

Citizens Action Coalition of Indiana * Citizens for Alternatives to Chemical Contamination * Citizens For Renewable Energy * Coalition for a Nuclear-Free Great Lakes * Don't Waste Michigan * Great Lakes United * The Green Party of Michigan * Kalamazoo Nonviolent Opponents of War * Lone Tree Council * Michigan Citizens for Water Conservation * Michigan Environmental Council * Michigan Land Trustees * National Environmental Trust * Nuclear Energy Information Service * Nuclear-Free Great Lakes Campaign * Nuclear Information and Resource Service * Nukewatch * PIRGIM * Radiological Evaluation & Action Project, Great Lakes (REAP-GL) * Sierra Club, Mackinac Chapter * Van Buren County Greens * WAND Michigan: Women's Action for New Directions * West Michigan Environmental Action Council

March 20, 2006

The Honorable Carl Levin
U.S. Senate
Washington, D.C. 20510

Dear Senator Levin,

We are writing you because of our serious concerns about issues of nuclear safety in Michigan.

The owner (Jackson, Michigan-based Consumers Energy Company, a subsidiary of CMS) and operator (Hudson, Wisconsin-based Nuclear Management Company, LLC) of the long-troubled Palisades nuclear power plant in Covert (just seven miles south of South Haven, on the Lake Michigan shoreline in southwestern Michigan) have applied to the U.S. Nuclear Regulatory Commission (NRC) for a 20 year extension to its original 40 year license.

But concerned citizens fear that extending the 35-year-old Palisades nuclear power plant's operational license from 2011 till 2031 risks a catastrophic accident. Palisades, as affirmed by the NRC [U.S. Nuclear Regulatory Commission, "Generalization of Plant-Specific Pressurized Thermal Shock (PTS) Risk Results to Additional Plants," Date Submitted: October 26, 2004; Revised: December 14, 2004, Table 1, "Plants with highest RTNDDT," page 5.], has one of the most embrittled reactor vessels in the United States. In fact, Nuclear Management Company itself has recently admitted that Palisades will violate embrittlement standards by 2014, just three short years into its proposed license extension [Mr. Lewis, attorney for Nuclear Management Company, Nov. 3, 2005 ASLB 20 year license extension proceedings pre-hearing, South Haven, MI, transcript page 114.]. Consumers Energy has previously pledged to take action, such as annealing (superheating to restore the metal's ductility) the reactor pressure vessel by 1999, to address the embrittlement [documented by NRC in "Reactor Pressure Vessel Embrittlement and Annealing" published prior to May, 2000, and Kalamazoo Gazette newspaper coverage]. But apparent NRC regulatory rollbacks have allowed Palisades to keep operating while ignoring embrittlement dangers, which worsen with time.

Embrittlement is caused by neutron radiation from the nuclear chain reaction in the reactor core seriously impacting the reactor pressure vessel's metallic ductility. The safety significance of embrittlement is the vessel's increased susceptibility of "pressurized thermal shock" (PTS). PTS occurs when a vessel is severely overcooled, followed by sudden re-pressurization. As the vessel is overcooled, there is a corresponding rapid drop in the pressure of the primary coolant loop. This causes the reactor's

high pressure injection pumps in the emergency core cooling system to automatically inject coolant into the primary loop. As this injection of coolant re-pressurizes the vessel, it is subjected to significant pressure stresses. The stresses placed on the reactor pressure vessel by overcooling and re-pressurization cause pressurized thermal shock, PTS. [Steve Sholly, "Pressurized Thermal Shock Screening Criteria," Nuclear Information and Resource Service, Jan. 1984.]

Thus, emergency cooling water pumped into the Palisades reactor pressure vessel would cause pressurized thermal shock, which could rupture the brittle vessel like a hot glass under cold water. The vessel, the primary containment for the deadly radioactivity within, could crack. A loss of coolant accident would ensue. The superheated nuclear fuel could melt down, burning its way through the plant's floor and foundations until it hit the underlying water table, releasing catastrophic amounts of radioactivity into the air and Lake Michigan.

The most recent analysis – "Consequences of Reactor Accident Consequences" or CRAC-2, published in 1982 by NRC and Sandia National Lab – on the effects of a large scale melt down at Palisades shows that 1,000 peak early fatalities, 7,000 peak early injuries, 10,000 peak cancer deaths, and \$52.6 billion in property damage (in 1982 dollars; if adjusted for inflation to 2005 dollars, this would be over \$100 billion) would result. This may be a significant underestimate of deaths, injuries, and property damage, given population growth and economic development over the intervening 24 years since the analysis was performed.

