Halting 20 Extended Years of Risky, Reactor Operations and Radioactive Waste Generation and Storage On Lake Michigan at Palisades Nuclear Power Plant

Comments on NUREG-1437, Supplement 27 to the Generic Environmental Impact Statement for License Renewal of the Palisades Nuclear Power Plant

2/23/06
71FR9383
(10)

Submitted to:

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RECEIVED
2006 MAY 25 PM 2: 42
RULES AND DIRECTIVES BRANCH USNRC

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Individuals endorsing these comments are listed at the end of this submission.

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May 18, 2006

SESP Review Complete
Template = ADM-013

E-RIDS = ADM-03
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I. Introduction

A 20-year license extension is proposed for Palisades Nuclear Power Plant
Consumers Energy, owner, and Nuclear Management Company (NMC), LLC, operator, of the Palisades Nuclear Power Plant situated on Lake Michigan in Covert Township, Michigan, has applied to extend its operating license 20 years beyond its original 40-year operation tenure, which began in 1971. The Nuclear Regulatory Commission (NRC), a federal agency responsible for regulating nuclear power plants, is required by the National Environmental Protection Act (NEPA) to seek input from members of the public and interested groups, regarding the environmental impacts of this action, as well as alternatives to the proposed action.

Don't Waste Michigan, the Coalition for a Nuclear Free-Great Lakes, and the Nuclear Information and Resource Service have researched, coordinated and taken a lead in the development of these comments on the proposed action. In addition to providing important background information on the plant and its impact on the region, the groups also present their assessment of the NRC's draft environmental impact statement (EIS), comments on the re-licensing process and stakeholder participation, and recommendations for improving security at the plant, as well as comments aimed at prevention of the continued risky operation of the plant, and the establishment of a permanent site for storage of high-level radioactive waste on the Great Lakes shoreline.

Description of groups submitting comments
Don't Waste Michigan is a federation of environmental organizations with a 25-member board and membership of 1,000 founded in 1987 to oppose the designation of the state of Michigan as a repository for what was misleadingly termed "low-level" radioactive waste from eight states. Don't Waste Michigan's work was ultimately successful and the state of Michigan was eliminated from consideration as a repository for the wastes. Don't Waste Michigan, with the Lake Michigan Federation (now the Alliance for the Great Lakes) and support from numerous local grassroots organizations, along with Michigan Attorney General Frank Kelly, brought suit in federal court in 1993 to prevent the loading of high-level nuclear waste in casks on the shore of Lake Michigan at the Palisades plant. The suit was unsuccessful and the issue was further pursued by Don't Waste Michigan and Lake Michigan Federation in a letter [Docket #: 05000255,07200007] sent to NRC Commissioner Dr. Shirley Jackson. A hard copy of this letter will be provided to the NRC by Don't Waste Michigan to be included as comments for this draft EIS.

The Coalition for a Nuclear-Free Great Lakes, founded 1986 in the wake of Chernobyl, is an association of groups and individuals from eight states and three Canadian provinces advocating for a nuclear-free Great Lakes. The group's inaugural conference drew representation from 35 reactor communities throughout the Great Lakes basin. The Coalition exchanges expertise and information across the basin regarding nuclear power while advocating for safe alternative energy sources and has held a series of ten basin-wide educational and conferences. The Coalition and its member groups

succeeded in encouraging the International Joint Commission to acknowledge radio-nuclides as persistent toxic substances, as well as undertaking major studies on the effects of radio-nuclides in the Great Lakes Basin. The coalition is based in Monroe, Michigan.

The Nuclear Information and Resource Service (NIRS), founded in 1978 and based in Washington, DC, is an international information and networking center for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy issues. NIRS and the World Information Service on Energy (WISE) joined forces in 2000, to create a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy.

History of involvement by submitting groups in the Palisades nuclear power plant
Don't Waste Michigan, the Coalition for a Nuclear-Free Great Lakes, and the Nuclear Information and Resource Service, have a history of monitoring the operations of Palisades, as well as consistently participating in public meetings, providing comments, and instituting legal interventions as needed. The groups have been active participants to date in the meetings, licensing proceedings, and comment processes provided by the NRC as part of the review of the application by Palisades to extend its license.

Both Don't Waste Michigan, and NIRS (representing 50 of its members within 50 miles of Palisades) filed as official interveners against the 20-year license extension, and petitioned the Atomic Safety and Licensing Board (ASLB), the NRC's administrative law licensing board, to hold hearings on the 20-year licensing extension, raising numerous safety and environmental concerns. The ASLB ruled against granting a hearing on March 7, 2006 upon which the groups appealed the decision to the NRC Commissioners. This EIS process is separate and distinct from the ASLB/Commission appeal.

NRC's comment framework unnecessarily restricts public involvement
The NRC has established a framework for this application process that unfairly and arbitrarily eliminates a huge array of issues from consideration, discussion and comment by individuals, organizations, and Native American tribes that provides an effective obstacle to meaningful public participation. Because of this, some of these comments will fall "outside" of the scope of this process. Regardless, these comments are provided on issues that we believe are germane, and we vigorously object to the arbitrary and overly strict limitations on the scope of public input.

II. Adverse Consequences of Approval of Palisades' License Extension Request

There is much at stake with the prospect of 20 additional years of nuclear power and radioactive waste generation and the associated risks and serious consequences associated with the Palisades plant, which is already unfortunately sited right in the

heart of an exceedingly environmentally valuable and sensitive dune and shoreland on Lake Michigan. Part of the Great Lakes basin, Lake Michigan is an essential facet of a system that is invaluable from a planetary perspective, not only for its contribution to the water supply on the globe - approximately 20% of the world's fresh surface water - but also for its rich and abundant fish and wildlife and the ecosystem services it provides to people, as well as supporting a primary economic engine for the nation. There is no price that can be placed on the value of Lake Michigan, but we do know this with absolute certainty:

Lake Michigan provides essential water resources for 10 million people, supports necessities crucial to the overall health of the region, such as fresh, healthy food from its abundant agricultural base, and provides a significant contribution to the recreation and tourism economies of the four states that border its lakeshore. It is the essential core of the region's natural resource base and provides a value to its human inhabitants that cannot be quantified.

Because pollutants tend to remain in the Great Lakes and cycle through the atmosphere, sediment, water, and biological food chain, contamination of Lake Michigan is a concern for the entire Great Lakes basin, home to one-tenth of the population of the United States and one-quarter of the population of Canada.

Lake Michigan is currently in a critical stage of initial recovery, after suffering decades of impacts from toxic substances, as well as habitat degradation. This initial recovery, unfortunately, has already slowed from the impacts of the more recent intrusion of invasive species. Much has been done and millions of dollars spent to restore and protect the values provided by Lake Michigan, as well as the entire Great Lakes. A recent proposal by a government led coalition has recommended that $20 billion in funds be appropriated to fully restore and protect the Great Lakes.

Given what is at stake with consideration of extending an operating license for Palisades, a nuclear power plant and waste storage facility unwisely situated within the heart of Great Lakes, it is imperative to examine the pertinent issues exhaustively as well as encourage the full and meaningful participation of the large constituency of citizens and stakeholders who will be affected by the license decision.

The aforementioned coalition of organizations and individuals listed at the end of these comments oppose the 20-year extension of a license for the Palisades nuclear power plant for the following reasons, elaborated more extensively further in this document:

<u>1. There is strong evidence that suggest security measures at Palisades are not adequate.</u> Recent reports, including one in March of 2006 by the Government Accountability Office, call into question the ability and motivation of the NRC and nuclear power industry to take the necessary steps to ensure that the nation's nuclear power plants have instituted the most stringent security measures to protect against terrorist attacks.

<u>2. Palisades' license extension will increase the amount of high-level waste on the Lake Michigan shoreline and the number of dangerous barge shipments of high-level</u>

radioactive waste on Lake Michigan. Palisades will generate approximately 290 more tons of high-level radioactive wastes in 20 additional years with no national repository likely to be established to receive the wastes. The U.S. Department of Energy's plan for transporting high-level radioactive wastes generated by the plant's operation, involves barging up to 125 or more giant rail-sized containers of the wastes from Palisades to the Port of Muskegon, up along the Lake Michigan shoreline. The slightest leakage of even a small amount of this waste could not only threaten Lake Michigan as a source of drinking water for ten million people, but also cause a host of other irrevocable impacts on the lake's fish, wildlife, people, and economy.

3. Palisades' high-level radioactive waste storage facility is defective and risky, situated on the Lake Michigan shoreline. There are numerous incidents dating from the installation of the waste storage facility to the present that demonstrate the risks associated with the dry cask storage containers, as well as their problematic placement on a high risk erosion stretch of the shoreline, on pads not adequately designed to be stable during events such as earthquakes.

4. The Palisades plant harms the environment and the health of its workers and surrounding residents from its discharges of radioactive and toxic substances to Lake Michigan, the air, and land. Routine radioactive discharges by nuclear power plants are incorrectly deemed legal and judged to be "safe" by the NRC and the nuclear power industry, contrary to a recent National Academy of Sciences report that confirms that there is no safe level of exposure to radiation. Further, other toxic chemical discharges to Lake Michigan, such as Betz Clam-Trol, discharged via a National Pollutant Discharge Elimination System (NPDES) permit, require stricter controls and enforcement of violations, as part of any license extension application.

5. Aging and extended operation increase the risk of accidents at Palisades. The longer Palisades operates, the more embrittled its reactor pressure vessel becomes, increasing the risk for Pressurized Thermal Shock, a condition caused by any number of system malfunctions which can result in a severe, sudden overcooling of the reactor pressure vessel. This can lead to a loss-of-coolant accident, meltdown, and catastrophic release of radiation to the entire Great Lakes basin.

6. The analysis of alternatives to extending the license for Palisades was flawed and biased. Renewable energy sources such as wind power and solar power, as well as alternatives such as energy efficiency and conservation, are not given credible consideration in the EIS. NMC/Consumers and the NRC reveal a bias in favor of fossil fuel and nuclear power by presenting only those two sources favorably and by downplaying the potential for energy efficiency, energy conservation, and renewable sources of electricity.

7. The draft EIS prepared by the NRC unaccountably discounts the effects of global warming. There is considerable evidence that more extreme winds, as well more frequent and intense tornadoes – all of which global warming could cause – could

make operation of Palisades more and more risky over time.

8. Financial benefits to Covert Township, host to Palisades nuclear power plant, are not evident and not expected with a license extension. The township consistently rates substantially below comparable county, state and national economic indicators in median household and per capita incomes and the draft EIS notes no improvements are expected by the license extension.

9. A 20-year extension for Palisades will be costly. Ratepayers and (by default) taxpayers are to pay for maintenance of the waste generated by the utilities. The fifty year old Price-Anderson Act requires taxpayers to pay for any major accident or terrorist incident at nuclear power plants over a cap of merely $11 billion paid for by the nuclear utilities and their insurance companies for accidents or terrorist incidents at the plant, a liability that could run into many hundreds of billions of dollars. This liability protection is a unique subsidy provided to the nuclear power industry, at taxpayer expense.

10. A license extension at Palisades increases the fragile status of numerous already threatened, endangered, or candidate species, from daily "routine" radiation releases and/or potential large-scale radiation releases. Species exposed to cumulative exposures from the radioactive discharges of a nuclear power plant may over time develop subtle genetic alterations that are not observable in the short term, but that could have large, subtle impacts within a population, not immediately apparent. This has significant implications for the threatened and endangered species of southwest Michigan.

III. Background

Palisades nuclear power plant, a one-unit pressurized water reactor with 798 mega-watt-electric capacity, began operation in 1971. It is owned by Consumers Energy and operated by Nuclear Management Company (NMC). NMC operates six nuclear power plants in Wisconsin, Minnesota, Iowa, and Michigan. Consumers Power is a member/investor in NMC and retains ownership of the Palisades plant.

The operating license for the Palisades nuclear power plant, located 5 miles south of South Haven on Lake Michigan, will expire in March 2011. NMC has applied for an extension to operate the plant for an additional 20 years, until March 2031. Nuclear power plants were originally licensed to operate for 40 years, as allowed by the Atomic Energy Act of 1954. There has been a nationwide movement by government regulators and the nuclear power industry to extend the licenses well beyond that time period, even though the reactors are beginning to show signs of aging, raising considerable concerns about safety. To date, 39 of the nation's 103 nuclear reactors have received 20-year extensions, while 12 others are in the process, including Palisades. The Nuclear Regulatory Commission has approved all applications to date.

The Nuclear Regulatory Commission (headed by a 5-member commission, appointed by the President and confirmed by the Senate) was established in 1974 to license and regulate nuclear power plants with a mission of protecting public health and safety and the environment, as well as protecting the common defense and security. Unfortunately, the NRC's implicit mission has been more one of protecting the nuclear power industry's interests rather than the interests of the public. This may be due in part to its budget: by law, the NRC is required to collect fees from nuclear power plant applicants and holders of licenses for the majority of its budget. $628 million of the NRC's $777 million budget for fiscal year 2007 is provided by the nuclear power industry.

The drive for re-licensing of the nation's nuclear power plants started as early as 1982, with research on aging of nuclear reactors, and began in earnest in 1991 when the NRC published safety requirements for renewal. Currently, re-licensing plans are moving more rapidly as proponents attempt to take advantage of the nation's current energy crisis. Extended and new nuclear power generation is now being promoted as a "clean" alternative to the use of fossil fuels, which are now universally acknowledged as contributing to global warming. Many utilities that own nuclear power plants, however, including Consumers Energy, also own coal-burning plants. Consumers Power, in particular, generates a sizable share of its electricity from the burning of fossil fuels.

The NRC and power companies thus advocate for a dangerous source of electricity, nuclear power, calling it "clean" and "green" by appearing to discourage another harmful electricity source, one, however, that they plan to continue utilizing to the fullest extent possible. Nuclear reactors, including Palisades, are not 'clean." They emit harmful radioactivity into the environment on a daily basis and generate long-lasting radioactive wastes. Further, nuclear power is <u>not</u> "carbon free," as it relies heavily on the use of fossil fuels in the mining, milling, processing, transportation, management, and storage of its fuel and waste products.

IV. Inadequate Security at Palisades is an Unacceptable Risk

The NRC has placed this issue outside the scope of the EIS for extending the license for Palisades. We strongly disagree and assert that the decision to allow Palisades to operate an additional 20 years in a much higher risk condition mandates extensive involvement by the public.

Maintaining the security of the Palisades plant is a high priority concern since the events of September 11, 2001. That threat is real and imminent, as nuclear power plants were considered to be potential targets by the terrorists who carried out 9/11, according to the report of the 9/11 Commission. The Commission report notes that several of the terrorists had given indications that a nuclear power plant near New York City was a considered target for an airplane attack, due to the large population that would be affected by a release of radioactivity. That did not happen, reportedly, because the

terrorists appeared to have concluded that it would have been difficult to control the effects of a release of radioactivity. But, the fact that it was considered means that each and every nuclear power plant in the U.S., including Palisades, should be regarded as a potential target for terrorism and security measures must be the most stringent available to address this threat. In fact, reactors such as Palisades are likely more at risk of terrorist attack than certain other reactors, as it is situated on the shoreline of Lake Michigan, the source of drinking water for the region.

Both the NRC and nuclear power companies assert that the events of 9/11 stimulated additional security at plants. However, numerous reports following 9/11 suggest otherwise, including a 2002 report by the Project on Government Oversight (POGO) referencing the plight of overworked and fatigued security guards at the plants during the year following 9/11, and numerous high-profile media accounts of risky gaps in security.

An October 3, 2002 Kalamazoo Gazette article, "Palisades incident leads to reassessment," describes a security response lapse due to Palisades' failure to follow proper procedures, leading to a communications breakdown. When three cars approached Palisades on the eve of the first anniversary of the 9/11/01 attacks, Palisades mistakenly phoned the local police rather than the county 911 system, leading to a 45 minute delay before state police arrived on the scene. By that time, the suspicious cars were long gone.

An October 20, 2002 New York Times article, "Guards at Nuclear Plants Say They Feel Swamped by a Deluge of Overtime," described an emotional breakdown by an armed security guard at Palisades with "unescorted access" to vital areas of the plant after she had been forced to work 72 hour work weeks for months on end. If guards complained about their fatigue, they faced the loss of their job, or forced psychiatric evaluations. Apparently, as reported by POGO, some nuclear utilities chose to nearly double current guards' duty time in order to avoid the added costs of training and providing benefits for newly hired guards.

