

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
Before the Atomic Safety and Licensing Board**

In the Matter of:	)	Docket No. 50-341
DTE Electric Company (Fermi Nuclear Power Plant, Unit 2)	)	NRC 2014-0109
License Renewal Application	)	September 19, 2014
	)	

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**INTERVENORS' COMBINED REPLY IN SUPPORT OF PETITION FOR LEAVE  
TO INTERVENE AND REQUEST FOR HEARING OF DON'T WASTE  
MICHIGAN, CITIZENS ENVIRONMENT ALLIANCE OF SOUTHWESTERN  
ONTARIO AND BEYOND NUCLEAR**

Petitioners Don't Waste Michigan, Citizens Environment Alliance of Southwestern Ontario, and Beyond Nuclear (collectively, "Petitioners"), by and through counsel, hereby reply in support of their initial Petition for Leave to Intervene and Request for Hearing in DTE Electric Company's license renewal application proceeding for the continued commercial operation of Fermi nuclear power plant, Unit No. 2 ("Fermi 2"), for the period 2025-2045.

***REPLY AS TO CONTENTION 1: INADEQUATE SAMA  
ANALYSIS OF MARK I BWR VULNERABILITIES***

Both the NRC Staff and DTE Electric Company ("DTE") answer that the Petitioners' Contention 1 is inadmissible. Petitioners disagree and explain their reasoning below.

**A. Contention 1 Raises a Genuine Dispute of Fact**

The NRC Staff and DTE argue that the Petitioners' contention does not raise a genuine dispute. NRC Staff's Answer to Petition for Leave to Intervene and Request for Hearing of Don't Waste Michigan, Citizens Environment Alliance of Southwestern Ontario and Beyond

Nuclear, September 12, 2014 (“NRC Answer”), p. 13; DTE Electric Company Answer Opposing Petitions to Intervene and Requests for Hearing, September 12, 2014 (“DTE Answer”), p.8.

The NRC and DTE recognize that Fermi-2 is a GE Mark I boiling water reactor. They recognize that SAMA is a Category 2 issue that must be adequately addressed in DTE’s Environmental Report (“ER”). The Petitioners have contended that the DTE ER does not provide a thorough and adequate Severe Accident Mitigation Alternative (SAMA) analysis for Fermi 2’s unreliable Mark I pressure suppression containment system under severe accident conditions. Petitioners initially provided numerous citations to the material facts ascertained by the NRC Japan Lessons Directorate (“JLD”) as published in SECY 2012-0157.

Petitioners contend that the findings and conclusions of the JLD’s SECY 2012-0157 constitute a genuine dispute with DTE’s SAMA analysis for Fermi-2’s ER. Neither the NRC Staff nor DTE answers address the Petitioners’ citations of JLD’s expert findings, conclusions and recommendations enumerated in SECY 2012-0157. Both NRC and DTE summarily conclude that the Petitioners do not raise a genuine dispute, without attempting to rebut, disprove, reinterpret or even address the NRC’s own documented findings in SECY 2012-0157 which, Petitioners maintain, illustrates that DTE has presented only “half the equation”<sup>1</sup> and failed to take the requisite NEPA “hard look” via the SAMA.

As a counterpoint to DTE’s SAMA 123, in SECY 2012-0157 the JLD explicitly documents as material fact,

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<sup>1</sup>From SECY-2012-0157, “Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments,” Notation Vote, Response Sheet, Commission Chair Allison Macfarlane, p. 3-7.

The staff concludes that considering both the quantitative and qualitative factors shows the direct and indirect costs associated with Options 2 [hardened containment vent] and 3 [equipped with an external engineered filter] are cost-justified in light of the substantial increase in the overall protection of the public health and safety that is provided by addressing severe accident conditions for BWRs with Mark I and Mark II containments.

SECY 2012-0157, p. 9. The JLD expert finding disputes and sharply contrasts with DTE's deficient quantitative SAMA analysis finding as defended in the NRC staff and DTE answers. Petitioners argue that this constitutes a genuine dispute of material fact in this site-specific proceeding.

