUM IN SUPPORT OF PETITION

A. Factual and Legal Basis for Enforcement Action

Neither the older (1993) nor the more recently-built (2004) concrete pads holding dry casks (which contained highly-radioactive used fuel) at Palisades conform with longstanding NRC requirements for earthquake stability standards. The accompanying Declaration of Dr. Ross Landsman,¹ formerly of the Nuclear Regulatory Commission staff, states that both pads were built on compacted sand and other subsurface materials, dozens of feet above bedrock and well above the ground elevation of the nearby Palisades Nuclear Power Plant. Dr. Landsman has decades of experience and a filled a direct oversight role in the inspection of dry cask storage at Palisades when he worked at NRC Region III during the critical period of dry cask storage installation and operation from 1993 to 2005. He concludes from his personal knowledge of the subsoil conditions that the older, 1993, pad nearer Lake Michigan is in violation of NRC "liquefaction" standards under 10 CFR Part 72.212(b)(2)(i)(B)², while the

¹The Landsman declaration was proffered in 2005 for the record in support of a formal contention filed by these same Petitioners in the ongoing proceedings for a 20-year extension of Palisades' operating license, from 2011 to 2031 (ASLBP No. 05-842-03-LR).

²[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.

newer, 2004, pad further inland violates NRC "amplification" requirements contained within the same regulations.

Neither the older nor newer dry cask storage pads at the Palisades plant were designed in consideration of the factors contained in the cited regulation. See Landsman Declaration, ¶¶ 3-13. Each violation, then, violates 10 CFR 72.212(b)(3).³ This means that the cask storage pads *have violated NRC regulations since they were constructed, and absent enforcement, they will continue to violate NRC regulations throughout any period of contemplated usage.*

The NRC staff considers the older (1993) pad nearer the lake to be in compliance with regulations and allows NMC to store high-level radioactive waste there, while the NRC is supposedly still trying to resolve through ongoing inspection, investigation, and analysis the status of the newer (2004) pad, which is situated further inland. During this extended period of investigation, the NRC is allowing NMC to store high-level radioactive waste on the new pad, despite the unresolved safety concerns.

Dr. Landsman understands that the 2004 pad was built large enough to accommodate all the dry casks currently stored on the 1993 pad, because, despite public pronouncements to the contrary by Consumers Energy, Nuclear Management Company, and the NRC, the older pad clearly violates regulations, which means that the 18 to 19 casks currently stored on the older pad⁴ must be ultimately be moved to the newer pad. The problem is, moving the casks

³[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 considered in these reports. The results of this review must be documented in the evaluation made in paragraph (b)(2) of this section.

⁴Including the dangerously, unmovable cask #4 at Palisades, loaded in June 1994 and shortly thereafter admitted by Consumers Power to be defective, having faulty welds. And the configuration of the 18 to 19 dry casks currently stored on the older pad nearer Lake Michigan is such that the casks furthest back cannot be moved or unloaded until all other casks in front of them have been moved out of

from the older pad to the newer one resolves no safety considerations.

Dr. Landsman sought repeatedly while an employee for the NRC to see the unresolved safety issues posed by the noncompliant storage pads corrected. But presently there are 29 casks stored on them.

The NRC has not heeded Dr. Landsman's articulate warnings for more than a decade, contrary to the agency's mission and mandate to protect public health and safety and the environment. On February 17, 1994, Dr. Landsman, then at NRC Region III as a nuclear safety engineer and dry cask storage inspector overseeing Palisades, sent a letter to the then-Commission Chairman, Ivan Selin, warning that:

[I]f you use NRC-approved casks under Subpart K [of 10 CFR Part 72], the regulations are silent about the foundation material or the pad. 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 NMSS [sic] doesn't realize the catastrophic consequences of their continued reliance on their current ideology. (Emphasis added)

Dr. Landsman has never received a meaningful response to this warning from the Commission. His expressed concerns about the older pad - encompassing violations of NRC regulations and of public health and safety and environmental protections - remain inadequately addressed and unresolved to this day.