In March of 2006, an independent nonpartisan investigatory federal agency, the Government Accountability Office (GAO), issued a report that demonstrates that there is much yet to be done to protect the nation from terrorist threats to nuclear power plants. The report, Efforts Made to Upgrade Security, but the Nuclear Regulatory Commission's Design Basis Threat Process Should be Improved (GAO-O6-388), assessed the NRC's current efforts and found evidence that suggested the nuclear industry attempted to avoid strengthening security to avoid costs. It also noted slow progress in conducting mock attacks or force-on-force exercises to test safety at plants, as well as egregious examples of security lapses in the small number of mock attacks that NRC has carried out to date.

NRC'S process for determining risk to nuclear power plants was flawed and undercut by the nuclear power industry

The recent GAO report was done to review the process that the NRC used to revise the Design Basis Threat (DBT) that was in place for nuclear power plants prior to 9/11. The DBT is a description of the threats that might be anticipated from terrorist activities and is used to recommend appropriate security efforts at plants. The GAO also looked at what nuclear plants were doing to meet the threats, and the results of mock attacks, called "force-on-force" inspections, to test security efforts, carried out by NRC staff.

Trained "threat assessment" staff within the NRC used intelligence information that provided information on the capabilities of terrorists and recommended that the DBT be changed to accommodate a larger suite of threats. After sending out the revised DBT for review by nuclear power plant industry officials and groups, however, the NRC changed their recommendations for revising the DBT to reflect nuclear industry concerns about what was "reasonable and feasible" to defend against.

Judgment calls were made on most likely threats

Much of the threat assessment analysis involved a review of a limited amount of information (not much was available specific to nuclear power plants) as well as personal judgment by NRC staff to predict what might be used in a terrorist attack against nuclear power plants. For example, the staff considered whether to increase the number of potential attackers in the DBT, based on knowing the number of attackers in other incidents. Staff did not, however, recommend increasing the number of attackers in the DBT because they assumed that a large number of attackers would be more likely to be caught before they could carry out an attack - a judgment call. NRC staff concluded that an attack similar to 9/11 would not focus on a single nuclear power plant and that since an attack from the air was not an option used often by terrorists, did not recommend that scenario to be included in the DBT. Staff did assess the possibilities of an attack from water, but concluded that a bomb transported by water would necessarily be of smaller size, because it would need to be carried on a boat. (This assessment would not apply to a facility on Lake Michigan, as boats of quite large size could approach Palisades; in addition, it is plausible that speedboats could have the ability to launch an attack on Palisades before plant security defenses could react.

Undue influence by the nuclear industry changed NRC recommendations

The GAO report, in its review of the revisions to the DBT, noted that because the nuclear industry had the opportunity to review the draft DBT, the changes that were made to the draft appeared to reflect concerns by the nuclear industry over the high cost of some increased security measures, suggesting undue influence by the industry. For example, industry representatives protested the inclusion of certain weapons in the DBT, saying that one would render the ballistic shielding of the plants obsolete and that another would be too costly. The industry argued as well that protecting against the use of certain weapons by terrorists was the responsibility of the U.S. federal government, namely, the Department of Defense.

The industry also opposed the inclusion of a threat of an attack from inside the plant, from an "active violent insider," saying there were no cost effective ways of avoiding this scenario. NRC staff made changes to the draft DBT that appeared to be influenced by the industry comments. When the draft DBT was presented to NRC commissioners, even more changes were made based on industry objections, for example, allowing plants to use a "human reliability program" to reduce the potential for an insider situation. The commissioners also removed some weapons from the list recommended by staff that plants would have to defend against that would have added to the cost of increasing security, as well as voting to decrease the maximum amount of weight of equipment, weapons, and explosives an attacker might carry, downgrading the level of security required at plants. The GAO report concluded that some of the changes suggested by commissioners and included as part of the DBT, were made due to judgment, rather than specific criteria.

Few mock attacks carried out to date

The GAO report noted that as of November 2005, the NRC had only conducted mock attacks, or force-on-force demonstrations at 20 of the 65 nuclear plant locations (with 103 reactors) in the U.S. The GAO reviewed documents from inspections and force-on-force demonstrations as well as observing a number of force-on-force demonstrations. Its review of 18 baseline inspection reports and demonstrations noted problems, including an intrusion detection failure at one site:

- Notice of demonstration dates were given 8 to 12 weeks in advance, and daytime and nighttime exercises were generally convened at the same times at each event, leading to a lack of unpredictability in the exercises.
- There were instances where advance information about attack scenarios had inadvertently been provided to plant personnel.
- The quality of feedback from NRC personnel to plants after an inspection varied. For example, not all potential problems were discussed by NRC with plant officials after each demonstration.
- Alarms failed to activate; some did not function properly.
- Gaps in patrols were observed.
- Not all personnel entering protected areas within the plant were searched (for example, a security officer did not examine objects that set off the metal detector).
- Some security officers were inadequately trained for a terrorist attack (lack of physical stress preparedness, training inappropriate to threat).
- Security officers in one location were noted as inattentive at their posts.
- A vehicle barrier system was improperly and ineffectively placed at one plant location.

Accountability to the public on security is non-existent

The need to keep classified certain sensitive information about measures taken at potential targets of terrorism is understandable, but those who live in the vicinity of Palisades, as well as those throughout the region who might be affected by a terrorist

attack directed at Palisades, must be assured in no uncertain terms by the NRC, Palisades, and elected leaders that every measure has been instituted that will provide safety and peace of mind to the public. It is disturbing to note that keeping back information on the plants has even broader implications. In March 2004, for example, the NRC decided not to publicize results of problems related to security at plants, as well as enforcement information relating to actions taken by the NRC against the reactor licensees for violations of safety regulations. This appears to be taking advantage of the heightened attention and concern for security at nuclear power plants to limit information about unsafe operations that should be readily available to members of the public.

If a force on force demonstration has not been conducted at Palisades, it should be conducted as soon as possible. Classified results of the demonstration should then be directly communicated to the region's U.S. Congressional representatives and senators, as well as the Governor and Attorney General of the State of Michigan, for their thorough review and approval and reporting back to the public. To truly secure the Palisades nuclear power plant and dry cask storage, the following security safeguards, if not instituted already, would need to be in place.

- Sufficient cameras and patrols;
- Delay measures, such as fences outside buildings and entrances that would delay potential attackers;
- Bullet resistant structures in the protected areas of the plant site;
- Adequate and specific training for security officers;
- Several levels of intrusion detection systems (Needed especially by Palisades to protect against intrusion from potential attackers that may enter from Van Buren State Park, adjacent to the plant site);
- Vehicle barrier systems to prevent vehicles with bombs from entering the site;
- Anti-aircraft capability, and;
- Shore patrol equipped with stationary weaponry capable of preventing an offshore assault.

While some of these safeguards may appear excessive, they are necessary to secure the facility. Unfortunately, some of these measures have significant civil liberties ramifications for the communities surround Palisades, therefore we request that the NRC address how this will be handled in a 20-year license extension in the draft EIS.

Palisades must also ensure that its irradiated nuclear fuel storage pools are safeguarded from terrorist activities. A study released in April 2005 by the National Academy of Sciences shows that the cooling pools at nuclear reactors, which store 10 to 30 times more radioactive material than that contained in the reactor core, are at risk from attacks by terrorists. According to the study, the cooling ponds could be severely damaged by crashing aircraft, high-powered weapons or explosives, releasing large quantities of radioactive material into the environment.

V. Lake Michigan Dunes and Shoreline Unsafe Location for Stored Waste Containers and Concrete Pads

Changing conditions of Lake Michigan dunes pose risks to waste storage facilities

Lake Michigan dunes constitute a series of dynamic environmental settings, from bare beach shorelines, to "growing dunes" or lightly vegetated foredunes, fragile interdunal wetlands and ponds, and finally to mature, forested "oldest" dune hills. Vegetation -- grasses, bushes, and trees -- is an essential key to the stability of the dunes. When dune vegetation is disturbed by footpaths or other activities, high winds and storms can widen a small stretch of bare sand into an increasingly wide swath or "blowout." Blowouts, areas of blowing and unstable sands, in dunes in the vicinity of Palisades' dry cask storage system could threaten the integrity of the dry cask storage waste system, by clogging vents in the casks, and causing the wastes to overheat, which could lead to an explosion. Left unattended, large blowouts in the dunes surrounding the casks could possibly decrease the stability of the pads on which the casks are situated. This issue must be addressed in the EIS. Palisades must, at minimum, be required to monitor the dunes for potential blowouts and ensure that the dunes are consistently vegetated and stable.

Threat to the waste storage facility from earthquake impacts ignored

Michigan has had a lengthy history of earthquake activity, dating back to the first several historically recorded quakes, in 1811 and 1812, originating from the New Madrid fault, centered in New Madrid, Missouri. These quakes registered at 8.0 or higher on the Richter scale. Additional quakes were felt in a variety of locations throughout Michigan in the later 1800s. The largest earthquake experienced in Michigan was in 1947. With a magnitude of 4.6, it was felt throughout southern Michigan, affecting an area of 50,000 square miles. A quake originating in south central Illinois in 1968 extended approximately 580,000 square miles and was felt throughout southern Michigan. The last earthquake in Michigan registered 3.5 and was centered in Lansing in 1994.

The New Madrid zone has produced the country's largest earthquake and is considered the country's most seismically active region east of the Rocky Mountains. The United States Geological Survey (USGS) has given the New Madrid fault a 25 to 40% probability of having an earthquake of 6.0 or greater in the next 50 years (USGS Fact Sheet FS-131-02). Movement has already been noted and described in a June 2005 *Nature* article describing the results of a University of Memphis study that detected a half-inch shift in the fault from 2000 to 2005.

The potential for earthquake activity to damage Palisades' outdoor dry cask storage pads, upon which the casks have been placed, warrants rigorous consideration, which unfortunately, is not in evidence in the draft EIS. Concerns regarding the impacts of an earthquake that might cause disruptive movement to the waste storage facilities at Palisades surfaced as early as 1994, from within the NRC. Dr. Ross Landsman, Nuclear Safety Engineer and Palisades Dry Cask Storage Inspector, questioned the adequacy of

requirements associated with earthquake activity for Palisades' dry cask storage facility in a letter to the chairman of the NRC. In his letter, Dr. Landsman voiced his concerns, "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 [soil taking on liquid characteristics]. This event might be in the public's mind in view of what just happened in Southern California. It is apparent to me that NMSS [NRC's Office of Nuclear Material Safety and Safeguards] doesn't realize the catastrophic consequences of their continued reliance on their current ideology."

In a September 15, 2005 affidavit, Dr. Landsman further describes his concerns regarding the ability of the storage pads to withstand movement due to earthquakes, asserting that both the older pad nearer Lake Michigan and the newer one further inland, are in violation of NRC earthquake regulations, 10 CFR § 72.212(b)(2)(i)(B), which require 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. . . ." Dr. Landsman noted that Palisades' analysts and engineers apparently failed to acknowledge the differences in elevation between the plant and pad sites in their design of the storage facility. This led to mistakes in the calculations made to determine the potential movement of the pads due to an earthquake. Dr. Landsman noted the violation after inspecting the new storage pad in 2004 and warned that it was not safe, but his concerns were not addressed and casks have nonetheless been allowed by NRC to be placed on the pad right up to the present.

The implications of damage to the casks from an earthquake are significant. Wastes in casks covered in or buried by sand, could overheat, causing severe damage to the irradiated nuclear fuel assemblies and making future storage, handling, transport, and management more dangerous. Overheated radioactive wastes could damage the dry storage casks, leading to leakage of radioactivity into the environment. Emergency responders could be at risk from any damage to the radiation shielding measures on the casks.

The dangers of nuclear waste cask submersion underwater are two fold. First, radioactivity could leak from the cask into the water. Leakage of even a fraction of a cask's contents into Lake Michigan could endanger the source of drinking water for ten million people. Second, enough fissile uranium-235 and plutonium is present in the high-level radioactive waste inside the casks, that water, with its neutron moderating properties, could actually cause a nuclear chain reaction to take place within the cask. This would complicate emergency responses, as potentially fatal radiation doses could be emitted from within the cask.

There is undoubtedly an elevated probability of a strong earthquake originating from the New Madrid fault in the next 50 years, and the potential for it to extend to

southwest Michigan. Because of that, it is imperative that the question of the safety of the concrete pads and the 29 storage casks of high-level wastes be resolved to the satisfaction of citizens of the region.

VI. Native American Tribes Left Out of the EIS

NRC staff, in the draft supplement to the Generic Environmental Impact Statement (GEIS), recommended that the Commission determine that the impacts of continued operation of Palisades were not significant enough to make its extended operation unreasonable. The document states further that: "This recommendation is based on (1) the analysis and findings in the GEIS; (2) the Environmental Report submitted by NMC; (3) consultation with Federal, State, and local agencies; (4) the NRC staff's own independent review; and (5) the NRC staff's consideration of public comments received during the scoping process." Astoundingly, it is obvious that Native American tribes were **not** included in the consultation process for the development of the draft EIS for Palisades.

The role of affected federally recognized, as well as non-federally recognized Native American tribes can best be described as unfairly and severely restricted throughout all aspects of the development of the EIS. Even though the re-licensing application from NMC was submitted to the NRC in March of 2005, it was not until four months later that eleven tribes in Michigan and Oklahoma were invited to participate (via one letter) in the license extension proceedings. A single letter to a federally recognized tribe is not legally sufficient government-to-government consultation. However, other tribes that might be expected to have a substantial interest in proceedings involving Palisades relating to treaty rights and other related issues were left completely out of any part of the process, such as the Bay Mills Indian Community, the Keweenaw Bay Indian Community, the Sault Saint Marie Tribe of Chippewa Indians, all in Michigan's Upper Peninsula, tribes in Wisconsin, the Sauk and Fox Tribes and others in Oklahoma, and the Kickapoo Tribe of Texas (which absorbed the Mascouten Tribe), all with ancestral ties to the Lake Michigan shoreline. In particular, there are concerns for the continued disregarding of sacred burial grounds and other artifacts of tribal groups that may be present on the site and possibly along electric transmission lines extending from the plant, as well as concerns from the tribes in safeguarding such species as the sturgeon that may be negatively impacted by continued operations at Palisades.

Native American tribes are known to have traveled regularly throughout the dunes in West Michigan, hunting in them and using dune plants for food and medicinal purposes. Because of that, it is likely that villages or encampments, as well as burial sites, may well have been located on or in the vicinity of Palisades, especially given the presence of creeks just north and just south of the plant site and the heavily forested, large dunes of the property. This likelihood is confirmed in the draft EIS, on page 2-61 to page 2-62, where the NRC reports "Native American groups that inhabited the area during the historic period were predominantly the Potawatomi, Mascouten, Miami, and Ottawa. During the early historic period, their villages were situated on the edge of

forested land, adjacent to prairies and convenient to streams or the lakeside; temporary winter camps were established in sheltered areas. By the beginning of the nineteenth century, the Potawatomi had established 11 known villages in southern Michigan. Most were near the shorelines of Lake Michigan and Lake Erie, generally along the streams that flow into their waters." Thus, Palisades has a significant potential for such Native American sites to be located on its property.

Nuclear Management Company (NMC), however, gives scant attention to the interests of Native American tribes in its over 500 page Environmental Report, prepared as part of the re-licensing application process. Section 2.10, "Historic and Archaeological Resources," of the report consists of four paragraphs, taking up less than two-thirds of one page (Page 2-46). In fact, the potential for Native American sites on the Palisades property is not explicitly mentioned at all. In its Environmental Report, NMC referenced a number of documents prepared as part of the original license application for Palisades that noted the absence of known archeological or historical resources on the site or in the vicinity to discount the potential for Native American artifacts to be impacted by the license extension application.

The only specific documentation NMC provides in the Environmental Report to support its claim that there are no Native American artifacts, is a letter dated April 7, 1972 from the U.S. Department of the Interior (DOI) to the U.S. Atomic Energy Commission (the predecessor to today's NRC), in terms of nuclear power plant regulation). In that letter, reproduced from Pages C-5 to C-9 of NMC's Environmental Report, DOI states "It does not appear that the existing plant should directly affect any existing or proposed unit of the National Park System, nor any site eligible for registration as a national historic, natural or environmental education landmark; however, the final statement should contain evidence of consultation with the State Historic Preservation Officer concerning the effects of the power station on places on or being considered for nomination to the National Register of Historic Places." However, the DOI statement does not seem to indicate that there was attention placed on locating Native American burial sites, former village sites, etc. located on the power plant site or along the transmission line corridors.