Additionally, the NRC and DTE answers are inconsistent with statements of material fact and the expert findings contained in NRC Chairwoman Allison Macfarlane's notation vote in support of the JLD staff analysis, conclusions and recommendations. Hence a genuine dispute exists where a hearing is necessary to reconcile the differences in conclusions of material fact in the SAMA analysis for the Fermi-2 GE Mark I boiling water reactor.

Other material facts contained in NRC documentation support the genuine dispute that DTE has not performed a thorough and adequate SAMA analysis which fulfills NEPA's "hard look" requirement. The current DTE SAMA quantitative cost-benefit analysis in the ER is only "half the equation"<sup>2</sup> for averting environmental consequences and costs by installation of engineered filtered containment vents. Petitioners contend that half measures for environmental protection do not meet NEPA requirements. In the SECY-2012-0157 "Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments," Notation Vote and Response Sheet of Commission

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<sup>2</sup>*Id.*

Chairwoman Allison Macfarlane, the Chairwoman explicitly supports and advocates for the JLD staff's employment of a combined quantitative and qualitative cost-benefit analysis of the SAMA recommendation to issue an agency order for Option 2 (the hardened containment vent) and Option 3 (adding an external engineered high-capacity radiation filter to the hardened containment vent) and consideration of Option 4 (additional containment isolation strategies only if in addition to incorporating Option 3) to cost effectively reduce the environmental impacts of a severe nuclear accident in a GE Mark I boiling water reactor, which includes Fermi 2, which is nearly as large a reactor at 1,112 Mwe-electric as Fukushima Units 1 and 2 combined. Petitioners contend that the JLD analysis remains valid and in sharp contrast to DTE's deficient and thus incomplete analysis. Chairwoman Macfarlane points out in her notation vote as follows (this quotation runs from this page through page 7):

#### Engineered Filtered Containment Venting System

Engineered filtered containment venting systems can help protect the public and the environment by significantly reducing the amount of radiological effluent released from the containment during a severe accident. All currently available information indicates that the ability to vent containment through filters would be an improvement to safety. In evaluating whether justification for filters exists per 10 CFR 50.109, known as the Backfit Rule, the NRC staff performed both a quantitative cost-benefit analysis and qualitative assessment to determine if the proposed modification could be considered cost-justified substantial safety improvements.

#### Quantitative Analysis

From a quantitative cost-benefit perspective, the staff performed the cost-benefit analysis for both Option 2 and Option 3, using two different core damage frequency values,  $2 \times 10^{-5}$ /year and  $2 \times 10^{-4}$ /year, to demonstrate the sensitivity of the results to these uncertain values. For both cases using a core damage frequency of  $2 \times 10^{-5}$ /year, the staff did not find the enhancements to be cost-beneficial, while for both cases using a core damage frequency of  $2 \times 10^{-4}$ /year, the staff found the enhancements to be cost-beneficial. Given the uncertainty of estimating an actual core damage frequency, I argue that the results of the cost-benefit analysis demonstrate that the proposed modifications are cost effective.

The existing record for severe accidents at nuclear power facilities worldwide over the past three decades versus the theoretical performance of nuclear power facilities in the U.S. highlights our struggle to assign uncertainties to these types of quantitative measures.

Significantly, I note that the staff used current agency guidance while performing the cost-benefit analysis. They did not include the potential costs of offsite releases similar to those experienced by Japan after the Fukushima accident, for example. Any postulated changes to the way the agency addressed the evaluation of economic consequences of accidents would clearly increase the costs-averted side of the equation and move the results in the direction of being even more cost-beneficial.

### Qualitative Analysis

While the cost-benefit analysis provided an arguably cost-justified result when considering uncertainty, I, like the NRC staff, also turned to reviewing the qualitative aspects of the implementation of enhanced containment vents. To this end, the staff notes that assessing the uncertainties and sensitivities of modeling economic consequences is best done qualitatively. I discuss below the qualitative factors of defense-in-depth, uncertainties, operator action and decision-making, international practice, liability and finally, whether a qualitative underpinning for requiring installation of engineered filter systems would be precedent setting.