Given this severe risk to the safety, health, and environment of Michigan and its residents, as well as to Lake Michigan (source of drinking water, and so much more, to tens of millions downstream throughout the Great Lakes in the U.S. and Canada), a growing coalition opposes the 20 year license extension at Palisades.

Last August, a group of over 50 local concerned citizens and five groups (Don't Waste Michigan, Green Party of Van Buren County, Michigan Land Trustees, Nuclear Information and Resource Service, and West Michigan Environmental Action Council) residing within the 50 mile emergency planning zone around Palisades officially intervened before the NRC Atomic Safety and Licensing Board (ASLB) against the 20 year license extension, citing embrittlement and PTS of the reactor pressure vessel as the primary safety contention.

Since then, nearly 20 additional environmental and public interest organizations and coalitions from Michigan, four other states, and two Canadian provinces have joined the effort against the Palisades license extension. They are: Alliance for the Great Lakes (formerly Lake Michigan Federation), Citizens Action Coalition of Indiana, Citizens for Alternatives to Chemical Contamination, Citizens for Renewable Energy in Ontario, Clean Water Action, Coalition for a Nuclear-Free Great Lakes, Great Lakes United (a bi-national coalition of over 150 grassroots groups in the U.S. and Canada, headquartered in Buffalo, New York and Montreal, Quebec), Green Party of Michigan, Kalamazoo River Protection Association, League of Women Voters of the Holland Area, Michigan Citizens for Water Conservation, Michigan Environmental Council (MEC), Nuclear Energy Information Service of Illinois, Nuclear-Free Great Lakes Campaign, Nukewatch of Wisconsin, Public Interest Research Group in Michigan (PIRGIM), Radiological Evaluation & Action Project of the Great Lakes, Sierra Club's Michigan Chapter, and WAND Michigan (Women's Action for New Directions). Altogether, the organizations comprising this coalition represent well over 200,000 Michigan residents, as well as many thousands more people throughout the Great Lakes Basin.

On Nov. 3 and 4, 2005 the NRC's ASLB convened a pre-hearing in South Haven regarding the admissibility of the contentions filed by the intervening citizens and organizations. The vast majority of

time was devoted to discussing the embrittlement and PTS contention. Not only Nuclear Management Company attorneys (on behalf of Consumers Energy), but also the NRC staff itself, argued against admission of the embrittlement and PTS contention. This was most troubling, given that NRC's supposed mandate is to protect public health and safety and the environment.

It is especially troubling when combined with the history of NRC action – or lack thereof – on national embrittlement standards over the past several decades. Our best efforts to track NRC's actions indicate that embrittlement standards have apparently been weakened several times since the 1980s. There needs to be an objective audit, such as by the U.S. Government Accountability Office (GAO), to determine if and how those standards have been relaxed, and whether those changes were justified or not. We are most concerned with how those relaxed standards have potentially lowered safety margins at Palisades, but embrittlement is a national problem afflicting dozens of reactors across the country. An essential question to address is, have embrittlement safety standards been weakened in order to allow reactors such as Palisades to continue operating? If regulatory rollbacks placing profits over safety have occurred, what actions must NRC and/or Congress take to protect the public? After all, Palisades was first identified by NRC as violating embrittlement and PTS standards in 1981, just ten years into its operations. [“Not Man Apart,” Nov. 1981, Friends of the Earth; “Pressurized Thermal Shock Potential at Palisades,” Michael J. Keegan, Coalition for a Nuclear-Free Great Lakes, July 8, 1993, attached.]

We should hasten to mention that, due to lack of resources, we focused on the single most significant safety issue at Palisades – embrittlement and PTS of the reactor pressure vessel. However, we raised numerous other contentions, such as regulatory violations involving the dry cask storage pads for high-level radioactive waste on the Lake Michigan shoreline. But the focus of our intervention, and of this letter, is on embrittlement and PTS of the reactor pressure vessel.

Embrittlement and PTS had been identified as a significant national nuclear safety issue more than 25 years ago, such as by NRC reactor safety engineer Demetrios Basdekas. Basdekas's courage to speak out on the dangers of embrittlement and PTS in the face of nuclear industry and even NRC harassment led to his being awarded the Institute of Electrical and Electronics Engineers' Society on the Social Implications of Technology Carl Barus Award in 1991, “[i]n recognition of his long-standing efforts to improve the regulatory process in the nuclear power field.” Basdekas advised the Palisades intervenors on the writing of their embrittlement and PTS contention, and they have depended heavily upon the documentation of his work on the issue at NRC over the previous decades.