Perhaps the greatest earthquakes in the known history of North America were three from a much longer series, known as the Great New Madrid quakes of 1811-12. The New Madrid quakes were estimated to be of a magnitude of 8.0 or higher on the Richter Scale. They were felt over the entire United States outside of the Pacific coast. Large areas sank into the earth, new lakes were formed, the course of the Mississippi River was changed, and forests were destroyed over an area of 150,000 acres. Many houses at New Madrid were thrown down.

the way first. This situation carries considerable risk, making it very difficult to timely deal with any emergencies in certain of the casks in the configuration.

"Houses, gardens, and fields were swallowed up" one source notes. Chimneys were toppled in New England. The Great Lakes developed crashing tides, yet there was no significant wind.

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.

<http://quake.wr.usgs.gov/prepare/factsheets/NewMadrid/>. Measurable, serious tremors could reach into central Michigan. See map at <http://hsv.com/genlintr/newmadr/>. The largest quake in recent times originating within Michigan registered 4.6 on the Richter scale in August, 1947. http://earthquake.usgs.gov/regional/states/events/1947_08_10_iso.php.

Both ISFSI pads at Palisades have continuously violated NRC earthquake regulations since the day they were built. The NRC must not allow continued high-level radioactive waste storage on pads at Palisades that are in clear violation of NRC earthquake regulations.

B. Petitioners

Organizations.

Nuclear Information and Resource Service is a nonprofit corporation with over 6000 members, a number of whom live in the Great Lakes region of the United States, including over 100 in Michigan and 50 of whom make their residences within fifty (50) miles of the Palisades Nuclear Generating Station (hereinafter "Palisades"). The central office of NIRS is located at 6930 Carroll Avenue, Suite 340, Takoma Park, MD 20912.

Western Michigan Environmental Action Council is a nonprofit, tax-exempt environmental organization started in the mid-1960's. It has 1500 members, most of whom live in Michigan, and an estimated 400 to 500 live within 50 miles of the Palisades nuclear plant. WMEAC is located at 1514 Wealthy St. SE Suite 280, Grand Rapids, MI 49506. WMEAC's representative in these proceedings is Alice Hirt, who resides at 6677 Summit View Drive, Holland, MI 49423, within 50 miles of the Palisades Nuclear Power Plant.

Don't Waste Michigan is a nonprofit organization begun in the 1980's with about 25

members, nearly all of whom live in Michigan, and of which an estimated 5 currently live within 50 miles of the Palisades nuclear plant.

The Green Party of Van Buren County is a political party and association of persons which came into being around environmental issues. It has a membership of approximately 15 members, all of whom are residents of Van Buren County, Michigan, and all of whom reside within 50 miles of the Palisades nuclear plant.

Michigan Land Trustees (website www.michiganlandtrust.org) was founded in 1976. It is an association of 60 to 70 individuals and families dedicated to preserving and protecting farm land in Michigan. Most of its members reside in southwest Michigan, at least 15 of whom live within the 50-mile zone around the Palisades nuclear reactor.

Individual Petitioners

Ann Aliotta, 79955 Fernwood Walk, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Katherine Beck, 30018 Lake Bluff Dr., Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Lee Burdick, 7130 Austrian Pineway, #13A, Portage, MI 49024, within 50 miles of the Palisades Nuclear Power Station.

Bruce Cutean, 3997 64th Street, Holland, MI 49423, within 50 miles of the Palisades Nuclear Power Station.

W. Ronald Elmore, 403 Water Street, Saugatuck, MI 49453, within 50 miles of the Palisades Nuclear Power Station.

Jane Gardner, 28386 Sturtevant, MI, 49043, within 50 miles of the Palisades Nuclear Power Station.

Barbara Geisler, 25485 County Road 681, Bangor, MI, 49013, within 50 miles of the Palisades Nuclear Power Station.

Karen Heavrin, 80012 Ramblewood Drive, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Janine Heisel, 29818 Lake Bluff Drive, Covert, MI MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Mary Lou Hession, 29818 Lake Bluff Drive, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Lauretta Holmes, 2923 Memory Lane, Kalamazoo, MI 49006, within 50 miles of the Palisades Nuclear Power Station.

Chuck Jordan, 50521 34th Avenue, Bangor, MI 49013, within 50 miles of the Palisades Nuclear Power Station.

Judy Kamps, 441 Fairfax Avenue, Kalamazoo, MI 49001, within 50 miles of the Palisades Nuclear Power Station.