### Defense-in-Depth

The Staff notes in Enclosure 1 to the SECY:

A key principle of NRC's regulation and oversight of nuclear power plants has historically been and continues to be 'defense in depth.' An aspect of defense in depth traditionally has been to have multiple barriers to the release of radioactive material and to have equipment and personnel to (1) prevent accidents from occurring or progressing, (2) contain radioactive material if released from the fuel, and (3) mitigate the possible release through protective actions, such as evacuation. The containment systems at nuclear power plants play a key role in helping confine fission products within the plant if an accident progresses to a point where significant core damage has occurred. Containment designs also help to control accidents by absorbing the energy released from the reactor coolant system, holding water for long-term core cooling, and protection systems from external hazards. Given the key role of containment performance as an essential element of defense in depth, concerns about the performance of Mark I and Mark II containments during severe accident conditions have been discussed for many years. p.27

Defense-in-depth is one of the primary ways the agency accounts for uncertainties in quantitative estimates of component failure or accident frequency. While the existing

Order requiring reliable, hardened vents focuses on the prevention of an accident, it's prudent to consider an accident scenario in which an operator, using plant systems, is not able to preclude core damage and the accident escalates. Such a scenario illustrates where the mitigation and containment aspects of defense-in-depth provide their primary benefit. As the paper notes in Enclosure,

While it may not be necessary or practical to ensure the complete independence of each barrier to the release of radiation, it is desirable to minimize dependencies and address the high conditional failure probability of Mark I and Mark II containments following a compromise of the preceding barriers (fuel and cooling system). The filtered system would provide the most independence while the unfiltered vent could result in large releases in the attempts to reduce containment overpressure conditions. p.34

Much like emergency preparedness is viewed as the last line of defense to public health and safety, the containment is the last engineered line of defense, and I believe it's important to ensure that in all situations, containment is given similar focus.

The staff also points out the large uncertainties involved in estimating the economic consequences given a large release of radioactive material (using the existing NRC economic consequences framework). Any increase in either the event frequency or economic consequences of a severe accident at a nuclear power facility could easily push a filtered vent into cost-beneficial space.

#### Operator Action and Decision-making

Another important uncertainty regarding severe accident management is human performance and reliability during a crisis. As raised by Commissioner Apostolakis during the January 9, 2013 Commission meeting, an important element of defense-in-depth is not over-relying on programmatic or human actions. I agree and I support a passive filtered containment vent design that requires as little operator action as practical. Making the vent operation passive will free up operators to focus on other actions needed to restore reactor safety. At the January 9 meeting, one of the external panel members, David Lochbaum noted that in a severe accident scenario, operators might not have the required information needed to follow an alternative mitigation strategy because of loss of power and equipment failures. Indeed, the industry's focus on developing new reactor systems is to add as many passive features as possible, reducing the need for human action. Moreover, the importance of reliable instrumentation and equipment that facilitates an operator's ability, during an accident, to devote attention and resources to the areas where it is most essential, was a key consideration underlying Order EA-12-051, issued on March 12, 2012.

While I appreciate that operators in the United States have indicated that they would open containment vents when required to protect the reactor, operators I've spoken to have also indicated that having a filtered vent system would give reassurance to their actions. I also agree with the staff that a filtered vent system affords decision-makers the

confidence that conducting a venting operation will avoid adverse radiological impacts to the surrounding area. Filtered vents remove a potential consideration that could delay a decision to vent the system.

### Foreign Experience

The NRC's analysis of the Fukushima accident highlighted the importance of an independent regulatory body that is well-funded and supported by the federal government. But it also showed that other factors, beyond regulatory function, were important elements in the accident, such as assessments of hazardous Earth processes like seismicity and flooding, the existence of mitigating equipment on site, and the ability to safely vent containment when necessary. There are 10 BWRs with Mark I containments and 15 BWRs with Mark II containments located outside of the United States. Of these 25 units, 7 have operational filtered vents, 14 have committed to installing filtered vents, and only 4 have not yet committed to filtered vents (in Mexico and India). In addition, all 19 non-U.S. plants with other BWR containment designs have either filters installed or are committed to installing them. In summary, this equates to 91% of all non-U.S. BWRs worldwide that either have filters or are committed to them.

