

UNITED STATES COURT OF APPEALS  
DISTRICT OF COLUMBIA CIRCUIT

Nuclear Information and Resource Service, *et al.*,

Appellants,

-vs-

U.S. Nuclear Regulatory Commission, *et al.*,

Appellees.

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Case No. 07-1212

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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 criticism, the NRC thus trivializes the need for maximum protection from earthquake of the high-level radioactive waste storage casks

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<sup>1</sup>, 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,

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<sup>1</sup>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<sup>2</sup>, 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<sup>3</sup> 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

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<sup>2</sup>[www.nirs.org/reactorwatch/licensing/sinclairltr020697.pdf](http://www.nirs.org/reactorwatch/licensing/sinclairltr020697.pdf)

<sup>3</sup>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 declaration<sup>4</sup>:

> 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)<sup>5</sup> 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)<sup>6</sup>.

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<sup>4</sup>Appended to Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML060960061.

<sup>5</sup>[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.

<sup>6</sup>[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

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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.<sup>7</sup> 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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<sup>7</sup>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,"<sup>8</sup> 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<sup>9</sup>, that the weight of the concrete pads (including the 2004 structure, 195' 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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<sup>8</sup>Docket No. 50-255, 72-7(2.206), NRC's ADAMS Accession No. ML060480234.

<sup>9</sup>Docket 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 earth-quake 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](http://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, tsunamis, 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<sup>10</sup>," 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

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<sup>10</sup>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.<sup>11</sup>

#### ***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<sup>12</sup> 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

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<sup>11</sup>Quoting from p. 4 of the "Memorandum to Marc Dapas, RIII from Edwin Hackett, 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.

<sup>12</sup>"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."<sup>13</sup> 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

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<sup>13</sup>[http://en.wikipedia.org/wiki/Humpty\\_Dumpty](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.<sup>14</sup> Measurable, serious tremors could reach into central Michigan.<sup>15</sup> The largest quake in recent times originating within Michigan registered 4.6 on the Richter scale in August, 1947.<sup>16</sup>

Even in a moderate earthquake, something far less than the (8.0 Richter) New Madrid disaster<sup>17</sup>, 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

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<sup>14</sup><http://quake.wr.usgs.gov/prepare/factsheets/NewMadrid/>.

<sup>15</sup>See map at <http://hsv.com/genlintr/newmadr/>.

<sup>16</sup>[http://earthquake.usgs.gov/regional/states/events/1947\\_08\\_10\\_iso.php](http://earthquake.usgs.gov/regional/states/events/1947_08_10_iso.php).

<sup>17</sup>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 an 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,"<sup>18</sup> 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 17<sup>th</sup> 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:

Lisa Jones, Attorney  
Appellate Section  
John F. Cordes, Solicitor  
Environment & Nat. Res. Div.  
P.O. Box 23795  
U.S. Department of Justice

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<sup>18</sup>*Texas v. U.S.*, 106 F.3d 661, 667 (5<sup>th</sup> Cir. 1997).

Washington, DC 20026-3795

Molly Barkman, Esq.  
Office of the General Counsel  
U.S. Nuclear Regulatory Comm'n  
Washington, D.C. 20555

Brad Fagg, Esq.  
Morgan, Lewis & Bockius LLP  
1111 Pennsylvania Ave., NW  
Washington, DC 20004

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Terry J. Lodge