Gary Karch, 251 Cass Street #714, Niles, MI 49120, within 50 miles of the Palisades Nuclear Power Station.

Maynard Kaufman, 25485 County Road 681, Bangor, MI 49013, within 50 miles of the Palisades Nuclear Power Station.

Nelly Kurzmann, 301 Edgemoor, Kalamazoo, MI 49001, within 50 miles of the Palisades Nuclear Power Station.

Nan Lewis, 80078 Ramblewood Drive, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Michael Martin, 25741 31st Street, Gobles, MI 49055, within 50 miles of the Palisades Nuclear Power Station.

Maria Ochs, 4660 Sailview Drive, Holland, MI, within 50 miles of the Palisades Nuclear Power Station.

Elizabeth Paxson, 3258 Lorraine Lane, Saugatuck, MI 49453, within 50 miles of the Palisades Nuclear Power Station.

Ken Richards, 72772 County Road 380, South Haven, MI 49090, within 50 miles of the Palisades Nuclear Power Station.

Margaret Roche, 27842 Shorewood Walk, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Pamela S. Rups, 2705 Pine Ridge Road, Kalamazoo, MI 49008, within 50 miles of the Palisades Nuclear Power Station.

James O. Schlobohm, 28324 Shorewood Drive, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Sally P. Schlobohm, 28324 Shorewood Drive, Covert, MI, 49043 within 50 miles of the Palisades Nuclear Power Station.

Catherine Sugas 410 S. Sherman Street, Otsego, MI, 49078, within 50 miles of the

Palisades Nuclear Power Station.

Elizabeth M. Sugas, 10888 Douglas Avenue, Plainwell, MI 49080, within 50 miles of the Palisades Nuclear Power Station.

Robin Tinholt, 6187 Bayou Trail, Saugatuck, MI 49453, within 50 miles of the Palisades Nuclear Power Station.

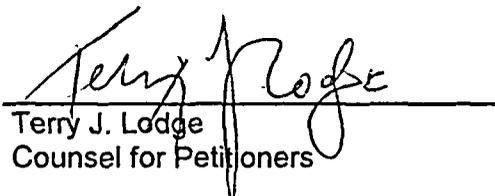
Barbara Trumbull, 80009 Ramblewood Drive, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

Sally Zigmond, 79955 Fernwood Walk, Covert, MI 49043, within 50 miles of the Palisades Nuclear Power Station.

The petitioning organizations state that their members' interests will not be adequately represented absent this 10 CFR § 2.206 enforcement action. The petitioning individuals similarly state that their interests must be taken account of in this proceeding. All Petitioners believe that the continuing use of the existing dry cask storage pad facilities at Palisades Nuclear Generating Station poses an unacceptable risk to the environment, thereby jeopardizing the health and welfare of the respective organizational Petitioners' members, and of the individual Petitioners, who live, recreate and have businesses within the vicinity of the nuclear reactor site.

C. Conclusion

The Petitioners respectfully request the Commission to investigate and take enforcement action against the owners of Palisades Nuclear Power Plant, in the form of ordering an immediate halt to the prospective use of the existing concrete storage pads, and further, to require the utility's owner to remove the dry casks from the existing pads to a properly-engineered and built storage facility as quickly as feasible.


Terry J. Lodge
Counsel for Petitioners

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of
Nuclear Management Company, LLC Docket No. 50-255
Palisades Nuclear Power Station
Regarding Renewal of Facility Operating
License No. DPR-20 for an Additional 20
Year Period

**DECLARATION OF Dr. Ross Landsman,
Retired U.S. Nuclear Regulatory Commission
Nuclear Safety Engineer and Palisades Dry Cask Storage Inspector**

Under the penalty of perjury, I, Ross Landsman, declare that the following statements are true and correct to the best of my knowledge and belief:

1. My name is Ross Landsman. I am a retired U.S. Nuclear Regulatory Commission Region III Nuclear Safety Engineer and Palisades Dry Cask Storage Inspector. I live at 9234 North Lowell, Skokie, Illinois.
2. NRC Region III, where I formerly worked before recently retiring, has requested assistance from NRC Headquarters division of Nuclear Reactor Regulation (NRR), in coordination with the division of Nuclear Materials Safety and Safeguards (NMSS) Spent (sic) Fuel Project Office (SFPO), in order to resolve questions involving the licensing basis for the Palisades Nuclear Power Plant and the appropriateness of the licensing basis to the seismic design of the Palisades ISFSI.
3. On August 4, 2004, on behalf of the NRC, I completed an inspection of design and operational activities associated with the newly constructed Palisades ISFSI pad. The results of this inspection were documented in NRC Inspection Report No. 07200007/2004-002 (DNMS). As a result, I identified two issues, characterized as violations by me in the draft report but changed to unresolved items (URI) by my boss in the final report to allow Palisades to go ahead and load fuel instead of stopping them even though it was not safe. These two issues were associated with the licensee's translation of the safe shutdown earthquake (SSE) from the reactor site to the ISFSI pad (URI 072007/2004-002-1) and its assessment of the sub-surface bearing stability beneath the ISFSI pad (URI 0720007/2004-002-2). After the final report was issued, I wrote a Differing Professional Opinion (DPO) on this issue but the agency (the NRC) would not accept it based on the fact that there was no issue to disagree about since the NRC has not made a decision on my issues yet because they changed them from violations to

unresolved items. I informed them that they did make a decision and let Palisades load casks over my objections. They turned me down again because I was retiring and officially couldn't brother them any more, but the point is, the pad is not safe to hold any loaded casks.

4. During an inspection of the 2004 ISFSI installation, I reviewed the licensee's seismic calculations associated with the ISFSI pad and the irradiated fuel canisters. I determined that the licensee performed the ISFSI pad SSE calculations assuming a seismic horizontal acceleration of 0.2g in the free-field and at the ISFSI pad ground surface elevation of 623 feet. The licensee stated its understanding that the seismic horizontal acceleration value of 0.2g was approved by the NRC at the time of initial reactor plant licensing. The licensee further stated its understanding that the 0.2g horizontal acceleration value was applicable for SSE seismic calculations associated with any location and at any elevation on the plant site. 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.

5. While reviewing the licensee's calculations, I noted significant differences between the elevation and subsurface soil composition of the reactor plant and the 2004 ISFSI pad. Specifically, the reactor containment building was constructed, following the removal of the soil/sands overburden, at a ground surface elevation of 590 feet on compacted glacial till. The 2004 ISFSI pad was constructed, without the removal of the soils/sands overburden, at a ground surface elevation of 625 feet on sands that the licensee mechanically compacted. The licensee estimated that the compacted glacial till soil layer, at the location of the 2004 ISFSI pad, was at an elevation of 560 to 570 feet.

6. Based upon the subsurface soil composition and elevation differences between the reactor plant site and the 2004 ISFSI site, I determined that the licensee's application of the 0.2g horizontal acceleration value that the ISFSI site was non-conservative. Specifically, the inspectors noted that the calculated SSE seismic horizontal acceleration would likely be larger at the ISFSI compared to the reactor plant site due to the increased site elevation and the approximately 50 to 60 feet of mechanically compacted sands present on top of the compacted glacial till material at the ISFSI site. In addition, I concluded that the soil-structure interaction calculation results were non-conservative, which if revised to incorporate a larger horizontal acceleration value based on the increased ISFSI pad elevation and the soil profile differences, would likely result in a seismic horizontal acceleration value in excess of the irradiated fuel canister design limit.

7. Additionally, correspondence between the NRC and the licensee, dated December 1966, telephone call between R. Maccary (Atomic Energy Commission, AEC) and H. Wahl (Bechtel for the licensee), indicates that the NRC considered SSE to be defined as having a horizontal acceleration, at the bedrock, of 0.15g with an amplification factor of 1.25, producing a 0.2g ground acceleration. This demonstrates the NRC's understanding

of the need for, and an accounting of, an amplification of the horizontal acceleration at the bedrock during a seismic event and the resultant ground surface acceleration.

8. In addition, the NRC's Safety Evaluation for the Palisades Nuclear Power Plant, dated February 7, 1967, indicates that the NRC was aware of the presence of significant sand dunes on the plant site and that those sand dunes would be removed prior to construction. I quote from the document: "[The site] is overlain by a 100 foot sand dune which is being removed prior to construction. Bedrock is about 150 feet below the surface." This demonstrates that the NRC was aware of the licensee's intent to remove the overburden of sand dunes prior to construction of critical plant structures. Therefore, it is unlikely that the NRC accepted the concept of sand dunes being present between the bedrock and foundation of critical plant structures. Removal of the overburden would also be a reasonable basis for using the "ground surface" term to describe calculations referencing the 590 foot elevation, since no other "ground surface" elevation would have any safety or regulatory significance.