### Liability

Another qualitative factor not mentioned in the staff paper is that of liability and insurance. In reality, the estimated \$16 million cost of installing a filtered vent system is a comparatively small price to pay to avoid billions in decontamination costs, not to mention all the costs loss of land would entail. In many ways a filtered vent serves as an added insurance policy for the plant, with the potential to avert billions of dollars in decontamination costs given certain severe accident scenarios.

### Precedent

It has also been suggested that the Commission has never overridden quantitative cost-beneficial analysis using qualitative factors. ***The Commission should weigh quantitative and qualitative factors in all its decisions since looking solely at one or the other would only be looking at half the equation.*** [Emphasis added] While I do not find that the use of qualitative factors in this instance sets a new precedent, I agree that the Commission should be cautious and deliberative in its use of qualitative factors. The thorough analysis by the staff in this paper meets these criteria and gives the Commission a solid foundation on which to base a decision that incorporates both quantitative and qualitative factors.

### Conclusion

Inclusion of filters on containment vents is a straight forward and cost-beneficial way to provide a significant level of additional protection to the public and the

environment, as well as potentially averting billions of dollars of clean-up costs to the nuclear operator, the nuclear industry and the federal taxpayer.

Excerpted from SECY-2012-0157, “Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments,” Notation Vote, Response Sheet, Commission Chair Allison Macfarlane, p. 3-7.

Chairwoman Macfarlane’s concluding remarks in her notation vote, and the NRC JLD findings, embody the mission of NEPA to take a “hard look” at alternatives that can reasonably and cost beneficially protect the environment and avert clean-up costs potentially raised by the requested federal action.

Petitioners contend that combined quantitative and qualitative analysis of severe accident mitigation alternatives for the filtered containment vent is within the scope of these proceedings. The NRC’s own documents demonstrate a genuine dispute of material fact. Petitioners urge the Atomic Safety and Licensing Board to convene a public hearing to scrutinize the significant differences and disparities between the NRC JLD staff’s SAMA analysis, conclusions and recommendations as documented in SECY 2012-0157 for GE Mark I boiling water reactors in contrast to DTE’s “half of the equation” SAMA analysis for the GE Mark I boiling water reactor under review for a 20-year license extension. Petitioners at such hearing would seek to have the ASLB adopt the combination of quantitative and qualitative cost-benefit analyses for the Fermi-2 severe accident mitigation alternative which is presented in SECY 2012-0157. The NRC’s principal authors and personnel who contributed to SECY 2012-0157 would be the witnesses called by Petitioners as experts to justify the JLD findings for incorporating both a quantitative and qualitative cost-benefit analysis of the external engineered filtered hardened containment vent which contrasts the Fermi 2 quantitative SAMA ER. Petitioners intend to call John

Monninger (NRC/NRR/JLD), Robert Fretz (NRC/NRR/JLD), and Robert Dennig (NRC/NRR/DSS) as expert witnesses regarding the combined quantitative and qualitative SAMA analysis in SECY 2012-0157.

### **B. Petitioners Adequately Identify Information Missing From the ER**

Both the NRC Staff and DTE aver that the Petitioners fail to identify information missing from the Environmental Report. NRC Answer, p. 14; DTE Answer, p.10. But as they previously argue, the Petitioners contend that DTE's singular quantitative analysis in the SAMA 123 analysis for the Fermi 2 license renewal application is deficient and inadequate and does not comprise the "hard look" required by NEPA. It is significantly missing "half of the equation" as cited by Commission Chairwoman Allison Macfarlane in her aforementioned notation vote in support of the NRC JLD SECY 2012-0157 conclusion to combine both quantitative and qualitative SAMA analyses in its findings and recommendations for the GE Mark I boiling water reactor engineered external filtered containment vent.