Even though the Michigan State Historic Preservation Office (MSHPO) noted the possibility of unreported artifacts (see Page C-2, Cultural Resources Correspondence of NMC's Environment Report), there has been no survey done by Consumers Power to confirm or dispute this claim and no actions taken by MSHPO officials to resolve the question, demonstrating a distinct lack of significance attached to protecting the interests of Native American tribes. In fact, NRC staff acknowledged in the draft EIS that no adequate surveys have ever been conducted at Palisades. Further, although the draft EIS document determined that the license extension for Palisades might pose a "moderate" impact on the interests of Native American tribes regarding archaeological or historical cultural resources, this initial determination was verbally deemed "a mistake" by NRC staff at the April 5, 2005 draft EIS public comment meeting in South Haven, Michigan. We ask for an explanation as to the reason for this "mistake" and

justification for a significant downgrading of the impact level ascribed to Native American interests in such cultural resources as burial sites from "moderate" in the draft EIS to "small" at the public meeting.

Forty years ago, Native American tribes were seemingly ignored in decisions regarding the original placement and construction of the Palisades nuclear power plant, even though it was an intense and disruptive use on lands at one time occupied by a number of tribes along Lake Michigan, which is revered by all Native Americans of the region. It can only be concluded from this most recent lack of attention in the re-licensing process, that these tribes have once again been accorded neither legally sufficient notification nor appropriate involvement, which is especially negligent in respect to the federally recognized tribes, which are sovereign entities and are legally entitled to have a government-to-government relationship with the United States.

All Native American tribes and bands that could be expected to have an interest in the application by Palisades to operate an additional 20 years deserve both notification of this process, as well as the opportunity to share government-to-government decision making regarding the application, as allowed for under NEPA and other federal laws. A comprehensive site wide survey should be performed on the entire Palisades property - as recommended by Palisades' own cultural resource assessment subcontractor as described in the draft EIS - carried out in close consultation with all affected tribes. If Native sites, such as burials, are found, then appropriate actions should be taken to protect them from damage, again, in close and meaningful consultation with affected tribes in order to ensure that NEPA, treaties, and the terms of other relevant federal laws, such as the Native American Graves Protection and Repatriation Act and the National Historic Preservation Act, are met.

VII. Socio-economic Impact Conclusions in EIS Biased by Substandard Methodology

Palisades has been considered a major contributor to Van Buren County's property and municipal tax revenues, but the economic benefit to Covert Township has been ambiguous. In fiscal year 2004, a total of $3.6 million in property taxes went to Covert Township and schools, with an additional $1.6 million to Van Buren County and schools. As host to the Palisades plant and benefactor of its tax revenue, it is reasonable to assume that Covert Township should at minimum be at economic parity with surrounding geographic household and per capita incomes. Despite the financial benefit such payments suggest, however, Covert Township consistently rates substantially below comparable county, state and national economic indicators in median household and per capita incomes. The EIS overlap of Geographic Distribution of Minority Populations (figure 4-1 on p. 4-29 of the NRC draft EIS) and Low-Income Populations (figure 4.2 on p. 4-30) shows a large area of Covert Township (and St. Joseph/Benton Harbor) to be both "high minority and low-income. Poverty persists in the Covert Township, a high minority and low-income community, despite the presence of the Palisades nuclear power plant for nearly four decades.

Consumers Energy is described as the largest employer in Van Buren County, with 484 employees (draft EIS, Table 2-8). The draft EIS states that unemployment in the county "was moderately high at 7.2% in December 2004," but determines no "incremental change" in employment and personal income resulting from a Palisades license renewal --new employment opportunities are not projected to occur.

Palisades' Permanent Employee Residence Information by County and City (Table 2-3) lists employee residence totals as: South Haven (156), Bangor (14), Grand Junction (13), Paw Paw (12), Hartford (8), and Others (30). Unfortunately, residents of Covert Township that might be employed at Palisades are not specified in this information, raising the question as to whether or not Covert Township residents benefit at all from employment at the plant.

A review of household income further shows a lack of positive benefit to Covert Township from Palisades. Per capita incomes in 2000 were $21,587 for the United States, $22,168 for Michigan, $17,878 for Van Buren County and $12,156 for Covert Township (U.S. Census Bureau, 2000 Census, in 1999 dollars). These figures reveal incomes for Covert Township that range from 45% and 33% consistently lower than the state of Michigan and Van Buren County respectively.

Covert Township reported 14.3% of families with incomes less than $10,000, three times the rate of Van Buren County. There are over three times as many families below poverty level in Covert Township as in Van Buren County. Covert bears the burden of 34% of related children under 18 years of age in poverty compared to Van Buren's 11%; related children under 5 years of age in poverty, 38% compared to Van Buren's 17%; Covert families with female householders, no husband present, 48% compared to Van Buren's 25%; related children under 18 years of age for Covert at 57% compared to Van Buren's 30%, and Covert related children under 5 years of age living below poverty level at 80% versus Van Buren's at 48%. Covert reports 32% of individuals in poverty while Van Buren reports 11% of individuals living in poverty. As unfortunate as Van Buren County poverty levels may be, Covert Township's poverty is consistently two and three times worse. <u>None of this data was provided whatsoever in the scope of the EIS socio-economic factors.</u>

Comments by local and county government and Chambers of Commerce officials at public hearings have extolled the benefits of new fire trucks and infrastructure improvements, and the EIS notes that Palisades' property tax revenues are "used to fund local and county emergency management programs, public safety, local public schools, local government operations, local road maintenance, and the local library system," (page 2-58, of the draft EIS). Still, Covert Township experiences chronic poverty.

NRC staff ultimately determined that the socio-economic impacts resulting from Palisades' license renewal would be "small", implying that the impacts "would not produce an incremental change in any of the impact measures used. Unfortunately, the draft EIS's methodology neglected a comprehensive analysis of socio-economic

conditions in Covert Township and Van Buren County, leaving out those conditions that did not support a positive benefit from the nuclear power plant.

NMC/Consumers discounts potential impacts to Latin American migrant workers in southwest Michigan from an extension of Palisades' license. NMC/Consumers' Environmental Report (page 2-32) notes (inaccurately) that "Berrien and Van Buren Counties host moderate numbers of migrant workers." According to the U.S. Department of Agriculture, however, in 2004, 3,677 and 6,733 temporary farm laborers (many of them Latino) were employed in Berrien and Van Buren Counties, respectively. These numbers, in addition to family members of the workers, represent populations as large as the county seats and even the biggest towns in these counties. Rather than characterizing the number of migrant workers, many of whom are Latino and of low income, as "moderate," a more accurate characterization relative to the populations of the host counties would be "large," and therefore worthy of significant consideration not only in NMC's Environmental Report, but also in NRC's draft EIS.

The Latin American agricultural workforce of the Palisades area is also at disproportionate risk from both routine radioactive discharges, as well as catastrophic radiation releases, given this workforce's complete reliance on agricultural sector employment. A large-scale radiation release from Palisades could seriously damage the region's agricultural base. Even a "minor" accident at Palisades involving radiation release could significantly harm area agriculture, due to the stigma attached to radioactive contamination. In either scenario, the Latino migrant labor workforce would suffer disproportionate harm. There also has been no evaluation of the potential for the synergistic effects of chronic or catastrophic radiation releases combined with the toxic pesticides to which field workers have been exposed. In addition, there are no Spanish language emergency evacuation instructions and notifications prepared to serve the Spanish speaking Latino population within 50 miles of the Palisades reactor.

VIII. NRC's Re-Licensing Process Arbitrarily Eliminates Major Impacts from Consideration

With no new nuclear plant orders (that were not later canceled) since 1973, a consequence of the partial meltdown in 1979 of the Three Mile Island plant in Pennsylvania, and with the last reactor built in the U.S. completed in 1996, the American public believed that nuclear power was on the way out, too risky and costly to contemplate. <u>That was not the case.</u> Plans for extending the licenses of operating nuclear power plants were already underway, begun in 1991, with draft rules written to establish a process that would ensure approvals for the extension applications. Although there were major concerns about the procedure raised by the U.S. Environmental Protection Agency, the President's Council on Environmental Quality (CEQ), state officials, environmental and safe energy organizations, concerned citizens, and others about the proposed rule, the procedure nonetheless went forward and ended with a final rulemaking published in the Federal Register in 1995 that provides

for a generic environmental impact review process for any and all nuclear power plants in the country intending to extend their licenses.

The rule requires nuclear power plant applicants to submit an environmental report (ER) and the NRC to write an environmental impact statement (EIS). Both documents are to analyze the environmental impacts associated with the proposed license extension, consider alternatives to a 20-year extension, and alternatives for reducing adverse environmental effects.

This process allows renewal applicants to take advantage of a generic analysis of environmental impacts for numerous environmental issues. Out of 92 issues identified that need to be addressed in an environmental impact analysis of re-licensing, the NRC has determined that 69 are already "adequately" addressed in the generic impact statement. Only 23 issues were found to require additional assessment for at least some plants at the time of the license renewal review. In other words, members of the public and those who live around Palisades are not allowed to address the 69 issues in comments to the NRC about re-licensing, only the short list of 23 identified by the NRC. At that time, over a decade ago, NRC made no meaningful or adequate public outreach in the vicinity of Palisades to alert the public and potentially interested stakeholders to the significance of the rulemaking and the opportunity to provide meaningful input into the decision.

The NRC also made a determination "that, although no standard exists that can be used to reach a conclusion as to the significance of the magnitude of the collective radiological effects attributable to any plant, these impacts are acceptable in that these impacts would not be sufficiently large to require the NEPA conclusion, for any plant, that the option of extended operation under 10 CFR Part 54 should be eliminated." This determination made by the NRC is in direct conflict with a 2005 National Academy of Science report, which concluded that no dose of radiation, no matter how small, can be declared "safe."

The NRC also concludes that any impacts from high-level waste and irradiated fuel disposal from a license extension (even acknowledging the uncertainties about the proposed Yucca Mountain repository) would not be sufficiently large to require the NEPA conclusion, for any plant, that the option of extended operation under 10 CFR Part 54 should be eliminated.

Through these determinations, the NRC has effectively stifled debate on two of the most significant impacts of a 20-year license extension – the continued and cumulative effects of radioactive discharges to the environment and humans from the Palisades plant, and the buildup of close to 300 more tons of high-level radioactive waste. This means storage of more wastes on the lakeshore, added to the 29 storage casks already in place, and the remainder of wastes stored in the pool within the plant, which is also a risky method for storing these deadly wastes.

IX. Routine Radioactive Discharges Pose Serious Threat to Health

The NRC has placed this issue outside the scope of the EIS for extending the license for Palisades. We strongly disagree.

There are routine everyday discharges from nuclear power plants, deemed to be both explicitly "permissible" or "allowable," and implicitly "safe" or "insignificant" by the NRC and the nuclear power industry. Prior to the advent of nuclear power, radioactive fission products, produced in nuclear reactors, were present in only exceedingly rare, trace amounts in isolated locations on earth. Over 300 different radioactive chemicals are currently created by nuclear chain reactions - and it takes hundreds of thousands to many millions of years for these new chemicals to return to a stable state.

Radioactivity is emitted to the air and the water, as part of routine discharges by nuclear power reactors. It settles upon or is washed back up on the soil and beach as well. For example, reactors use large amounts of water for cooling, and that water when it is returned to a lake or river will have radioactive substances in it. Radioactivity from air discharges also can fall out into water bodies and become embedded in bottom sediments, as well as upon soil on land. Contamination of soils and groundwater can occur through routine discharges, as well as through leaks, accidents, and spills, which are not always fully detected or reported. Wind, water, precipitation, and ecological processes (such as bio-accumulation) can move the radioactive contaminants off site where they are dispersed or diluted, but still present in the ecosystem where they can eventually make their way into living organisms.

Although radiation monitoring occurs at reactor sites, it only provides information on levels of discharges emitted or released. It does not provide specific information about where the radioactive materials end up, or if they contribute to radiation levels in plants, fish, and wildlife as well as body burdens of local and downwind or downstream residents. The Nuclear Regulatory Commission relies upon self-reporting and computer modeling from reactor operators to track radioactive releases and their projected dispersion. A significant portion of the environmental monitoring data is extrapolated - or virtual, not real.

Radioactive materials are toxic, persistent pollutants, now widely acknowledged to have many adverse affects on people, as well as fish and wildlife. According to the Union of Concerned Scientists (UCS), the adverse affects are numerous, and can include cancer, reproductive difficulties, genetic and birth defects, and death. "Routine" radioactive releases from nuclear power plants, while reported by the utility to be below "permissible" levels, are still potent due to their ability to become concentrated in organisms. For example, a report by UCS found that mallard ducks carried concentrations of cesium-137 in their flesh that was 2,000 to 2,500 times that in their food, while strontium-90 was concentrated by a factor of 65,000 in clam shells. UCS's report also found increased levels of radioactivity in marine life up to 300 miles from the source.

Ionizing radioactivity differs from natural background radioactivity because it produces radioisotopes that mimic natural chemicals and concentrate in the body where these chemicals reside. Strontium-90, which is routinely released during fission, can get into cow's milk and mimic calcium, following the path of that element in the body and end up in teeth and bones. It can concentrate to high levels and cause leukemia, a deadly form of cancer. Iodine-131, another highly toxic by-product of nuclear power, can concentrate in the thyroid where naturally occurring iodine is deposited, and produce serious hormonal dysfunctions or even thyroid cancer in children.

Radioactive byproducts in reactor waste have different half-lives – the amount of time it takes for half of a given amount of radioactive material to decay. Some decay in a few hours. Others, like strontium-90 and cesium-137 last longer, with half-lives of about 30 years. It takes them around 300 years, or ten half-lives, to decay. But some by-products, like iodine-129, have half-lives of a million years or longer. Plutonium-239, one of the most toxic human-made materials, has a half-life of nearly 25,000 years.

While concerns about the consequences of human exposure to ionizing radiation are not new, the 2005 National Academy of Science's seventh Biological Effects of Ionizing Radiation (BEIR VII) report on "Health Risks from Exposure to Low Levels of Ionizing Radiation" has confirmed that there is no safe level of exposure to radiation—that even very low doses can cause cancer and other maladies - and that risks from low dose radiation are likely greater than previously thought. The implications of NAS's recent findings require a thorough analysis by NRC in its EIS of the human health impacts of the radioactive substances released by Palisades.

NMC/Consumers should be required to provide the communities in the vicinity of the Palisades plant, with a monitoring program to supply independent information regarding radioactive discharges and releases. These communities are currently dependent upon the operators of Palisades to provide notification of radiological releases. Establishment of an independent program would give evidence of NMC/Consumers' interest in and commitment to ensuring the health of its surrounding communities.

Historically, the NRC has relied on a 1990 National Cancer Institute (NCI) study to address cancer rates near nuclear power plants. However, this study is now outdated, not accounting for latency periods which could have developed into cancers since 1990. And it was essentially methodologically flawed from the start, as the only data considered by the NCI was from the county that each reactor is located in, and not other downwind and downstream populations potentially affected by radioactive releases of the plants. Further, there are a host of other diseases associated with radiation exposure that have not been assessed, such as thyroid disease, infertility, genetic damage and birth defects, heart disease, and immune system suppression, which require monitoring and attention. A baseline assessment, as well as regular monitoring, of cancer and other disease rates is warranted prior to consideration of Palisades' proposal for a 20-year license extension.

X. More Palisades Waste to Build Up On the Lake Michigan Shoreline

Palisades' high-level radioactive waste storage facility is defective

The NRC has placed the issue of waste generation and storage outside the scope of the EIS for extending the license for Palisades. We strongly disagree.

The Palisades nuclear power plant has generated, on average, 14.5 tons [U.S. Dept. of Energy's Feb. 2002 Final EIS for Yucca Mountain. Appendix A. Tables A-7 and A-8] per year of high-level radioactive waste. The Nuclear Waste Policy Act was amended in 1982 to allow the NRC to approve interim storage of high-level radioactive waste in dry cask storage facilities in a "generic licensing" without studies specific to each plant site or Environmental Impact Statements. In 1993, several tons of wastes that were accumulating in the Palisade plant's overfull irradiated fuel pools were moved into massive concrete and steel storage casks on concrete pads on the plant site.

