

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Jack R. Strosnider, Director

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| In the Matter of |) | Docket Nos. 50-255, 72-7 |
| |) | |
| NUCLEAR MANAGEMENT COMPANY, LLC |) | License No. DPR-20 |
| |) | |
| Palisades Nuclear Plant |) | |

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 fail, 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.

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/sinclairltr020697.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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