The intervenors' contentions were submitted to NRC's ASLB on August 8, 2005. On August 22, 2005 Basdekas informed the intervenors he could no longer serve as their expert witness, for personal reasons. Intervenors have since communicated with Dr. Joe Hopenfeld, another retired NRC safety engineer, who has indicated interest in serving as an expert witness on the embrittlement and PTS contention. A very troubling aspect of the ASLB proceedings is an apparent attempt by the NRC staff attorney to threaten any former NRC employees serving as expert witnesses for the intervenors with a \$50,000 fine and two years imprisonment. After legal consultation we have concluded that such threats are without legal merit, and fortunately Dr. Hopenfeld (and Dr. Ross Landsman, another former NRC dry cask inspector) have courageously agreed to continue serving as our experts. The attempted intimidation did chill the proceeding, however, including causing Mr. Basdekas considerable anxiety. Our question is, why would the NRC, whose mandate it is to protect public health and safety, attempt to intimidate the expert witnesses of citizen intervenors attempting to raise significant safety concerns?

Numerous rounds of filings have occurred between the intervenors, defending the embrittlement and PTS contention, and the companies and NRC staff, attacking the contention as inadmissible. Almost all of the attacks against the contention involve legalistic technicalities and procedural objections,

disregarding the merits of the safety concerns about embrittlement and PTS. In addition, the disparity of resources (between the intervenors' non-profit and largely volunteer legal effort, versus the substantial resources of the companies and agency involved), the NRC's very strict intervention proceeding rules, and the intimidation intervenors' potential expert witnesses have faced, have put the intervenors at a significant disadvantage.

Unfortunately, on March 7 the NRC licensing board ruled against all of the intervenors' contentions, including embrittlement. They denied granting intervenors a hearing on the merits of their safety concerns, ruling against them based upon legalistic and bureaucratic technicalities under the NRC's overly strict and Byzantine licensing proceeding rules. But this comes as little surprise, given NRC's clearly established pattern of denying intervenors' contentions and approving 20 year license extensions: NRC has approved 37 reactor license extensions since 1998, having ruled against almost all intervenors' contentions, including contentions involving reactor pressure vessel embrittlement and PTS. NRC now seems poised to rubberstamp the Palisades license extension as well. The ASLB's rejection of our contentions reflects an overriding pattern at NRC – the downplaying and outright neglect of significant safety issues such as security, waste, age-related deterioration, and other issues in the rush to rubberstamp 20 year license extensions.

NRC's rubberstamp on the Palisades 20 year license extension will now likely eventually follow as a mere formality, leaving the significant safety issues surrounding embrittlement and PTS of the reactor pressure vessel unaddressed. The intervenors will appeal this adverse ASLB ruling on the embrittlement contention to the five member NRC Commission itself, in order to preserve the record of the intervention and exhaust all administrative remedies. But history is again clear: no intervention appeals to the NRC Commission have ever succeeded against a 20 year license extension. Although very unlikely, if the NRC Commissioners do overrule the ASLB decision and admit the embrittlement contention, the intervenors fully intend to prove during the adjudicatory hearing that embrittlement and PTS risks are too high for NRC to grant Palisades a 20 year license extension.

Seeing the writing on the wall -- that our administrative remedies are being exhausted and our appeal will almost certainly fail at the NRC -- we are writing to ask you to request a GAO investigation into the significant nuclear safety issue of reactor pressure vessel embrittlement and PTS. Michigan residents downwind and downstream from Palisades are not the only Americans put at risk by this. NRC has identified the 30 most embrittled pressurized water reactor vessels in the U.S. (see attached)

According to this NRC listing, the most embrittled reactor vessel in the country is at Salem Unit 1 in New Jersey, very close to the border with Pennsylvania. (Salem Unit 2 is also listed, as the 23rd most embrittled.)

Beaver Valley (2nd most embrittled in U.S.) and Three Mile Island Unit 1 (3rd most embrittled) are both in Pennsylvania. Despite this, they have sent NRC letters of intent to apply for 20 year license extensions. The Indian Point 2 nuclear power plant in New York State has also indicated its intention to re-license, despite being identified as having the 13th most embrittled reactor vessel in the U.S.

In fact, NRC has already granted 20 year license extensions to several reactors also identified as among the 30 most embrittled. These include both Calvert Cliffs units in Maryland, Ginna in New York State, Point Beach Unit 1 in Wisconsin (also on the Lake Michigan shoreline, upwind of northern Michigan), and – of additional concern for Michigan -- both Cook units in southwest Michigan.

Other pressurized water reactors on this NRC watch list, such as Diablo Canyon Units 1 and 2 in California, have not yet indicated their intention to apply for license extensions. But they very likely will

do so, especially if NRC's license extension approvals continue to essentially be pro forma, de facto rubberstamps, despite such significant safety concerns as embrittlement.