Inexplicably, the extremely dangerous radioactive wastes from Palisades, that will remain dangerous for tens to hundreds of thousands of years, were deliberately placed within a high-risk erosion zone, which is highly unstable, dynamic and risky. Currently, around 20 of a total of 29 casks, weighing 132 tons each, are situated approximately 150 yards from Lake Michigan, sitting atop loose sand dozens of feet thick. Thus, the casks, and the concrete pad upon which they sit, are not anchored to bedrock. This stretch of Lake Michigan's southwest shoreline is known to have the ability to recede in an exceptionally short time frame. The high-risk erosion zone requires 30-year construction setbacks that range from 55 ft. to 140 ft. and 60-year setbacks that range from 115 ft. to 260 ft.

One of the waste storage cask systems at Palisades, the "VSC-24," (Ventilated storage cask containing 24 pressurized water reactor irradiated nuclear fuel assemblies) utilizes passive ventilation to keep the waste at the appropriate temperature. The vents on this type of cask need regular cleaning so they will not clog from blowing dune sand, debris, or snow. This cask is also not considered transportable, like some casks, and as such, wastes contained within them will need to be unloaded and transferred into shipping containers, when or if transport occurs. But even though Consumers Energy and the NRC testified in federal court that the casks could be safely unloaded, there have been numerous problems. When weld defects were detected in the fourth VSC-24 cask to be loaded in 1994, for example, it was found that there were critical questions about how to handle the procedure. This defective cask has yet to be unloaded, twelve years later.

To further complicate the unloading problems of Palisades' casks, the configuration of the dry casks currently stored on the older pad nearer Lake Michigan is such that those casks furthest back cannot be moved or unloaded until all other casks in front of them have been moved out of the way first. Thus, casks that cannot be unloaded on the shore side of the pads will effectively halt unloading of the casks behind them.

There have been other accidents and incidents with the VSC-24 system. While a VSC-24 cask was being welded shut at the Wisconsin Point Beach nuclear power plant in 1996, a spark from the welding caused a hydrogen gas explosion that tilted the lid of the cask (3 tons of metal) several inches ajar; this incident occurred on the edge of the waste storage pool, threatening to damage the pool and unleash a potentially catastrophic radiological accident. Additional weld defects have been detected in other casks at Palisades and at other plant sites.

On February 6, 1997, Mary P. Sinclair Ph.D. co-chair of Don't Waste Michigan, wrote to Dr. Shirley Jackson, Chair U.S. Nuclear Regulatory Commission and reviewed this history in great detail with documentation and references for each point made. In her letter to Dr. Jackson, Dr. Sinclair wrote the following:

" . . . Attorney General Frank Kelley petitioned for an injunction in May 1993, against the loading of these casks in the Western Michigan Federal Court at Grand Rapids. (Case No. 4:93 CV 67). Consumers Power Co.'s response to the Court was that the company would unload the casks and place the nuclear waste back in the spent fuel pool if the Court should rule against them and, therefore, an injunction to prevent loading was unnecessary. A supporting position for the utility's action was filed by Charles Haughney of the NRC, in which he assured Judge Robert Holmes Bell that Consumers was able to do this by simply reversing the process of loading, if the Court so ordered. <u>This demonstrates that, not only did Consumers Power Co. mislead the Judge, perhaps out of ignorance, about Consumers' ability to unload these casks, but more importantly, Charles Haughney of the NRC pledged the Agency's credibility in support of this position.</u> His statement is signed, "Pursuant to 28 U.S.C. sec. 1746, I declare under penalty of perjury that the foregoing is true and correct." (Executed and signed on May 5, 1993). Judge Bell, of course, could hardly grant an injunction under those circumstances. <u>This is one of many instances in which the judgment of the staff was flagrantly in error, and helped to compound the problems that have later developed.</u> [pp. 3-4, Requests that Commission review 2.206 petition filed on 950919 & amended on 960930 by Lake Michigan Federation & Don't Waste Michigan, Sinclair MP. Accession Number: 9704090248, Docket Number: 05000255,07200007, Microform Address: 92410:204-92410:211] A hard copy of this letter is being provided by Don't Waste Michigan to be entered in its entirety into the record as part of comments being submitted on this draft EIS. There are additional comments in the letter, which also pertain to this EIS process.

The Wisconsin explosion led to a three year hiatus in the loading of VSC-24 casks nationwide, in order to improve safety procedures. Palisades was the first plant in the country to begin loading VSC-24s again, in June, 1999. However, mistakes were made yet again. A welding crew accidentally ignited flammable hydrogen gas being vented off a loaded VSC-24. But it failed to notify the next welding crew coming on shift to replace them. The new crew also ignited the leaking hydrogen gas, representing a breakdown of safety protocols, risking a repeat of the Wisconsin explosion.

During the June, 1999 dry cask loading campaign, Palisades also loaded irradiated fuel that had not yet thermally cooled and radioactively decayed in the underwater storage

pool for the required minimum of five years. This represented a violation of the technical specifications for the casks, and thus NRC safety regulations. Also in June 1999, a fire at Palisades in an office trailer storing paper records on the dry cask storage installation destroyed records on the most recent, and earlier, accidents.

Palisades also uses Transnuclear NUHOMS-32PT dry storage casks. In October 2005, crane handling errors led to a 107 ton NUHOMS transfer cask fully loaded with high-level radioactive waste dangling for 55 hours above the storage pool. Reports confirmed that the risk of a heavy load drop had been increased due to improper emergency brake manipulation during the incident. NRC reported that, had the load dropped, severe damage to the pool could have resulted.

A separate NRC report, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," (NUREG-1738, Feb. 2001) revealed that a heavy load drop can cause the cooling water to drain away. The densely-packed waste in the pool could then overheat, spontaneously combust, and ignite a waste fire causing catastrophic radiation release. NRC concluded that up to tens of thousands of people could die from cancer over time, downwind of such an accident.. Despite similar crane problems years earlier at its Big Rock Point nuclear power plant in northern Michigan, failure to communicate "lessons learned" within the nuclear utility contributed to repeating the same dangerous errors at Palisades.

Establishment of a permanent national waste repository remains indefinitely delayed

In 1982, with the passage of the Nuclear Waste Policy Act, the U.S. Department of Energy (DOE) was given the responsibility for finding a permanent site to build and operate a repository for all of the wastes accumulating at the reactors across the country. Original plans were for the repository to begin accepting irradiated nuclear fuel in 1998, but it has been pushed back until 2020, according to the most-recent predictions made by Energy Secretary Samuel Bodman. In 2002, Congress voted to allow DOE to apply for a license from NRC to construct and operate a repository at Yucca Mountain in Nevada. The opening of the repository is uncertain: the State of Nevada has actively opposed the plan, and raised legitimate questions about the suitability of the site; DOE does not have full funding for construction and operations, and recently, a federal appeals court found that the impact of the project must be evaluated for longer than the 10,000 years currently considered. Even if the Yucca site were to open in 2020, DOE has projected in its 2002 Final EIS for Yucca that it would take 24 to 38 years to transport wastes to Yucca from reactors across the U.S., including Palisades. Thus, even if Yucca opened in 2020, it would take until 2044 or even until 2058 for the wastes generated before 2010 at Palisades to be moved to Yucca Mountain, Nevada. Because of this, existing wastes from Palisades are likely to remain on the Lake Michigan shoreline indefinitely.

Waste from 20 additional years of operation at Palisades will not go to Yucca Mountain

Yucca Mountain is limited by law to store 70,000 metric tons of nuclear waste. Only 90%, or 63,000 metric tons, of that can come from commercial nuclear reactors. 63,000

metric tons is approximately the amount of nuclear waste that will be stored on-site at reactors around the country by 2010. A 2004 analysis by the Environmental Working Group found that the 26 reactors at nuclear power plants re-licensed between 2000 and 2004 will produce an additional 9,000 metric tons of high-level nuclear waste over the 20-year period of their license extensions. Eighteen more reactors at nine power plants with license extensions pending would add another 6,600 metric tons of waste, for a total of 15,600 additional metric tons. Wastes produced at Palisades for 20 additional years-- 290 additional tons of irradiated nuclear fuel --will likely be stored indefinitely in the same manner as the other Palisades wastes that have been produced to date, resulting in a massive assemblage of concrete and steel silos extending along the high risk erosion zone on Lake Michigan, as well as a packed storage pool within the Palisades plant.

<u>If Yucca Mountain opens, waste will be transported by barge and rail</u>
The DOE has estimated that transporting the waste from the plants to Yucca Mountain would require more than 53,000 truck shipments to Yucca over 24 years or about 2,200 per year. If rail is the primary means of transporting the waste – and DOE has stated that it prefers rail – the proposed action would require more than 10,700 cross-country shipments over 24 years, or about 450 per year (Halstead 2002). Re-licensing to date has added about 5,700 more truck shipments, or 1,050 rail shipments to that total.

The Department of Energy declared in April 2004 that rail shipment to Nevada is the preferred mode of transportation for high-level nuclear waste. Barge shipments are being considered under this option because 17 nuclear power plants, including Palisades, have no rail access, yet could connect to rail lines via barges.

For Palisades, DOE has proposed barging up to 125 giant rail-sized containers of high-level radioactive waste from Palisades to the Port of Muskegon, up the Lake Michigan shoreline. DOE's estimate of 125 shipments may very well be an underestimate, in that DOE assumed Palisades would only get a 10-year license extension, while NRC's practice to date has been to approve every request for a 20-year license extension. Thus, an additional 10 years worth of waste generation would mean that many more barge shipments between Palisades and Muskegon.

The barging of 125 or more shipments of high-level radioactive waste is very risky. Any submersion of the casks in water, could stimulate the fissile uranium-235 and plutonium, both present in the high-level waste, to cause a nuclear chain reaction. The slightest leakage of even a small amount of this waste could not only threaten Lake Michigan as a source of drinking water for ten million people, but also cause a host of other irrevocable impacts on the lake's fish, wildlife, people, and economy.

<u>Storage of "low" level radioactive waste from Palisades not addressed in the draft EIS</u>
The Barnwell, South Carolina "low" level radioactive waste dump, which has accepted shipments from Palisades for decades, will close its doors to wastes from Michigan in 2008. Neither NMC in its Environmental Report, nor NRC in its draft EIS, have

explained how Palisades will deal with the "low" level radioactive wastes when Barnwell closes, such as establishing storage installations for "low" level radioactive wastes on the plant site. What NRC and the nuclear industry term "low" level radioactive wastes contain many of the same radio-nuclides as high-level radioactive waste, only less concentrated. Some "low" level radioactive waste can even deliver a lethal dose of radiation at close enough range in as little as 20 minutes. "Low" level radioactive waste management at Palisades is a significant health, safety, and environmental issue that requires is largely unaddressed by NMC and NRC in the license extension application and requires specific consideration.

XI. Plant Aging Increases Accident Risk

A top concern directly related to the re-licensing of Palisades for 20 additional years, is the aging of the plant, in particular *embrittlement*, or the gradual weakening of the reactor pressure vessel (RPV) from decades of bombardment by neutrons emitted by the nuclear chain reaction in the core. It is generally acknowledged that the reactor pressure vessel at Palisades is one of the most embrittled in the nation. The longer Palisades operates, the more embrittled its RPV becomes, increasing the risk for Pressurized Thermal Shock (PTS), a condition caused by any number of system malfunctions which can result in a severe, sudden overcooling of the reactor pressure vessel. This, combined with the intense pressurization in a pressurized water reactor, can stress the RPV such that its walls could crack or rupture, leading to a loss-of-coolant accident, meltdown, and catastrophic release of radiation to the entire Great Lakes basin.

Age-related failure of Palisades' systems could initiate the sequence of events that leads to PTS. Examples of aging systems at Palisades are evident in this short list of recent incidents:

1. Alert Declared Due to Loss of Shutdown Cooling (Event # 39699 March 25, 2003)

2. Failure of the Control Rod Drive Mechanism (see PNO-III-04-010 August 11, 2004)

3. Reactor Manually Tripped Due to Fire in 2B Condensate Pump (Event# 41002 August 31, 2004)

4. Relief Requests for Reactor Vessel Head Penetration problems (NMC Request 10/4/04)

5. Reactor Vessel Head Nozzle Cracking - Through Wall Cracks (Degraded Condition 10/17/2004)

6. Manual Reactor Trip/Main Condenser Vacuum (Event # 41319)

7. Emergency Declared on Primary Coolant System Integrity (Event # 41681)

8. Control Rod Stuck in Reactor Core (Event #42569 May 11, 2006)

The embrittlement at Palisades, the unresolved risks of PTS, and the ever-increasing likelihood of the failure of the RPV as Palisades ages warrant special environmental considerations. This type of accident is considered one that goes beyond the design of the reactor. NRC has not, however, included the issue in the EIS nor incorporated it in "Beyond Maximum Credible Accident" scenarios for Palisades as a potential accident. Further, NMC in its Environmental Report, has declined to undertake major refurbishment for Palisades' license renewal, despite Consumers Energy's earlier pledge to "anneal" (super-heat) the reactor pressure vessel. This super-heating theoretically can bring back ductility or flexibility to the metal, thus reducing potential for PTS. Annealing has never been performed in the U.S., however, and thus raises concerns itself as an experimental procedure.

Please include for the record the Adobe PDF document entitled "Palisades Nuclear Plant Yearly Capacity Factors" & "Palisades Plant - Record of Transients or Operational Cycles" for Occurrence #1 dated 1/11/1972 through Occurrence # 126 dated 1/9/2005. This is a record which has major implications for embrittlement and the Reactor Pressure Vessel at Palisades. A hard copy will be sent. Please enter it into the record.

Age-related deterioration also increases the likelihood of unintentional leaks, as plant systems, structures and components wear out and fail. Palisades' age-related degradation means increasing amounts of radioactivity will be "routinely" released over time. Plans for addressing embrittlement and other aging issues at Palisades are not provided in NMC's Environmental Report or in the EIS. Any discussion of 20 additional years of operation at Palisades necessitates a specific plan for addressing embrittlement and aging issues.

The most recent NRC report on a potential accident at Palisades, done in 1982, (Calculation of Reactor Accident Consequences or CRAC- 2), predicted that a meltdown and large-scale radiation release from the Palisades reactor would cause 1,000 fatalities and 7,000 injuries in just the first year, 10,000 cancer deaths over time, $52.6 billion in property damage (based on 1980 census, expressed in 1980 dollars, thus significantly underestimating current and future impacts due to population growth and inflation; adjusting for inflation, property damage could exceed $100 billion expressed in year 2005 dollars). The above CRAC - 2 report did not take into account a "Beyond Maximum Credible Accident" scenario. We request the EIS provide assessment of the consequences of a "Beyond Maximum Credible Accident" as Palisades' embrittlement status increases the likelihood of such an accident.

XIII. Emergency Evacuation Plans Need Updating

Emergency responders in the 50-mile zone around the Palisades nuclear reactor are likely to be inadequately trained and inadequately equipped to respond to a major radioactivity release during an accident or attack at the Palisades plant. Covert Township does not have the staffing, equipment, training or preparedness for a major radiological emergency, the risk of which increases with 20 additional years of operation at Palisades., as the plant ages.

Other communities within the 50-mile zone are mostly rural, and maintain only volunteer fire departments, which have even less equipment and training than Covert Township. Radiation monitors and radiation-protective gear are unheard of, or in limited supply. Isolation wards for radioactively contaminated victims - the patients themselves posing a hazard to emergency medical technicians, doctors, and nurses -- are limited as well at hospitals within 50 miles of Palisades

NMC/Consumers are obligated to demonstrate how the communities that surround its facility are equipped for such a risk referenced in NRC's 1982 report, of a catastrophic radiation release, as well as ensuring that the plant's current Radiological Emergency Response Plan projects 20 years forward and incorporates population trends and development, highway construction projects, transitory populations of migrant workers, and provisions for bi-lingual notifications and dissemination of information.