### **C. Petitioners Have Shown That The NAS Report Materially Affects The LRA Application**

The NRC Staff maintains that Petitioners have not shown that the National Academy of Sciences ("NAS") report materially affects the Fermi-2 LRA application. NRC Answer, p.18. DTE did not answer the Petitioners on the point of the NAS report. The Staff argues that the NAS "Committee on Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants" report provides no basis for concluding that the DTE SAMA analysis is flawed or inadequate.

Petitioners contend that the NAS committee report constitutes new and significant information not previously considered by DTE or incorporated into the Fermi 2 ER respecting

the required SAMA analysis. The NRC answers, “As cited by Petitioners when the NAS Report was discussing the Staff’s filtered vent analysis in comparison to the costs projected for the Japanese recovery, it was simply highlighting that different assumptions can impact the cost estimates.” Petitioners submit that this type of new information, particularly the assumptions in determining environmental consequences, impacts and how to avert costs, in the NAS findings point out the broad areas of uncertainty for a severe accident and beyond-design-basis accidents that are more thoroughly accounted for in the required SAMA analysis by incorporating the quantitative and qualitative assessments employed in SECY 2012-0157.

Petitioners further urge that the new findings of the NAS in Appendix L, “Factoring the Costs of Severe Accidents into Backfit Analysis,” introduces new information regarding the real cost of nuclear catastrophe. “The Fukushima nuclear accident demonstrates that the economic costs of a severe nuclear accident can be considerable.” The NAS states that the cost of the Fukushima Daiichi nuclear accident could exceed \$200 billion. NAS “Committee on Lessons Learned from the Fukushima Nuclear Accident for Improving Safety and Security of U.S. Nuclear Plants,” July 24, 2014, Appendix L, p. 1-2.

The NAS further finds:

Differences between accident costs in Japan and the United States can be expected — as can differences in accident costs for different sites in the United States. Nevertheless, the large differences noted above serve to illustrate that cost estimates — and associated backfit rule decisions — are sensitive to the assumptions made in developing those estimates. The point of this appendix is not to critique the USNRC’s analysis — the committee did not perform an in-depth review of this analysis because it is outside the statement of task for the study. The committee offers this example to demonstrate that severe accidents such as occurred at the Fukushima Daiichi plant can have large costs and other consequences that are not considered in USNRC backfit analyses. These include national economic disruption, anxiety and depression within affected populations, and deterioration of social institutions arising from a loss of trust in governmental organizations.

NAS, L-3. The Petitioners suggest that the findings of the National Academy of Sciences committee report support the incorporation of both quantitative and qualitative assessments for a more thorough and complete SAMA analysis as performed and recommended by SECY 2012-0157.

The NAS committee report states,

If used mechanically without recognizing and acknowledging these limitations, PRAs can supplant judgment and undermine the regulatory policy-making process. For example, PRAs that underestimate the uncertainties in event probabilities or that contain incomplete consequence estimates can result in misleading cost-benefit evaluations for regulatory decisions under the backfit rule (Sidebar 5.5). Appendix L compares the estimated costs of the Fukushima Daiichi accident to the hypothetical costs for a core-melt accident at a U.S. nuclear plant to illustrate the sensitivity of cost estimates to PRA assumptions. Appendix L suggests that USNRC cost estimates for backfit analyses do not include a full accounting of costs and consequences arising from severe nuclear accidents. It is essential that the USNRC fully account for the costs of severe nuclear accidents when making backfit decisions.

An opportunity exists to use the accident progression at the Fukushima Daiichi nuclear plant to validate and improve severe accident system models (e.g., MAAP and MELCOR; see Chapter 4) and thereby enable higher-fidelity consequence modeling, both for on-site events and for off-site releases of radioactive materials during accidents, including the types of long-term releases to groundwater that are occurring at the Fukushima Daiichi plant.

NAS, p.5-24. This study was sponsored by the U.S. Nuclear Regulatory Commission and was a congressionally mandated report.

Petitioners concur with the above NAS recommendation.