Given the potentially catastrophic risks associated with the worsening problem of reactor pressure vessel embrittlement and PTS at pressurized water reactors across the U.S., we urge you, Senator Levin, to join with Senator Stabenow and your Senate colleagues from other impacted states to request a GAO investigation into the apparent weakening and non-enforcement of NRC safety standards regarding reactor pressure vessel embrittlement and PTS at Palisades and other reactors.

We stand ready to assist in whatever way we can, as by providing copies of NRC and other documents showing the worsening embrittlement and PTS potential at Palisades and other reactors across the U.S. Some of the intervenors' legal team members, representing Don't Waste Michigan, Coalition for a Nuclear-Free Great Lakes, and Nuclear Information and Resource Service, have watch dogged the embrittlement and PTS issue for many years, and even decades, at Palisades and nationally, and would be willing to meet with your staff and be interviewed by GAO investigators.

Thank you for your previous leadership on opposing dangerous nuclear proposals, such as: your 2004 vote against allowing the U.S. Department of Energy (DOE) to abandon high-level radioactive waste sludge in underground tanks at such sites as West Valley, New York, which would endanger Lake Erie with severe radioactive contamination; and your 2003 vote against \$7.5 billion in direct federal taxpayer subsidies for the construction of the first new nuclear reactors in the U.S. in 30 years.

Our largely volunteer efforts, as with other grassroots actions around the country, have fallen on deaf ears at NRC, whose ever more strict intervention rules benefit the nuclear power industry at the expense of the public's health, safety and environment. So widespread and significant a problem as reactor pressure vessel embrittlement and PTS should not be left to the vagaries of grassroots interventions in NRC license extension proceedings, where concerned citizens are most often stopped at the threshold, without ever being granted hearings on the merits of this complex yet potentially disastrous generic safety problem. We need Congress to investigate this issue to make certain that NRC's mandate to protect public health and safety and the environment is being fulfilled in the face of embrittled reactor pressure vessels susceptible to catastrophic failure due to PTS.

We respectfully urge you to request GAO to investigate NRC's inaction in the face of the embrittlement and PTS crisis, in order to shed light on this risk to Michigan residents downwind and downstream of Palisades, and other Americans living in the shadow of nuclear power plants with embrittled reactor pressure vessels.

For more information, please contact Kevin Kamps at Nuclear Information and Resource Service in Washington, D.C. (and a board member of Don't Waste Michigan) at 301.270.6477.

Sincerely,

Grant Smith
Executive Director
Citizens Action Coalition of Indiana
Indianapolis, IN

Kay Cumbow
Secretary
Citizens for Alternatives to Chemical Contamination
Brown City, MI

S.(Ziggy) Kleinau
Coordinator,
Citizens For Renewable Energy
Lion's Head, Ontario, Canada

Michael Keegan
Chairperson
Coalition for a Nuclear-Free Great Lakes
Monroe, Michigan

Alice Hirt (Holland chapter) and Kathryn Barnes (Sherwood chapter)
Board Members
Don't Waste Michigan

Maria Maybee
Great Lakes United
Buffalo, NY and Montreal, Quebec, Canada

Sylvia Inwood, Chair
The Green Party of Michigan
Ann Arbor MI

Dr. Tom Small
Kalamazoo Nonviolent Opponents of War
Kalamazoo, Michigan

Terry Miller, Chairman
Lone Tree Council
Bay City, MI

Terry Swier
Michigan Citizens for Water Conservation
Mecosta, MI

James Clift
Policy Director
Michigan Environmental Council
Lansing, Michigan

Maynard Kaufman and Barbara Geisler
Michigan Land Trustees
Bangor, Michigan

Vicki Levengood
Michigan Representative
National Environmental Trust
Lansing, Michigan

Dave Kraft
Executive Director
Nuclear Energy Information Service
Evanston, IL

Keith Gunter
Nuclear-Free Great Lakes Campaign
Livonia, Michigan

Kevin Kamps
Nuclear Waste Specialist
Nuclear Information and Resource Service
Washington, D.C.

John LaForge
Nukewatch
Luck, Wisconsin

Mike Shriberg, Ph.D.
Director, **PIRGIM** (Public Interest Research Group in Michigan)
Ann Arbor, MI

Henry Peters,
Radiological Evaluation & Action Project, Great Lakes (REAP-GL),
Ewen, Michigan

Anna Holden,
Chair of the Conservation Committee
Sierra Club, Mackinac Chapter,
Detroit, Michigan

Chuck Jordan
Co-chair, **Van Buren County Greens,**
State Central Committee, Green Party of Michigan
Bangor, Michigan

Clare Mead Rosen
WAND Michigan: Women's Action for New Directions
Southfield, Michigan

Thomas J. Leonard
West Michigan Environmental Action Council
Grand Rapids, MI