XIV. Dispute Regarding Violations of Palisades' NPDES Permitted Discharges Remains Unresolved

There are questions regarding the status of the NPDES permit of Palisades to utilize and eventually discharge a compound, Betz Clam-Trol, to Lake Michigan to control mussel and clam mussel colonization in discharge and intake pipes. Reports posted by the Michigan Department of Environmental Quality (MDEQ) in 2000 and through 2004 indicated "continued non-compliance." Subsequent updating of the reports now appears to indicate that the plant is and was in compliance with its permit. To further confuse the matter, MDEQ has stated that the original reports were erroneous. We ask that a full explanation be provided for this situation and how it will be considered in the re-licensing decision. The impact of 20 additional years of pollution improperly controlled under requirements of the National Pollutant Discharge Elimination System will adversely affect the water quality of nearby sources, including Lake Michigan.

In its "Ninth Biennial Report on Great Lakes Water Quality," the International Joint Commission urged that "[g]overnments monitor toxic chemicals used in large quantities at nuclear power plants, identify radioactive forms of the toxic chemicals and analyze their impact on the Great Lakes ecosystem." The draft EIS must address how the NRC or the U.S. Environmental Protection Agency has met this obligation.

XV. Analysis of Alternatives to License Extension Flawed and Self-Serving

In the draft EIS, Section 7.0, "Alternatives to the Proposed Action," renewable energy sources such as wind power and solar power, as well as alternatives such as energy efficiency and conservation, are not given credible consideration. Polluting electricity sources such as fossil fuels are cited by NMC/Consumers as the only realistic alternatives to approval of a 20-year license extension at Palisades. This is not surprising, as nearly three-quarters of Consumers' electricity generation (in 2002) comes from fossil fuel facilities. But the choice is not just between nuclear power and coal as sources for electricity generation. NMC/Consumers reveal a bias in favor of fossil fuel and nuclear power use by presenting only those two sources favorably in their Environmental Report, and by downplaying the potential for energy efficiency, energy conservation, and renewable sources of electricity. NRC echoes this as well in its draft EIS.

Renewables, efficiency and conservation are not only available, reliable, safe, clean and affordable options for electricity generation and savings, but also a source for tremendous job growth and cost savings. Using simple energy efficient techniques, Michigan citizens and businesses could easily reduce the state's energy demand by 1%, the energy used by 40,000 homes. In the state of Michigan there is currently 19,250 megawatts of generating capacity. Palisades generates 798 megawatts, or 4% of the power generation in the state of Michigan. Wind power potential in Michigan, according to the DOE, is 16,000 megawatts, or twenty fold the mega-wattage of Palisades, and could be a viable replacement for the energy that Palisades provides. In fact, wind power is the fastest growing new source of electricity in the United States, relative to all other sources.

NRC staff's assertion in the draft EIS that such wind power expansion would have a large negative impact due to the large surface area of land it would require is incorrect, and ignores the fact that small-scale family farmers could benefit from the placement of wind turbines on their fields. These farmers could either benefit from the lease payments from wind power companies for use of their land's "windshed," or could work towards owning their own wind turbines on their own land, and thus receive the full income from wind powered electricity generation. Wind turbines would not preclude the farmers' continued use of fields for agricultural crop or livestock production. Wind power could serve as a valuable source of income for farming families, complementing their agricultural livelihood, while also providing safe, clean, reliable, and inexpensive electricity for the region.

There are also many examples of new efforts underway in Michigan to move forward with renewable energy, with the deployment by Mackinaw Power of modern, large capacity wind turbines on the northern tip of Michigan's lower peninsula, plans to deploy more wind turbines on the Lake Michigan shoreline of west Michigan, and advances in solar electricity by United Solar Ovonics in Troy, Michigan (which

manufactures solar electricity generating roofing shingles). President Bush visited the headquarters of United Solar Ovonics earlier this year to promote promising renewable energy technologies.

It is especially significant that on April 6, 2006, Michigan Governor Jennifer Granholm signed Executive Directive No. 2006 - 2, which charges the Michigan Public Service Commission to prepare an "Energy Plan for the State of Michigan" by December 31, 2006. The directive calls for the development of a renewable portfolio standard that "establishes targets for the share of this state's energy consumption derived from renewable energy sources" and initiates the "appropriate use and application of energy efficiency, alternative energy technology, and renewable energy technologies.... consistent with the goal of assuring reliable, safe, clean and affordable energy." This puts the state of Michigan in a favorable position to promptly substitute clean energy sources for those with adverse impacts, such as nuclear power, as it moves into the forefront of renewable energy technology.

The full cycle of nuclear power illustrates its complete adverse environmental impact

There are many different types of nuclear power reactors. In the U.S. there are two types of light water reactors, Boiling Water Reactors (BWR) and Pressurized Water Reactors (PWR). Palisades is a pressurized water reactor. All, however, rely on a nuclear fission chain reaction to generate heat to boil water, to create steam, which is then used to drive an electrical generator. The radioactive material used in the fission process is uranium.

Mining for uranium involves separating the ore from rock, which leaves "tailings" that contain residues of uranium, and other radioactive materials (such as radium, radon, and thorium) from the radioactive decay of uranium and, although being considered "low-level" radioactive waste, actually contain around 85% of the natural uranium's original radioactivity. Mining of uranium is likely to impact the quality of Michigan's environment with an extension of Palisades' license, as there have been recent proposals to mine uranium in the Upper Peninsula of Michigan. The Great Lakes have already been damaged by such mining activities. Uranium mining at Elliot Lake, Ontario from the 1940s to the 1990s released vast quantities of radiological and toxic chemicals into Lake Huron. Despite the mines shutting down in the late 1990s, harmful effluents still flow into the Great Lakes. Mine tailings were flooded over with water to prevent oxidation, thus creating "dead," artificial lakes which dot the landscape.

After mining, raw ore is milled, ground up, and chemically leached into a powder called "yellowcake." The yellowcake powder is chemically processed or enriched, into either uranium dioxide for use in power plants or uranium metal, used in making nuclear weapons. Wastes from the enrichment process, also miss termed a "low-level" radioactive waste by NRC, are called depleted uranium or DU. The U.S. and some other countries use DU to coat tank armor and armor piercing shells/weapons. There is considerable controversy regarding DU coated weapons and the potential for exposure to depleted uranium to cause kidney and lung damage, and cancer and birth defects.

According to Dr. Arjun Makhijani, Director of the Institute for Energy and Environmental Research, uranium mining and milling inflicts some of the worst human health impacts of the entire uranium fuel chain. This is due to the careless handling of the radioactive materials involved, and dumping of waste materials upon the surface of the land, where they can be dispersed in air and water. Because of this, the Navajo Indian Tribe in the Southwestern United States - the largest Indian tribe in the country - has officially banned the mining, milling, or processing of uranium upon its reservation territory.

Nuclear power is not carbon-free. Considerable amounts of fossil fuel energy are used to mine, mill, process, and transport, and manage uranium ores and byproducts. As more reactor licenses are extended, fossil fuel use is likely to increase as poorer-quality ores are used due to the depletion of higher quality ore reserves because poorer quality ores require much more conventional energy for extraction and processing. Mining of more distant deposits also contributes greater carbon dioxide inputs to the atmosphere. Uranium enrichment is also energy intensive, and has historically involved the release of very large amounts of ozone layer destroying chlorofluorocarbons. NRC's draft EIS does not address such negative environmental impacts of the nuclear fuel chain. A full cost accounting of the uranium fuel chain's negative impacts on health and the environment is required to properly evaluate Palisades' twenty-year license extension request.

Nuclear power generation is more costly than readily available alternatives

Many costs associated with nuclear power are often hidden or externalized; for example, the very existence of the nuclear industry is only possible due to the government's assumption of the accident liability risk. According to Public Citizen ("Renewable Energy Is Capable of Meeting Our Energy Needs" fact sheet, 2006) direct taxpayer subsidies to the nuclear energy industry totaled $115 billion between 1947 and 1999, with a further $145 billion in indirect subsidies. In contrast, subsidies to wind and solar during the same period amounted to only $5.5 billion.

Decommissioning, or the closing and dismantling of nuclear power plants, ranges from $280-$612 million for each plant, ultimately paid for by utility customers. DOE's latest cost prediction for the Yucca site for high-level radioactive waste generated up to the year 2010 is $58 billion. Energy Secretary Bodman has recently admitted, however, that DOE has no total price tag predictions for the project and the state of Nevada predicts the cost will top $100 billion. Ratepayers who receive electricity from nuclear reactors pay a Nuclear Waste Fee on their electricity bills. Several billion dollars of the Fund have already been spent at Yucca; about $20 billion remains in the Fund, far short of DOE's now underestimate of $58 billion for Yucca. The shortfall will have to be paid, yet again, by US taxpayers, many of whom have already paid as ratepayers.

Nuclear power is not, as currently promoted, cost effective compared with other energy sources. In a 2006 paper on the "economics and climate-protection potential" of nuclear power, Amory Lovins, energy researcher and director of the Rocky Mountain Institute,

describes the advantages of energy efficiency and explains that ".... nuclear power saves as little as half as much carbon per dollar as wind power and traditional cogeneration, half to a ninth as much as innovative cogeneration, and as little as a tenth as much carbon per dollar as end-use efficiency. ..... Empirically, on the criteria of both cost and speed, nuclear power seems about the least effective climate-stabilizing option on offer." [Amory B. Lovins, "Nuclear power: economics and climate-protection potential, Rocky Mountain Institute, 11 September 2005, updated 6 January 2006, p. 15.]

Lovins puts it succinctly in his recent analysis: "No other energy technology spreads do-it-yourself kits and innocent disguises for making weapons of mass destruction, nor creates terrorist targets or potential for mishaps that can devastate a region, nor creates wastes so hazardous, nor is unable to restart for days after an unexpected shutdown."

The full costs of operating the Palisades nuclear plant for 20 additional more years, including the costs of accidents, waste storage, and decommissioning, must be assessed as part of the EIS.

Impacts from extreme weather/global climate change discounted by NRC

A majority of scientists throughout the world now believe that increased emissions of carbon dioxide since the Industrial Revolution are enhancing the greenhouse effect of the atmosphere that surrounds the earth, and causing a warming that will cause dangerous effects to the earth's climate and inhabitants - global warming. The NRC confirms it as well, in its analysis of impacts of alternatives that might be more appropriate options than extending the license for Palisades, as it concludes that the impacts of substituting coal plants for Palisades would be a "large" impact, due to their contribution to global warming.

A one-degree Celsius warming of the earth's surface may seem insignificant, but it is not. The temperature of the earth's surface greatly affects our climate in many ways. In particular, a warmer planetary climate means more rain, flooding, and snow in various regions, earlier spring arrivals, hurricanes, heat waves, drought and fires in some places, frigid cold in others.

The effects are already seen in Michigan, where water in the Great Lakes is warming. According to Dr. Natalia Andronova, research scientist at the Department of Atmospheric, Oceanic, and Space Sciences at the University of Michigan in a May 7, 2006 interview with the Ann Arbor News, "Measurements of the near-surface temperature over the northern part of Lake Michigan and southern part of Lake Huron showed that for both lakes the period from 2000 to 2005 was warmer by at least two degrees Celsius than the period from 1981 to 1985." An increase of Lake Michigan water temperatures may eventually affect Palisades' operation, since the condenser within the plant requires cooler water to operate efficiently. During a heat wave in the late 1990s, reactors on the U.S. side of Lake Ontario shut down because the water temperature was too high to efficiently cool the reactor and generate steam for electricity production. During the extreme heat wave in France in recent years, nuclear reactors released so

much superheated water to rivers that fish kills occurred; operators had to hose down the exterior of reactors as an emergency measure to provide additional cooling at the same time.

In the recent interview, Dr. Andronova also noted conditions particular relevant to re-licensing of Palisades. She commented that "it is becoming windier over the Great Lakes. The extreme winds increased from the one period to the next by more than 3 meters per second." More extreme winds, as well more frequent and intense tornadoes – all of which global warming could cause – could make operation of Palisades more and more risky over time. For example, documents received by the Nuclear Information and Information Resource from NRC during a Freedom of Information Act request regarding the October 2005 "near-drop" of a storage cask into the irradiated nuclear fuel pool at Palisades revealed that on extremely windy days, Palisades is prohibited from lifting loaded dry casks from the pool, as the high winds make crane operations too dangerous.

The potential danger presented by tornadoes to reactors was clearly shown in 1998, when a tornado struck the Davis-Besse nuclear plant in Ohio, knocking out the off-site electricity supply; the emergency back up diesel generators also malfunctioned. If not for extreme efforts by staff, the plant could have lost coolant, leading to a meltdown. An increase in severe weather due to global climate destabilization in the region could well increase risks at Palisades. Far from being a solution to global warming, nuclear power could become unacceptably dangerous and unreliable due to global warming.

The draft EIS prepared by the NRC unaccountably discounts the effects of global warming, noting that its effects cannot be predicted. We assert that there is sufficient information currently available that should be investigated and considered regarding the impacts of changes in weather that may occur in a 20-year extension to Palisades' license. This must also include an analysis of the increased potential for an electrical station loss of power that could lead to loss of cooling in the reactor core and waste storage pool, with the potential for core meltdown and waste pool fires, with consequent catastrophic large-scale radiation releases to the environment. The warming of the cooling water supply from Lake Michigan must also be considered in regards to the efficiency and safety of Palisades continued operation till 2031.

XVI. Endangered Species Harmed by Radioactive Discharges

Plant and wildlife species become endangered for a variety of reasons, including loss of habitat, overexploitation, disease and pollution, and the introduction of invasive species. Official designation of a species by federal or state government as endangered or threatened not only acknowledges the importance of that species, but also its fragile status that requires special protection efforts. These special protection efforts most certainly encompass protection against the routine and cumulative exposure to radioactive substances.

Frameworks for radiological protection have traditionally been focused on the protection of humans. The International Commission on Radiological Protection (ICRP), which provides recommendations on protection against ionizing radiation, has maintained that "if man is adequately protected then other living things are also likely to be sufficiently protected" (ICRP, 1977). There is no scientific evidence, however, to support this viewpoint.

In addition, it is well established that ionizing radiation is one of the causes of genetic mutation. Species exposed to cumulative exposures from the radioactive discharges of a nuclear power plant may over time develop subtle genetic alterations that are not observable in the short term, but that could have subtle, but large impacts within a population. This has significant implications for threatened and endangered species.

NMC/Consumers' Environmental Report identifies numerous federal and State of Michigan endangered, threatened, candidate or species of special concern - such as the eastern box turtle, lake sturgeon, lake herring, creek chub sucker, Pitcher's thistle, prairie warbler, prairie vole, eastern massasauga rattlesnake, spotted turtle, Indiana bat, globe-fruited seedbox, scirpus-like rush, bald rush, Carey's smartweed, and sedges that either already live at or near the Palisades reactor or along its transmission lines, or very likely could in the future.

Approving a license extension of 20 more years of reactor operations at Palisades increases the fragile status of these already threatened, endangered, or candidate species, from daily "routine" radiation releases and/or potential large-scale radiation releases. At minimum, NMC/ Consumers must be required to establish a baseline for the status of the endangered species listed above and conduct appropriate monitoring to ensure that Palisades is not further endangering their health and viability.

XVII. Conclusions

For the reasons laid out in this document, the coalition of aforementioned environmental, social justice, and public interest organizations oppose the application by Palisades nuclear power plant to operate for an additional 20 years beyond its original 40 year license. The decision to sanction approval of the 20-year license extension appears to have been predetermined and the invitation to members of the public and citizens of this region to participate in this decision making process has been merely perfunctory. This coalition of organizations protests the severe limitations of the process and advocates for a decision-making framework that allows for an unbiased, deliberative, participatory discussion as to whether or not to allow 20 more years of operation by the Palisades nuclear power plant.

With a **fair and just** Environmental Impact Statement - the conclusion reached in the EIS would not have been the continued operation of a potentially catastrophic accident risk and terrorist target on our beloved Lake Michigan shoreline. These risks are

exacerbated by the already regrettable high-level radioactive waste storage -- or de facto high-level nuclear dump -- in the heart of the Great Lakes.

There are too many explicit threats to the region's environment and people that have been ignored in order to promote the use of an energy that is far too costly, exceedingly hazardous, increasingly risky and highly irresponsible, as the question of a solution to the waste problem is passed down as a regrettable legacy to future generations.