#### **D. 10 C.F.R. § 2.206 Is Not A Meaningful Alternative Means Of Relief**

According to the NRC Staff and DTE, Petitioners raise safety claims that are outside the scope of the proceeding and have a procedural route for relief through the 10 CFR § 2.206 process. NRC Answer, p.19; DTE Answer, p.11. The Staff states that “The ability of the containment structure to perform its intended function is a current licensing issue; not an issue

unique to license renewal.” NRC Answer, p. 22.

But for the performance of a thorough SAMA for the Fermi 2 ER or subsequent Supplemental Draft Environmental Impact Statement, the reliable operation of existing plant features under current design requirements is an extremely important and vital factor to avert potentially adverse environmental impacts and avoidable costs during the requested relicensing period. The Fermi 2 Mark I pressure suppression containment system is currently determined to be unreliable under severe accident conditions. In view of the findings and recommendations of SECY 2012-015, it cannot therefore be reasonably and reliably determined using DTE’s deficient ER that FERMI-2 will have an “essentially leak tight barrier” for the re-licensing period.

The NRC and DTE are essentially saying that a severe accident challenging the Fermi 2 containment can’t or won’t happen, whether or not the Current Licensing Basis or the requested license extension are questioned.

DTE argues that using its quantitative analysis, the postulated frequency for a Fermi-2 severe accident resulting in significant environmental consequences and cost - such as widespread and long-term radioactive contamination to land and the Great Lakes - is extremely remote. They argue that a severe accident causing the Mark I containment system to fail is extremely unlikely to occur for the relicensing period.

To counter that position, the Petitioners offer the significant finding and expert opinion of NRC Chairwoman Allison Macfarlane:

While the postulated frequencies of an accident at nuclear power facilities in the United States are often expressed anywhere from one in 1,000 years to one in 1,000,000 years, it’s important to recognize that the world has seen three severe accidents at nuclear facilities in the past 33 years — or essentially one every 10 years, on average. Even though the circumstances, regulatory requirements, and plant designs differed from one accident to the next, these distinctions do not reassure most members of the public. To the

contrary, this recurrence rate feeds much of the concern the public expresses about the safety of nuclear power. The existing record for severe accidents at nuclear facilities worldwide over the past three decades, versus the theoretical performance of nuclear power facilities in the U.S., highlights our struggle to assign uncertainties to these types of quantitative measures.

SECY-2012-0157, “Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments,” Notation Vote, Response Sheet, Commission Chair Allison Macfarlane, p. 3. Petitioners believe that DTE should be required, as recommended by SECY 2012-0157, to perform the quantitative and qualitative assessments to determine whether the Fermi-2 containment system equipped with an engineered external hardened filtered containment vent is a more reasonable and reliable “essentially leak tight barrier” for the requested license extension period than without the SAMA alternative.

It is disingenuous of NRC staff and DTE to answer that the Petitioners have other recourse for substantive relief through the non-adjudicatory process provided by 10 CFR § 2.206 to address their concerns that the apparent and current lack of compliance for specific containment design criterion (GDC 16) has not been assessed in the ER as extending into the requested relicensing period.

The Petitioners further point to the “Additional Opinion of Judge Rosenthal” in the ASLB Memorandum and Order (Denying Petitions for Hearing), ASLBP No. 12-918-01-EA-BD01, (July 10, 2012) which was issued in the case of the Pilgrim Nuclear Power Plant license renewal. Notably, the ASLB Order and Memorandum and Judge Rosenthal’s additional opinion pre-dates the JLD findings, conclusions and recommendations published in SECY 2012-0157. While Judge Rosenthal subscribes to the ASLB decision to deny Pilgrim Watch a hearing on the matter

of the Pilgrim nuclear power station license renewal application, he states that a straightforward review of the NRC § 2.206 process would afford very little substantive relief to hearing requesters:

To the contrary, over the course of the many years that I have been associated with this agency, as first an Appeal Panel member and more recently a member of the Licensing Board Panel, seekers of some form of substantive relief have often been told by the NRC Staff, if not by the Commission itself, something along the lines of the following: You have not met the standing and/or contention admissibility requirements that are a condition precedent to obtaining an adjudicatory hearing on your safety or environmental concerns but there remains available the opportunity to present those concerns in a petition filed with the appropriate NRC official.