9. The NRC's documentation of the design and construction of the reactor plant makes use of the terms "ground surface" and "grade elevation" interchangeably. This may have been appropriate at the time since the overburden sands were removed down to the compacted glacial till level, elevation 590 feet, prior to plant construction.

10. The NRC's evaluation of the seismic design was performed by J.A. Blume and Associates, dated November 28, 1969, and was included as Appendix E to the March 6, 1970 NRC Safety Evaluation Report. The evaluation in the first few paragraphs acknowledges that the plant was built in an area of sand dunes. However, the evaluation also notes that the sand dunes were removed prior to the compacted glacial till level prior to construction. Since the sand dunes were removed prior to construction, it would appear that the only logical reference point for the ground acceleration would be that elevation at which the critical plant structures were to be built, i.e. 590 feet. The evaluation also indicates that the maximum potential earthquake was specified with a maximum horizontal ground acceleration of 0.2g. The wording included here would appear to indicate that the author was neither approving nor commenting on the maximum horizontal acceleration value, merely noting that the value had been prescribed.

11. The June 1966 Palisades Preliminary Safety Analysis Report states, and I quote: "...material above elevation 590 is the area covered by sand dunes [and] should be excavated (sic) to provide adequate foundation for all heavy structures. Such excavation will generally expose the glacial lake deposits which yield higher blow count figures. Foundations of important structures will not be placed on dune sand without special compaction." It should be noted that the licensee did not propose this option and the NRC did not approve the use of this option during the initial licensing of the reactor plant.

12. The June 1966 Palisades Preliminary Safety Analysis Report also states, and I quote: "Primary plant structures utilize the compact glacial deposits, the upper surface of which ranges from about elevation 575 to 590 [feet]..."

13. Revision 0 of the Final Safety Analysis Report indicated that a 0.2g surface acceleration was used for the SSE. Licensee calculations of the seismic adequacy of those structures housing safety-related components were all performed at the grade elevation of 590 feet. This was also the ground surface elevation since the overburden of sand dunes was removed prior to construction.

14. NRR and NMSS have been requested by NRC Region III to respond to each of the following questions:

- a. During initial licensing of the Palisades Nuclear Power Plant, did the NRC anchor the horizontal acceleration for seismic evaluations at the "ground surface" of the reactor building, elevation 590 feet and on top of the compacted glacial till, or the "ground surface" of the general plant site, any elevation and with any combination of soil structures intervening between the "ground surface" and the underlying bedrock?
- b. During Initial licensing of the Palisades Nuclear Power Plant, did the NRC consider that the seismic horizontal acceleration would be amplified from its value at the bedrock to the value used at the "ground" surface due to the type and thickness of the intervening soil between the bedrock and the "ground surface"?
- c. Does the NRC expect, based upon the regulations in 10CFR72.212(b)(2)(i)(B) and 10CFR72.212(b)(3), a licensee to incorporate new information and technology into its assessment of the continued appropriateness and re-application of the previous reactor plant seismic siting and design criteria for the design and construction of an ISFSI pad?
- d. Irrespective of the previous answers, should the NRC require the licensee to demonstrate that the irradiated fuel canister seismic design is appropriate, using ISFSI pad-specific seismic data, given that the calculated ISFSI horizontal acceleration is at the canister design limit without consideration of the increases expected due to the site-specific soil profile and elevation?

15. Regarding intra-NRC coordination on these questions, NRC Region III staff spoke with NRR staff and others on April 29, 2005. NRR agreed to accept this issue as a Task Interface Agreement and to respond to this request 30 days after receipt, but at least prior to the next dry cask loading campaign, because the pad is not safe to hold the irradiated fuel. The Task Force Agreement Number is 2005-06.

16. Upon request, I would be happy to identify the more than one dozen references referred to in the preparation of this declaration.

/s/ Dr. Ross Landsman
[Signature]

Date: 9-15-2005