For these reasons we urge that the proposed 20-year license extension be denied until all environmental impact concerns raised here and by other stakeholders are addressed in an objective process that is deemed acceptable by the public as prescribed by the 1969 National Environmental Policy Act (NEPA).

Recommendations

Security issues at Palisades must be addressed immediately. If a mock attack or force on force demonstration has not been conducted at Palisades, it should be conducted as soon as possible. Classified results of the demonstration should then be directly communicated to the region's U.S. Congressional representatives and senators, as well as the Governor and Attorney General of the State of Michigan, for their thorough review and approval and reporting back to the public. The following security safeguards, if not instituted already, must be put in place immediately:

- Sufficient cameras and patrols;
- Delay measures, such as fences outside buildings and entrances that would delay potential attackers;
- Bullet resistant structures in the protected areas of the plant site;
- Adequate and specific training for security officers;
- Several levels of intrusion detection systems (Needed especially by Palisades to protect against intrusion from potential attackers that may enter from Van Buren State Park, adjacent to the plant site.);
- Vehicle barrier systems to prevent vehicles with bombs from entering the site;
- Anti-aircraft capability, and;
- Shore patrol equipped with stationary weaponry capable of preventing an offshore assault.

NRC and Palisades must also ensure that the plants irradiated nuclear fuel storage pools are safeguarded from terrorist activities as well as address civil liberties ramifications of increased security to the host and surrounding communities of Palisades.

Native American interests must be addressed. All Native American tribes and bands that could be expected to have an interest in the application by Palisades to operate an additional 20 years deserve both notification of this process, as well as the opportunity to share government-to-government decision making regarding the application, as allowed for under NEPA and other federal laws. A comprehensive site wide survey

should be performed on the entire Palisades property – as recommended by Palisades' own cultural resource assessment subcontractor as described in the draft EIS - carried out in close consultation with all affected tribes.

Effects on the health of populations surrounding Palisades and subject to downstream or downwind discharges must be studied and quantified. The implications of the National Academy of Science's recent findings require a thorough analysis by the NRC in its EIS of the human health impacts of the radioactive substances released by Palisades. NMC/Consumers are obligated to provide the communities in the vicinity of the Palisades plant, with a monitoring program to provide them with independent information regarding radioactive discharges and releases. There is also a need to establish a baseline assessment of cancer and other disease rates, as well as a program of regular monitoring, prior to consideration of the proposal for a 20-year license extension. This should also include an evaluation of the potential for the synergistic effects of chronic or catastrophic radiation releases combined with the toxic pesticides to which migrant field workers in the region have been exposed.

NRC must provide a detailed explanation to the public as to the ultimate disposition of the wastes stored currently on the Palisades plant site, as well as the 290 additional tons expected as part of 20 additional years of operation.
The proposed national repository for high-level wastes from nuclear power plants, Yucca Mountain, Nevada, is not expected to open until at least 2020, and is likely to be delayed beyond that date. Further, by law, the repository can only store 70,000 metric tons, which will not include the additional wastes generated at Palisades during a license extension. NRC in its EIS, must also explain how Palisades will deal with its "low" level radioactive wastes when its current repository site in Barnwell, South Carolina closes in 2008.

Barging of high-level radioactive wastes in Lake Michigan must be removed as a transportation option. The barging of 125 or more shipments of high-level radioactive waste on Lake Michigan is simply too risky. Any submersion of the casks containing the wastes in water, could stimulate the fissile uranium-235 and plutonium, both present in the high-level waste, to cause a nuclear chain reaction. The slightest leakage of even a small amount of this waste could not only threaten Lake Michigan as a source of drinking water for ten million people, but also cause a host of other irrevocable impacts on the lake's fish, wildlife, people, and economy.

NRC must require Palisades to develop and implement a specific plan for addressing embrittlement and aging issues. Plans for addressing embrittlement at Palisades are not provided in by NMC or in the EIS. Any discussion of 20 additional years of operation at Palisades necessitates such a plan to address the aging of plant structures and components. We request the EIS provide assessment of the consequences of a "Beyond Maximum Credible Accident" as Palisades' embrittlement status increases the likelihood of such an accident.

NMC/Consumers must demonstrate how the communities that surround its facility are equipped for a catastrophic radiation release. The plant's current Radiological Emergency Response Plan is inadequate and must be revised to project 20 years forward and incorporate population trends and development, highway construction projects, transitory populations of migrant workers, and provisions for bi-lingual notifications and dissemination of information. This requires Spanish language emergency evacuation instructions and notifications prepared to serve the Spanish speaking Latino population.

A comprehensive analysis of socio-economic conditions in Covert Township and Van Buren County must be conducted to encompass income disparities. NRC must account for the lack of positive benefit by Covert Township residents as a result of the presence of Palisades' nuclear power plant and potential license extension. NRC must also direct NMC/Consumers to address the potential for disproportionate harm to the Latino migrant labor workforce from harm to the agricultural base from a radiation release.

The safety of the concrete pads and the storage casks of high-level wastes must be resolved to the satisfaction of citizens of the region. The potential for earthquake activity to damage Palisades' outdoor dry cask storage pads, upon which the casks have been placed, warrants rigorous consideration, which unfortunately, is not in evidence in the EIS. Further, blowouts, areas of blowing and unstable sands, in dunes in the vicinity of Palisades' dry cask storage system could threaten the integrity of the dry cask storage waste system, by clogging vents in the casks, and causing the wastes to overheat, which could lead to an explosion. Palisades must be required to monitor the dunes for potential blowouts and ensure that the dunes are consistently vegetated and stable.

NRC must revise its analysis of energy alternatives. Full and objective consideration must be afforded the options of renewable energy and efficiency. NRC must also provide a thorough cost accounting of the uranium fuel chain's negative impacts on health and the environment.

The EIS should be revised to include how the NRC meets its obligations as described in the International Joint Commission's (IJC) "Ninth Biennial Report on Great Lakes Water Quality." In it, the IJC urged that "[g]overnments monitor toxic chemicals used in large quantities at nuclear power plants, identify radioactive forms of the toxic chemicals and analyze their impact on the Great Lakes ecosystem."

NRC must assess and consider as part of the EIS, the information currently available regarding the impacts of global warming to the region. This must also include an analysis of the increased potential for an electrical station loss of power that could lead to loss of cooling in the reactor core and waste storage pool, with the potential for core meltdown and waste pool fires, with consequent catastrophic large-scale radiation releases to the environment. The warming of the cooling water supply from Lake

Michigan must also be considered in regards to the efficiency and safety of Palisades continued operation till 2031.

NMC/Consumers must be required to establish a baseline for the status of the endangered species and conduct appropriate monitoring to ensure that Palisades is not further endangering their health and viability. Approving a license extension of 20 more years of reactor operations at Palisades increases the fragile status of these already threatened, endangered, or candidate species, from daily "routine" radiation releases and/or potential large-scale radiation releases.

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6930 Carroll Avenue, Suite 340
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Dr. Helen Caldicott, Founder and President
Nuclear Policy Research Institute
1925 K St N.W., Suite 210
Washington, D.C. 20006

Henry W. Peters, Director
Radiological Evaluation & Action Project, Great Lakes
(REAP-GL)
Rt. 1, Box 193
Ewen MI 49925

Anna Holden, Chair
Conservation Committee
Sierra Club, Mackinac (Michigan) Chapter
8430 E. Jefferson Ave., Apt. 217
Detroit, Michigan 48214

Chuck Jordan, Co-Chair
Van Buren County Greens
50521 34th Ave.
Bangor, Michigan 49013

<u>The Following Individuals Add Their Support to the Submission of These Comments:</u>

Official Individual Intervenors Against the License Extension Who Live Within 50 Miles of Palisades:

Sandra J. Adams, 744 Garland Avenue, Kalamazoo, MI 49008

Wade J. Adams, 744 Garland Avenue, Kalamazoo, MI 49008

Ann Aliotta, 79955 Fernwood Walk, Covert, MI 49043

Amy Anderson, 3819 Devonshire, Kalamazoo, MI 49006

Elizabeth (Beth) Anderson, 145 66 Street, South Haven, MI 49090

Robert C. Anderson, 3819 Devonshire Avenue, Kalamazoo, MI 49006-2703

Anthony Badalamenti, 9251 West R Avenue, Kalamazoo, MI 49009

Joan Badalamenti, 9251 West R Avenue, Kalamazoo, MI 49009

Laura Barringer, 01655 67th Street, South Haven, MI 49090

Katherine (Katy) Beck, 30018 Lake Bluff Drive, Covert, MI 49043

Thomas Beck, 30018 Lake Bluff Drive, Covert, MI 49043

James F. Brisky, 24154 W. McGillen Avenue, Mattawan, MI 49071

Lee Burdick, 7130 Austrian Pineway #13A, Portage, MI 49024

Drucilla D. Carter, 96 S. Lake Doster Drive, Plainwell, MI 49080

Henry Cohen, 903 Pinehurst Blvd., Kalamazoo, MI 49006

Don Cooney, 1221 Vassar Drive, Kalamazoo, MI 49001

Bruce Cutean, A 3997 64th Street, Holland, MI 49423

W. Roland Elmore, 403 Water Street, Saugatuck, MI 49453

John Ephland, 714 Fairview Avenue, Kalamazoo, MI 49008

Jane Gardner, 28386 Sturtevant Walk, Covert, MI 49043

Barbara Geisler, 25485 County Road 681, Bangor, MI 49013

Joseph A. Gump, 45511 CR 380, Bloomingdale, MI 49026

Rachel Hayward, 827 W. Maple St., 2-B, Kalamazoo, MI 49008

Samuel Hayward, 1930 S. Westnedge Avenue, Apt. 4, Kalamazoo, MI 49008

Karen Heavrin, 80012 Ramblewood Drive, Covert, MI 49043

Janine Heisel, 29818 Lake Bluff Drive, Covert, MI 49043

Mary Lou Hession, 29818 Lake Bluff Drive, Covert, MI 49043

Alice H. Hirt, 6677 Summit View Drive, Holland, MI 49423

Shaun Hittle, 827 W. Maple St., 2-B, Kalamazoo, MI 49008

Lauretta Holmes, 2923 Memory Lane, Kalamazoo, MI 49006

Lee Ann Johnson, 1602 Jefferson, Kalamazoo, MI 49006

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Raelyn Joyce, 1920 Hillsdale, Kalamazoo, MI 49006

Judy Kamps, 441 Fairfax Avenue, Kalamazoo, MI 49001

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Nan Lewis, 80078 Ramblewood Drive, Covert, MI 49043

Larry Mahannah, 3504 Tamsin, Kalamazoo, MI 49008

Michael Martin, 25741 31st Street, Gobles, MI 49055

Carol McGeehan, 568 W. 31st Street, Holland, MI 49423

Brenda F. Mehagan, 29886 Lake Bluff Walk, Palisades Park, Covert, MI 49043

Michael W. Mehagan, 29886 Lake Bluff Walk, Palisades Park, Covert, MI 49043

Jeanice Morgan, 01651 67th Street, South Haven, MI 49090

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Maria Ogston, 2717 Ridgeview Drive, Kalamazoo, MI 49008

Elizabeth Paxson, 3258 Lorraine Lane, Saugatuck, MI 49453

Ken Richards, 72772 County Road 380, South Haven, MI 49090

Margaret Roche, 27842 Shorewood Walk, Covert, MI 49043

Pamela S. Rups, 2705 Pine Ridge Rd., Kalamazoo, MI 49008

James O. and Sally P. Schlobohm, 28324 Shorewood Drive, Windjammer, Palisades Park, Covert, MI 49043;

Stephen M. Senesi, 439 Park Place, Kalamazoo, MI 49001

Thomas E. and Nancy Cutbirth Small, 2502 Waite Avenue, Kalamazoo, MI 49008

Daniel B. Smith, 3022 Fleetwood Drive, Portage, MI 49024

Catherine Sugas, 410 S. Sherman St., Otsego, MI 49078

Elizabeth M. Sugas, 10888 Douglas Avenue, Plainwell, MI 49080

Kimeri Swanson-Beck, 30018 Lake Bluff Drive, Covert, MI 49043

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Ineke Way, 1938 Oakland Drive, Kalamazoo, MI 49008

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<u>Additional Individuals Adding Their Support to the Submission of these Comments:</u>

Laurel and Mark Goetzinger
4453 Central Ave.
Indianapolis, IN 46205
Eldredge cottage in Palisades Park Community

Martha Eldredge Heck

Jean Keller
Owner of Grapevine Cottage, #182, at Palisades Park Country Club
Home address: 15691 Aulnay Lane
Huntington Beach, CA 92647
Phone 714 230 6528
Email: jkeller841@socal.rr.com

Ryan and Cheryl McCoy
208 S. Haven St.
South Haven, MI 49090

Tim O'Brien
Indiana resident
Frequent visitor to Palisades Park/South Haven area since 1978
Owner of a vacation home in the area.

Terry & Laura O'Brien
7390 Holliday Drive East
Indianapolis, IN 46260
Palisades Park cottage owners

Jean S. Prokopow
24390 Sandpiper Isle Way #104
Bonita Springs, FL 34134

Catherine Quigg
838 Harriet Land
Barrington, Illinois

Pamela Rups
2705 Pine Ridge Road
Kalamazoo, Michigan 49008

Mary E. Schmidt
6684 Sunset Concourse
Holland, Michigan 49423

Halting 20 Extended Years of Risky, Reactor Operations and Radioactive Waste Generation and Storage On Lake Michigan at Palisades Nuclear Power Plant

Comments on NUREG-1437, Supplement 27 to the Generic Environmental Impact Statement for License Renewal of the Palisades Nuclear Power Plant

Submitted to:

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

RECEIVED
2006 MAY 30 AM 9:31
RULES AND DIRECTIVES BRANCH USNRC

From:

Citizens Action Coalition of Indiana; Canadian Coalition for Nuclear Responsibility/Regroupement pour la surveillance du nucléaire; Citizens for Alternatives to Chemical Contamination; Citizens Resistance at Fermi Two (CRAFT); Citizens for Renewable Energy; Huron Environmental Activist League; Clean Water Action; Home for Peace and Justice; Great Lakes United; IHM Justice, Peace and Sustainability Office; Indigenous Environmental Network (IEN; International Institute of Concern for Public Health; Lone Tree Council; Kalamazoo River Protection Association; Michigan Citizens for Water Conservation; Michigan Land Trustees; Michigan Environmental Council; Michigan Interfaith Climate and Energy Campaign/Voices for Earth Justice; National Environmental Trust; Nuclear Energy Information Service (NEIS); Nuclear-Free Great Lakes Campaign; Nuclear Policy Research Institute; Nukewatch; Radiological Evaluation & Action Project, Great Lakes; Sierra Club, Mackinac (Michigan) Chapter; Van Buren County Greens.

Individuals endorsing these comments are listed at the end of this submission.

Please direct questions to the following organizations responsible for research and content development:

Don't Waste Michigan
2213 Riverside Drive, NE
Grand Rapids, MI 48505
Email: alicehirt@charter.net

Coalition for a Nuclear Free Great Lakes
P.O. Box 331
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Email: mkeeganj@comcast.net

Nuclear Information and Resource Service
6930 Carroll Avenue, Suite 340,
Takoma Park, MD 20912
Tel: 301-270-NIRS (301-270-6477)
Fax: 301-270-4291
Email: nirsnet@nirs.org

Coordinated by:
Tanya Cabala, Great Lakes Consulting, Tel: 231-981-0016; Email: tcabala@charter.net
May 18, 2006

Please include
* Letter to Dr. Shirley Jackson
* Plant Capacity
* Record of Transients
as part of the Submittal coordinated by:

These documents are referenced in our electronic filing

Thank You

I. Introduction

A 20-year license extension is proposed for Palisades Nuclear Power Plant
Consumers Energy, owner, and Nuclear Management Company (NMC), LLC, operator,

5711 Summerset Dr.
Midland, MI 48640
Feb. 6, 1997

Dr. Shirley Jackson, Chair
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Jackson:

I respectfully submit a request that you and your fellow Commissioners personally review the 2.206 petition(10 CFR 2.206) that was filed on Sept. 19, 1995, and amended on Sept. 30, 1996, by Lake Michigan Federation and Don't Waste Michigan. Acting Director Frank Miraglia of the Office of NRR issued a decision on this petition on Jan. 23, 1997. The Federal Register notice of this decision indicates that there are 25 days in which the Commission can institute a review of this decision before it becomes final.