Over the course of the same number of years, there has been considerable speculation regarding just how meaningful the section 2.206 remedy has proven to be in practice. Beyond question, there has been the grant of requests for such procedural action as, *e.g.*, the institution of an investigation into asserted misconduct. There equally can be no doubt that, in many instances, the petitioner derived benefit from the action taken. At the same time, there was uncertainty regarding the extent to which there had been the like grant of requests for such substantive relief as was being sought in Bellotti and is now being sought in the matter at bar.

Believing this to be an appropriate occasion to endeavor to remove that uncertainty, with the indulgence of Judges Hawken and Baratta I issued an order on May 17, 2012 in which I directed the Staff to provide the Board with a list of those section 2.206 petitions filed with it since January 1975 (the birth of the agency) in which substantive relief had been sought and granted. In the case of each petition so listed, a summary of the granted relief was also to be supplied.

On June 15, the Board received the Staff response. We were told that the Staff had examined a total of 387 Directors' Decisions. It had then 'screened out' those that had been denied. That left two petitions that were said to have been granted in full in the 37 years under scrutiny, and 140 that, according to the Staff, had either been granted in part or 'although denied, either prompted responsive action by the Staff or were already being addressed by the Staff.' A summary was provided of the substantive relief said to have been granted in each instance.

The most cursory examination of the 142 items left me in no doubt that there had been a total failure by the Staff to have understood the direction contained in the May 17 order. For one thing, *how possibly could the outright denial of a petition be considered the according of substantive relief simply because the matter in question was already being addressed by the Staff?* And was it reasonable to accept that, in every one of those many instances in which the petition was granted in part and denied in part, the granted part represented the totality of the substantive relief that had been sought?

(Emphasis supplied). The Judge further stated:

In the circumstances, it appeared that the appropriate course was to give the Staff a second opportunity to specify which of the 142 items identified in the June 15 filing in fact represented, for the present purposes of ascertaining the meaningfulness of the section 2.206 remedy, the grant of substantive relief requested in a section 2.206 petition. That opportunity was provided in a June 19 order, to which the Staff responded in a June 26 submission that insisted that the June 15 filing had been in full compliance with the Board's May 17 directive. We were told in emphatic terms that 'the Staff stands by its initial determination and continues to maintain that each of the [142] instances [cited in the June 15 filing] reflects substantive relief provided to the petitioner.'

With respect to the PG&E matter alluded to above, the Staff would have it that the Notice of Violation that inevitably followed the district court ruling qualified as the grant of substantive relief despite the fact that, apparently, no civil penalty was assessed against PG&E on the strength of that notice. It is not necessary, however, to quarrel with the Staff's assertion on that score in order to establish the total lack of substance to its remarkable insistence that, without a single exception, every one of the 140 partial grants of section 2.206 petitions accorded substantive, rather than simply procedural, relief to the petitioner.

It might be, as the Staff further maintains, 'that reasonable minds can differ with respect to whether a particular matter is one of procedure or of substance.' And it might also be that there are some forms of substantive relief that do not involve the modification, suspension, or revocation of a license. That said, *no reasonable mind applying the most expansive definition of 'substantive' could possibly apply such a characterization in the case of, to cite but one example, the section 2.206 petition acted upon in 1997 with regard to the St. Lucie and Turkey Point facilities that, the Staff would have it, provided substantive relief.*

Judge Rosenthal continued,

The short of the matter thus is that, with regard to two of the 142 section 2.206 petitions on the Staff's list, there has been an egregious and mystifying mischaracterization of the nature of the relief granted to the petitioner. There remains, however, the 140 other petitions on the Staff's list. In the present circumstances, must one now examine the relief granted with respect to each of those petitions in order to determine whether there has been a like misrepresentation that that relief had been substantive in character?