This petition was related to the fact that Consumers Power Co. (CPCo) did not have a workable unloading procedure in place before it loaded the first VSC-24 cask at the Palisades site in May, 1993, as required by the Certificate of Compliance (No. 1007) under 10 CFR 72, Section 1.1.2.

When cask #4 was found to be defective in Aug., '94, CPCo pledged to unload the cask. It claimed that this would be a means of affirming to the public its high standards of safety and of restoring public confidence in the cask loading operations at Palisades. When the task of unloading was actually to be undertaken, the technicians found that there were challenging procedures which had never been considered or anticipated in the initial unloading document. In a public meeting with the NRC in Maryland in late Aug., 1994, the concerns described included: 1) introducing 400 degree F. fuel from the metal basket to 100 degree F. spent fuel pool water which would result in a highly radioactive steam flash and raised concerns about thermal shock to the fuel; 2) cutting through the steel in a window of 50 hours or less, since the cooling process cannot be maintained during cutting; 3) developing a procedure for removing steel shims that were pressure-fit inside the fuel basket below the lid.

Without resolving these grave issues and demonstrating a successful unloading procedure of the defective cask, CPCo proceeded to load 9 more casks 150 yards from the shore of Lake Michigan at Palisades.

A year later, when defective cask #4 was still not unloaded, Don't Waste Michigan and Lake Michigan Federation filed the aforesaid petition 2.206 to demand enforcement proceedings by the NRC, since public confidence not only in CPCo but in the NRC,-- because it allowed continued loading of these casks,--was even further eroded by these actions.

I am enclosing a copy of this 2.206 petition so that you and your fellow Commissioners can readily review it and understand why we strenuously object to NRC's decision in the resolution of these matters and our reasons for doing so.

1) The decisions made by Mr. Miraglia are based on what appears to be a woefully inadequate understanding of all the facts involved. The lack of a factual basis for his decision is due either to ignorance on his part (understandable, perhaps, since he has been in his Acting Director position for only a few months), or is a deliberate evasion of some of the extraordinary issues and events that have transpired in the design, development, certification and implementation of this cask system that are now in the public record. It is possible to review these facts only briefly in this communication, but even this should be enough to convince you and your fellow NRC Commissioners that a hearing is in order to fulfill the requirement of your responsibility in implementing the 2.206 regulation in the Federal Code.

Mr. Miraglia appears to have relied solely on the judgment of the staff and the facts they provided him for his decision. For this reason, the role of the NRC staff must be reevaluated in light of the serious errors in judgment on the part of some staff members that have been made in the past, and the notable lack of comprehension and understanding of some important aspects of this cask system by some leading staff members who are in decision-making positions.

(It should be noted that there are some highly competent staff members who have tried to influence the decisions of the NRC in key areas. For example, Dr. Ross Landsman, an NRC soils expert, visited the Palisades area in Feb., '94, after repeated citizen concerns about placing casks on unstable sand dunes. He pointed out that using the site specific studies that were initially done for the nuclear plant's environmental impact statement as a basis for judging the stability of the cask storage area on site, as is now done under "generic"

licensing, was seriously flawed and could lead to "catastrophic consequences." As an example, he showed how a nuclear plant, itself, as at Palisades, usually has a foundation of 8 ft. of concrete that is grounded in bedrock. By contrast, the casks, as at Palisades, are placed on top of a 3 ft. concrete pad with no foundation to bedrock. His concerns and expert advice have been ignored by staff members in decision-making positions, and "generic" licensing continues to be the policy for siting dry cask storage facilities on our fresh water supplies throughout the country).

The few historical events we are limited to describing here will demonstrate how poor judgment and incompetence on the part of some of the staff who have directed policy have had unfortunate consequences for the public.

2) The NRC staff was establishing their "generic" licensing policy with the development of the VSC-24 cask at Palisades. This meant that there was no full environmental impact statement required for an area of the dunes at that site that was, and is, characterized as a "high risk erosion area" by the Michigan Dept. of Natural Resources, and no public adjudicatory hearing was permitted.

For these reasons and other safety concerns brought to him by the public, Attorney General Frank Kelley of Michigan requested such a hearing on the VSC-24 cask. This cask had never been built before and had never been fully tested before it was to be certified for use for dry cask storage of high level nuclear waste at Palisades. Having been refused such a hearing, Attorney General Kelley petitioned for an injunction in May, 1993, against the loading of these casks in the Western Michigan Federal Court at Grand Rapids. (Case No. 4:93 CV 67). Consumers Power Co.'s response to the Court was that the company would unload the casks and place the nuclear waste back in the spent fuel pool if the Court should rule against them and, therefore, an injunction to prevent loading was unnecessary. A supporting position for the utility's action was filed by Charles Haughney of the NRC, in which he assured Judge Robert Holmes Bell that Consumers was able to do this by simply reversing the process of loading, if the Court so ordered. <u>This demonstrates that, not only did Consumers Power Co. mislead the Judge, perhaps out of ignorance, about Consumers' ability to unload these casks, but more importantly, Charles Haughney of the NRC pledged the Agency's credibility in support of this position.</u> His statement is signed,

"Pursuant to 28 U.S.C. sec.1746, I declare under penalty of perjury that the foregoing is true and correct." (Executed and signed on May 5, 1993). Judge Bell, of course, could hardly grant an injunction under those circumstances. This is one of many instances in which the judgment of the staff was flagrantly in error, and helped to compound the problems that have later developed.

3) On May 28, '96, a "hydrogen ignition" event occurred at the Point Beach n-plant in a loaded VSC-24 cask. This "ignition" was of sufficient explosive force to raise a 3 ton lid several inches and tilt it on its side. This event was a complete surprise to the utilities, the vendor, and most significantly, to the NRC. It was discovered that the chemical reaction between the zinc coating inside the metal basket and the boric acid of the spent fuel water released hydrogen causing the explosion when the lid was being welded shut. This is further evidence that the staff was not competent to evaluate all the parts of this cask before it was certified. Yet, Mr. Mirgalia repeatedly relies only on this staff's flawed judgment for his decision-making on our petition without providing any proof through documented data or the testimony of independent qualified experts to support his decisions.

(Such independent evaluations by qualified experts would have surely been a great assistance to the staff if a public hearing and an environmental impact statement had been required in the process of certifying this cask. It would have prevented much of the chaos, confusion and costs that we are now experiencing as remedies are being sought for controlling the generation of explosive hydrogen within these casks.)

4) The NRC staff responded to the explosion at Point Beach by sending inspection teams to Point Beach and to the facilities of the vendor of this cask, Sierra Nuclear, in California, by issuing Confirmatory Action Letters to the utilities using the VSC-24, and by issuing Bulletin 96-04 to all utilities in the country to stop loading procedures and to analyze the casks they were using for chemical, galvanic, or other reactions in the casks. Their findings had to be approved by the NRC before loading could again proceed.

5) The responses prepared for Bulletin 96-04 by the utilities which were using the VSC-24 cask we found to be disturbingly inadequate and unsupported by documentation. For this reason, we retained a

highly competent corrosion engineer consultant, Dr. Rudolf Hausler, who had been retained in the past by the Electric Power Research Institute to solve a corrosion problem afflicting all nuclear reactors. He was able to do so and developed a corrosion inhibitor which is now used in all reactors.

Dr. Hausler was able to define a number of serious deficiencies in this cask that had not been found before, and he recommended that they be resolved before any more VSC-24 casks were loaded.

Carl Paperiello, Director of NMSS, wrote an analysis of Dr. Hausler's study and claimed his comments were not sufficient to halt further loading of the casks. (Dec.10, '96) Dr. Hausler responded (Dec. 29, 1996) by stating that Mr. Paperiello's evaluation was pure speculation, and pointed out in detail the additional data that would have to be a part of this analysis to come to the conclusions that Paperiello did in his analysis. Hausler also pointed out that in certain areas of the chemistry of metals, the staff was "stunningly ignorant."

6) Further evidence of the inadequacy of staff's regulatory performance in whom the public is asked to place its trust came to light when an announced inspection at the Sierra Nuclear Corp. took place a week after the explosion at the Point Beach plant. (Inspection Rept. No. 72-0007/96-204, July 9, 1996). Following are only a few of the serious deficiencies that were found:

a) Retrieval of documents was difficult. Design records for the VSC-24 were mixed with those of the VSC-17. Most of the analyses were performed for the VSC-17, whose testing data the NRC had never accepted, but were used, nevertheless, by Sierra Nuclear for the VSC-24 design. The design calculation package, dated Feb. 14, 1989, did not contain a signature nor proof of verification by either the Project Manager or Project Engineer. Neither the design plan or the design package included reference to the design verification as required. The Project Plan should provide detailed guidance for the design staff but contained neither.

b)The SNC staff indicated that the design was not reviewed by a corrosion engineer, that SNC did not consult an environmental effects specialist, and that SNC did not consider the problem of environmental interactions of components in the SFP.

c) The SNC design team had no well-founded basis to specify Carbo-Zinc 11 for coating the MSB components.

All of these deficiencies should have been identified by staff inspections in 1989 and 1990, long before the cask was certified. The licensees should have been required to provide oversight and corrective actions among their own vendors since NRC regulations state that licensees are responsible for assuring that fabricators and vendors establish and execute appropriate QA programs. But the staff did not do so. Yet we are now asked to accept the judgments of this staff, who did not find these very obvious deficiencies in the critical design phase of this cask, as being able to give us the assurance and the appropriate resolution for the far more complicated safety-related issues we have described in our petition.

7) After the Point Beach explosion, you, the Chairman of the NRC, requested the Office of the Inspector General to evaluate staff actions and the dry cask storage program. A major conclusion was, "NRC staff told us they do not formally approve or validate licensee loading and unloading procedures because the agency does not have sufficient staff or expertise to review each procedure." Yet, that is exactly what the NRC staff has been doing when they halted all loading and unloading procedures at all utilities after the Point Beach explosion. They required responses to Bulletin 96-04 which they had to approve before these procedures could continue at individual plants.

Given this acknowledgement to the Inspector General' Office of the lack of sufficient staff and expertise, it strains the public's credibility to be asked to have the confidence in the judgment of the staff in all the critical areas that we pointed out in our petition, as Mr. Miraglia would have us do.

8) Since the explosion at Point Beach, there is general recognition that unloading these casks may be even more difficult. The problems that were earlier identified when CPCo first pledged to unload the cask are now compounded by the fact that hydrogen may be generated in that process. Here again we are asked to accept the judgment of the staff,--now already proved to be incompetent in so many ways--that "the deficiencies in the original unloading procedure would not have challenged the integrity of the cask or the fuel...and that the licensee would have ultimately been able to safely unload a cask." This failure to have an adequate unloading procedure,--with all these glaring mistakes and oversights

that are now apparent--is characterized by Miraglia as having "limited safety significance" and therefore, the NRC has refrained from issuing a Notice of Violation or a civil penalty.

The examples of the incompetence of some staff members cited here have become better known to the public since our petition was filed in Sept.19, 1995. But it is that record of poor judgment on the part of the staff that should have given pause to Mr. Miraglia in relying on them for an adequate response to this petition. Instead, his main reliance for his decision is on judgments by staff that he should be able to realize have been inadequate in the past and, therefore, cannot be relied upon now if the public is to have any confidence in the NRC.

Miraglia should have gone beyond these staff judgments to make a decision on our petition. He should have considered the magnitude of what has been done without adequate deliberation and knowledge--1) that millions of curies of radioactivity have been placed in 13 poorly designed casks on the shores of the Great Lakes, 9 of which the utility continued to load even though grave problems with unloading were known to it and were unresolved; 2) that Consumers failed to monitor the casks vendor's design, fabrication and construction practices, giving the public a cask whose design and function it cannot trust; and 3) that some of this high level nuclear waste on the shores of the Great Lakes will remain highly toxic for thousands of years, and yet the casks are licensed for only twenty years. He should especially have considered the fact that no cask has been successfully unloaded, and that there is no assurance of a federal repository.

In view of these considerations, he should at least have required that a VSC-24 cask be successfully unloaded to begin to restore the confidence of the public in the dry cask storage system in general, and at the Palisades site in particular. This should have been required as a condition for continuing to load these casks, and for not issuing a high level violation and meaningful fine. Instead he is asking us to believe his staff's demonstrated flawed judgment that procedural deficiencies of the initial unloading document were of "limited safety significance" as his decision states.

Mr. Miraglia's decision sends the wrong message to the whole nuclear industry on this most dangerous course for the country--i.e. placing high level nuclear wastes on the shores of our fresh water supplies--with no repository in sight. The message is that no matter how careless and sloppy its procedures are, the NRC is a "paper tiger"--it will cost them nothing--and the sham of regulation will go on as usual.

I hope that you and your fellow Commissioners are beginning to understand the sense of outrage on the part of the public over this cavalier dismissal of the grave issues we have placed before you in this 2.206 petition--and its implications for the safety of the fresh water supplies of this country for all future time.

We hope that you and your fellow Commissioners will institute a review of the decision on this 2.206 petition discussed here.

We deeply appreciate your attention to these grave issues.

Yours sincerely,

Mary P. Sinclair

Mary P. Sinclair, PhD.
Co-chair, Don't Waste Michigan

cc. NRC Commissioners Kenneth C. Rogers, Greta J. Dicus,
Nils J. Diaz, Edward McGaffigan, Jr.
Vice-President Al Gore
Senator Carl Levin
Senator Spencer Abraham
Attorney General Frank Kelley of Michigan
Carole Browner, Administrator, EPA
Congressman Dave Camp
Congressman Fred Upton
Senator Joseph Biden

PALISADES NUCLEAR PLANT

YEARLY CAPACITY FACTORS

Year	Net Mwe	DER	MDC
1972	1,764,842	25%	32%
1973	2,411,337	34%	43%
1974	78,298	1%	1%
1975	2,427,933	34%	44%
1976	2,847,033	40%	51%
1977	5,084,688	72%	91%
1978	2,624,144	37%	47%
1979	3,433,264	49%	62%
1980	2,379,529	34%	43%
1981	3,462,629	49%	62%
1982	3,345,123	47%	60%
1983	3,769,958	53%	68%
1984	811,549	12%	15%
1985	5,301,797	75%	95%
1986	841,244	12%	13%
1987	2,634,430	37%	41%
1988	3,435,215	49%	54%
1989	3,637,779	52%	57%
1990	3,008,095	43%	47%
1991	4,873,885	69%	76%
1992	4,865,072	69%	76%
1993	3,545,655	50%	55%
1994	4,513,826	64%	71%
1995	4,856,858	69%	76%
1996	5,314,341	75%	83%
1997	5,803,456	82%	91%
1998	5,390,584	76%	84%
1999	5,128,361	73%	80%
2000	5,748,023	82%	90%
2001	2,355,631	33%	37%
2002	6,369,371	90%	100%
2003	6,158,154	87%	96%
2004	5,346,140	76%	84%

DER=Design Electrical Rating
805

MDC= Maximum Dependable Capacity

730 635 before 10/85

Based on 365 x 24 x Rating, no Leap Year adjustment

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

COMPONENT: Primary Coolant System LIMIT: 500 PAGE #: 1

DESCRIPTION:

DESIGN: Reactor Trips from 100% power

ADMINISTRATIVE: Record all reactor trips at or above 10^{-4}% power

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
1	01/11/72	1030	15%	Loss of S/G LVL due to loss of feed pump
				Hotwell LVL low
2	01/12/72	1249	20%	Operation of z phase unit differential 487
				relay technician initiated suspected
3	01/13/72	0038	20%	Loss of Feed Pump on low suction pressure -
				condition pump suction strainers removed
4	01/13/72	1232	20%	Operation of z phase unit differential 487
				relay - wiring problem
5	02/03/72	0245	20%	Low S/G LVL due to FRV malfunction
6	03/05/72		70MWe	Loss of offsite power test
7	03/11/72	1708	20%	Turbine coastdown test
8	03/12/72	1941	30%	Pilot wire actuation - turbine trip without
				Rx trip (initial) - Loss of Load - Breakers
				open
9	03/27/72	0542	60%	Loss of feed pump due to high vibration -
				air in oil system due to improper filter
				change
10	04/04/72	2229	60%	Turbine trip test - Power test program
11	04/14/72		10%	Loss of condenser vacuum while opening east
				water box for maint, failure of 15%
				trip bypass
12	04/14/72	1328	15%	Failure of feedwater bypass v/v to control
				properly. Low S/G lvl trip

MI0686-0003A-OP03

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

COMPONENT: Primary Coolant System LIMIT: 500 PAGE #: 2

REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
13	04/15/72	0056	15%	Lightening on 345 relays
14	04/20/72	2300	60%	Power test program. Generator trip test
15	04/22/72	1010	15%	Power test program. Partial loop inadvertant
				trip while shifting PCPs
16	06/03/72		10%	TM/LP trip - overly sensitive
17	06/22/72	2222	30%	Low flow pump suction
18	07/06/72		10%	Loss of feedwater due to inadequate feed pump
				speed
19	07/31/72	1022	18%	Feedpump trip on high vibration - low S/G LVL
				trip
20	12/09/72	0200	20%	Inadvertant closing of feed reg valve
21	12/11/72			TM/LP trip due to turbine - Rx pwr mismatch
22	12/21/72	0333	82%	FW valve closure (inadvertant)
23	03/06/73	1605	80%	EH failure - faulty load limiter control
24	03/19/73	0635	80%	2/4 high pressure spurious trip (A&C channels)
25	04/16/73	0509	100%	Loss of load - turbine trip; 25F7 & 25H9 opened
				simultaneously
26	05/18/73	2309	100%	Generator trip test - 100% power test
27	07/08/73	0204	88%	Unknown turbine trip while testing turbine
				valves - while reopening #1 stop valve.
28	07/22/73		10^{-4}	Rx trip on high pwr - faulty log NI channel
29	10/07/74		15%	Pilot wire/reverse power turbine trip. Cause
				unknown
30	04/22/75	1545	85%	Loss of load, turbine EH hydraulic fitting,
				loss of EH pressure

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

COMPONENT: Primary Coolant System LIMIT: 500 PAGE #: 3

REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
31	06/30/75			Loss of feed pump - unstable S/G level control
32	07/29/75		15%	Loss of feed pump - low S/G level
33	05/10/76	1004	25%	Loss of feed pump P-1B - Low water level in S/G
34	07/20/76	2043	93%	Loss of load due to lightening
35	08/24/76	2227		Per ER0001
36	08/31/76	0152	100%	Inst air dryer failure - high press. pressure
37	11/24/76	2210	99%	Generator voltage reg failure
38	11/25/76	0824	15%	Low S/G level
39	11/25/76	2044	22%	Voltage regulator problems
40	12/01/76	1232	100%	Loss of load
41	01/11/77	2102	100%	Line A. Cooling Tower Pump frozen (P-39A
				due to frozen pump basin ref line)
42	01/17/77	1320	100%	Loss of B feedwater pump; loss of feed due to loss
				to loss of level in MSDT (T-5) CV-0609 failed to
				open
43	01/17/77	2329	36%	Loss of A feedwater pump. Improper pwr decrease.
44	03/25/77	0039	90%	Loss of A feedwater pump while valving out P10A for
				repair
45	03/27/77	1017	84%	Loss of B feedwater pump
46	09/24/77	0652	85%	Low vacuum pressure in condenser when lightening
				caused the loss of the startup transformer and the
				loss of cooling tower circuitry. "R" bus lost
47	09/25/77	2310	37%	Loss of offsite power
48	11/25/77	0823	86%	"R" bus lost, loss of cooling tower pumps

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

COMPONENT: Primary Coolant System LIMIT: 500 PAGE #: 4

REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
49	11/27/77	1927	50%	Loss of feedwater pump, Low S/G level (E-50A)
				while attempting to place P-1A in Auto
50	12/11/77	0045	100%	Loss of "R" bus
51	04/21/78	0917	49%	Loss of "B" main feed pump (P-1B) vibration
				detector suspected
52	05/11/78	2105	25%	Loss of feed pump due to plugged y-strainer on CDS
				effluent
53	05/20/78	0728	99%	MSIV closure then reopened
54	05/22/78	1836	97%	MSIV closure (not reopened)
55	05/23/78	0719	20%	Low PCS flow; loss of 1B bus during xfer to
				station power (4160V)
56	06/07/78	1836	23%	Low S/G level on "B" S/G due to loss of feedwater
57	06/08/78	0122	20%	Feedwater control malfunction - low S/G level,
				unstable FW control
58	06/11/78	2148	83%	Loss of air pressure to MSIVs, MSIVs closed
59	06/13/78	1323	83%	Feedwater pump trip; loss of feed pump P-1B - Trip
				on low S/G level
60	06/18/78		84%	Pilot wire activation - lightening struck causing
				the main generator protective relaying to trip
61	07/09/78	2253	90%	Loss of vacuum caused by the pressure control valve
				supplying steam to the main air ejectors failed
				closed - TM/LP trip due to rapid power decrease in
				response to loss of vacuum
62	07/31/78	2140	25%	Loss of electrical power to 2 coolant pumps
63	08/07/78	2121	86%	Loss of "B" feed pump - loss of feed pump P-1B -
				Unstable FW control

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

COMPONENT: Primary Coolant System LIMIT: 500 PAGE #: 5

REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
64	10/17/78	0205	94%	Loss of "B" feed pump P-1B - low S/G level
65	12/16/78	1010	88%	Loss of "A" main feed pump, P-1A low S/G level
66	01/28/79	0844	100%	Manual trip because "B" S/G level increased 98% -
				feed reg valve actuator mechanical failure causing
				S/G B high level
67	02/01/79	0243	100%	Operator turned off of P-50A instead of P-56A
68	03/03/79	0707	100%	Fdwtr pump tripped low S/G level prompted by loss of
				htr drain pump due to low level in T-5
69	04/07/79	0830	100%	Loss of fdwtr flow when P-1B fd pump tripped
				Corrective after was to remove vibration trips on
				FPS
70	04/25/79	0919	97%	Generator loss of load condition - voltage reg sys
				Failed resistor in voltage regulator.
71	04/30/79	0044	100%	Similar to 4/25/79 trip above. Generator loss of
				load - voltage regulator malfunction.
72	06/09/79	1248	12%	Reverse power trip while lowering power. Bus 1A
				failed to transfer - for condenser leak repairs
73	08/10/79	0252	88%	Manually tripped after loss of both feedwater pumps
				during turbine valve testing
74	08/24/79	1323	91%	Manually tripped after loss of feedwater flow while
				cutting in Cond. Demin System
75	05/27/80	0751	7.5%	High pressurizer pressure spike
76	07/02/80	1739	95%	Manually tripped turbine rupture of filter housing
				on generator seal oil sys - loss of gen seal oil

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

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REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
77	07/09/80	1518	10^{-4}%	NI-3 began to fluctuate and resulted in trip
				(High start up rate)
78	08/26/80	0342	88%	Breaker 252-105 "Bus 1A" tripped (condensate pump
				trip)
79	09/28/80	0239	82%	Manually tripped. Short circuit failure of a
				transformer within EHC sys. Intercept valves
				closed.
80	10/09/80	1435	97%	Trencher cut underground cables resulting in gen-
				erator trip - loss of load severing buried switch
				yard control cables.
81	12/23/80	0008	97%	EH control syst failed. Intercept valves closed
				resulting in high PZR pressure trip
82	01/15/81	0047	98%	Irratic feedwater control. Feedwater pump trip
				due to S/G level controller failure
83	08/10/81		40%	Loss of cooling tower pumps resulting in high PZR
				pressure trip
84	12/31/81	2225	18%	EH control problems resulting in turbine trip.
				MSR E-9A relief valves lifting and failure to seat
85	01/02/82	0740	10%	EH control problems resulting in turbine trip.
				MSR intercept valves cycling open and closed.
86	01/24/82	0449	19%	Manual transfer to station pwr low PCS flow
				trip. (During fast transfer 460V A Bus)

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

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REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
87	01/30/82	0910	14%	Low S/G level due to closed throttle valve.
				Failure to open feed pump trip/throttle valve.
88	02/04/82	0406	80%	Loss of cooling tower pump resulting in TH/LP trip
89	05/12/82	0021	98.5%	Failure of #9TG bearing resulting in loss of load
90	06/12/82	0445	$9X10^{-3}$%	Failure of NI-03 resulting in high rate trip
91	07/11/82	1720	42%	Failure of cooling tower pump motor guide bearings
				and cutless pump bearings.
92	09/04/82	0836	42%	Tripped on high pressure. Operating EHC
				pump removed from service resulting in turbine
				valves closing and high PZR pressure trip
93	10/16/82	0325	100%	Failed level indicator on E-50A resulting in low
				S/G level trip.
94	10/28/82	2252	100%	Manually tripped from 100% due to loss of main
				FW flow - Failure of MSR drain tank high level
				dump valve and condensate recirculate valve
				resulting in low suction pressure trip of both
				main feed pumps.
95	01/26/83	0443	100%	Failure of T-G valve position limiter circuitry
				resulting in high PZR pressure trip
96	05/19/83	1114	100%	Loss of B main feed pump resulting in low S/G
				level trip

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

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REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
97	08/04/84	1355		Loss of Turbine EHC due to failed fittings
98	08/10/84	1437		Due to a PCS leak from an instrument line
99	08/11/85	0834	98%	Voltage regulator problem
100	08/30/85	1138	47%	Generator relay cut out improperly
101	03/26/86	1258	60%	Voltage regulator problem
102	05/19/86	1416	97%	EHC system power supply failure
103	04/12/87	0534	75%	EH Line Break
104	05/16/87	0125	93%	Power reduction to 0% power due to CV-1059
				(pressurizer spray valve) stuck in intermediate
				position (Rx in hot shutdown at 1718 hrs).
105	05/22/87	0007	40%	Ruptured disc on feedwater pump
106	07/10/87	0121	14%	Oil leak in the upper oil reservoir for "D" primary
				coolant pump.
107	07/14/87	1322	94%	Manual Rx trip due loss of 1-2 S/U x-fer.
108	08/17/87	0404	68%	Manual Rx trip due to EHC leak on lube oil line to
				#4 Govenor valve
109	08/23/87	0630	93%	Trip due to a failed voltage regulator on the main
				generator
110	08/04/89	1949	80%	Automatic trip due to "B" S/G low level ("D" Bus
				did not fast transfer to SU power when transfer of
				Y20 to bypass reg. attempted)
111	01/09/90	0512	35%	Manual reactor trip upon loss of P1A

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

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REACTOR TRIPS FROM 100% POWER

OCCURRENCES

OCCUR #	DATE	TIME	POWER	COMMENTS
112	2/28/90	1825	59%	~~Automatic Trip due to~~ loss of "B" Main Feed Pump, ~~[illegible]~~ at 80%, decreased to 50%, SIG level increased, ~~variable high power trip~~, automatic VHPT at 59% power.
113	03/03/91	1435	100%	RPS trip ~~due to~~ occurred during maintenance on NI-7
114	07/12/91	1838	100%	Loss of "A" Main Feed Pump, low S/G level, automatic Rx trip
115	12/09/91	1722	22%	Main Generator seal oil pressure decrease, rapid down power to take plant off-line. Tave dropped below 525°F, momentarily S/G level increased. Manual Turbine/Reactor trip. Turbine tripped first so automatic low Reactor trip on loss of load at ~~22% power~~
116	03/01/92	1232	100%	Turbine trip due to loss of load signal but no actual loss of load.
117	07/29/92	1007	100%	Turbine trip due to low line voltage during test of Safety Injection System
118	08/14/92	0017	100%	Rx trip on low A S/G level
119	08/25/92	0129	100%	Rx trip due to loss of power to RPS Channel B
120	10/30/92	0700	100%	Turbine trip due to loss of load signal but no actual loss of load. Problem with DEH uninterruptible power supply.

PALISADES PLANT

RECORD OF TRANSIENTS OR OPERATIONAL CYCLES

COMPONENT: Primary Coolant System LIMIT: 500 PAGE #: 10

Design: Reactor Trips from 100% Power

Administrative: Record all Reactor Trips at or above 10^{-4}% Power

OCCURRENCES

Power changes in excess of 5%/minute

OCCUR #	DATE	TIME	Power	COMMENTS
121	5/22/95	1110	55	Manual Reactor trip due to loss
				of both Main Feedwater Pumps
122	7/21/98	1500	99.6	(Ref: SS Logbook 223, p. 76)
				Manual Reactor Trip due to
				loss of ONE (B) MFP.
123	4/4/00	0627	99.9	Manual trip due to electrical transient
				and loss of both MFP's.
124	12/1/02	2154	100.	Static Wire broke on transmission tower,
				with fault on output line ⇒ Turbine trip ⇒
				Reactor trip. Static line also fell across
				Rear bus, with loss of RCPumps. See
				CAP 0032289. Plant Stayed hot, above 500°F
125	8/31/04	0718	95%	Per LER-2004-01 Trip was from 95% power
				Condensate Pump fire See CAP 043294
126	1/9/05	11:27	73%	Loss of Condenser Vacuum. Power
				reduced @ 30%/hr (5%/min) from 100%
				prior to the trip from 73%
				See CAP 046023

MI0885-00091A-OP03

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	M/R	Y	75	Power Operation	0	Hot Standby

Event Text

MANUAL REACTOR TRIP DUE TO LOWERING MAIN CONDENSER VACUUM

"The Palisades reactor was manually tripped from approximately 75% power at 1127 hours EST due to lowering main condenser vacuum. Prior to the reactor trip, power was lowered from 100% to 75% in accordance with off-normal procedures in an effort to restore condenser vacuum. The reason for the loss of condenser vacuum is not understood and is being investigated. At 1135 hours an automatic actuation of the auxiliary feedwater system occurred, as designed, to maintain steam generator levels. The atmospheric steam dump valves opened per design on reactor trip, however one dump valve did not fully re-close until instrument air was manually isolated to it. Reactor decay heat is being removed via steaming through the turbine bypass valve to the main condenser. Reportable under 10CFR50.72(b)(2)(iv)(B) and (b)(3)(iv)(A)."

After the reactor trip, Main Condenser vacuum rose to 25 inches - sufficient for using the Turbine Bypass valves for removing decay heat. All rods inserted on the manual reactor trip. The electric grid is stable.

Licensee notified NRC Resident Inspector.

NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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No. III-06-018

April 20, 2(

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Sent: Friday, May 12, 2006 10:02 AM
Subject: Palisades Control Rod Problem & Reactor Trip (5/11/06)

Power Reactor	Event Number: 42569
Facility: PALISADES Region: 3 State: MI Unit: [1] [ ] [ ] RX Type: [1] CE NRC Notified By: PATRICK PITCHER HQ OPS Officer: BILL HUFFMAN	Notification Date: 05/11/2006 Notification Time: 17:35 [ET] Event Date: 05/11/2006 Event Time: 15:14 [EDT] Last Update Date: 05/11/2006
Emergency Class: NON EMERGENCY 10 CFR Section: 50.72(b)(2)(iv)(B) - RPS ACTUATION - CRITICAL	Person (Organization): RICHARD SKOKOWSKI (R3)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
1	M/R	Y	8	Power Operation	0	Hot Standby

Event Text

MANUAL ACTUATION OF REACTOR PROTECTION SYSTEM DUE TO FAILURE OF CONTROL ROD TO WITHDRAW

"Following a startup from a refueling outage with the plant at approximately 24% power, it was determined that one control rod appeared to be fully inserted in the core as determined by both incore and excore flux tilts. The Off Normal Procedure for a dropped control rod was entered. The decision was made to take the plant offline to troubleshoot and correct the apparent condition. The Off Normal Procedure does not allow operation in Mode 2 with a dropped control rod. At 1514 hours EDT the reactor was manually tripped from 8% power. The reactor trip was uncomplicated.

"This is reportable under 10 CFR 50.72(b)(2)(iv)(B) as a manual Reactor Protection System actuation while critical."

Decay heat is being discharged to the condenser via the turbine bypass valves and cooling is being supplied from AFW. All systems besides the control rod in question functioned as required.

It appears that the control rod in question may have been inserted since startup. The rod

position indicators were showing a normal rod position. The licensee believes that the rod may not be coupled. This rod has had a previous history of being difficult to couple. The licensee stated that normal rod testing was conducted prior to startup along with low power physics testing which did not indicate anything significantly out of spec.

The licensee notified the NRC Resident Inspector.