Upon analysis, I have concluded that no such exceedingly laborious undertaking is required in order to reach a sufficient level of confidence that *very few, if any, of the section 2.206 petitions had led either to the modification, suspension, or revocation of an NRC license or to some other administrative action of equally consequential effect.*

To reach that conclusion, one need not rely entirely, or even primarily, on the high degree of improbability that, with respect to each of the partially-granted petitions, the relevant Office Director had granted the most consequential relief sought while, at the same time, denying that of appreciably less significance. Rather, the conclusion can rest on this wholly reasonable inference: *had there been indisputable instances of grants of*

*substantive relief, such as significant affirmative administrative action taken with regard to a licensee or license, in compliance with the Board's first order those instances would have been simply identified by the Staff without the addition of the patently absurd and demonstrably false claim that all partial grants were substantive.*

Although deemed very remote, I cannot exclude the possibility that the drawn inference gives too much credit to the Staff. Should, however, the inference be on target, I question the justification for the often reference, both in Commission decisions and in Staff briefs filed with licensing boards, to the broad availability of the section 2.206 remedy as a realistic alternative to an adjudicatory hearing. Where it has been determined that the hearing requester, such as Pilgrim Watch here, has not established an entitlement to a licensing board's evidentiary consideration of a claim for what manifestly amounts to substantive relief (here the further modification of reactor operating licenses), the matter should be left at that. An unsuccessful hearing requester is, of course, always free to invoke the section 2.206 remedy. *But, at least where truly substantive relief is being sought (i.e., some affirmative administrative action taken with respect to the licensee or license), there should be no room for a belief on the requester's part that the pursuit of such a course is either being encouraged by Commission officialdom or has a fair chance of success*

(Emphasis supplied). "Additional Opinion of Judge Rosenthal," Memorandum and Order

(Denying Petitions for Hearing), ASLBP No. 12-918-01-EA-BD01, July 10, 2012, p.1-7. For the NRC Staff and DTE to suggest that Petitioners can seek substantive relief outside of the requested adjudicatory process for Fermi-2 through the emergency enforcement petition process (10 CFR § 2.206) is misleading at best.

### **E. Conclusion**

A hard look for a superior alternative is a condition precedent to a licensing determination that an applicant's proposal is acceptable under NEPA. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 & 2), ALAB-471, 7 NRC 477, 513 (1978). When NEPA requires an EIS, the Commission is obliged to take a harder look at alternatives than if the proposed action were inconsequential. *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), ALAB-660, 14 NRC 987, 1005-1006 (1981).

NEPA requires the Applicant to incorporate the concerns, findings and recommendations

of the NAS expert committee into the Fermi 2 SAMA analysis. In *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719, 729 (3d Cir. 1989), the court affirmed the NRC's obligation as follows:

[C]ontrary to the NRC's contention, simply meeting the requirements of the AEA does not exempt the Commission from complying with NEPA's procedural requirements. NEPA requires that the environmental impacts of agency action be given careful consideration and that the public be informed of them. Here, the NRC excluded consideration of design alternatives through a generic policy statement rather than through careful consideration. Because the action not to consider SAMDAs was promulgated as a policy statement, rather than a rule, and because it applies to an issue that we find is unlikely to be treated as generic, it does not meet the *Baltimore Gas* criteria for a generic rulemaking and therefore SAMDAs must be given careful consideration. Moreover, we are unwilling to conclude on the basis of the record before us, that, if the Commission had not excluded consideration of severe accident mitigation design alternatives on the basis of the Final Policy Statement, it would nevertheless have precluded their consideration on the ground that the underlying risks were remote and speculative. We therefore will grant the petition for review and remand for consideration of SAMDAs in light of this opinion.

Failing to complete a meaningful economic analysis of installation of filters as a mitigation measure renders DTE's ER SAMA effort insufficient and inadequate because it fails to meaningfully examine alternatives to mitigate the adverse environmental consequences arising out of a potential and to-be anticipated severe accident fulfilling the worst fears from the long-recognized and still unaddressed design vulnerability of the GE Mark I Boiling Water Reactor pressure suppression containment system. The omission of SAMA candidates which thoroughly explicate the comparative economic viability of mitigation of the Mark I reactor vulnerabilities will fail NEPA's "hard look" obligation.

***REPLY AS TO CONTENTION 2: INADEQUATE CONSIDERATION  
UNDER NEPA OF DENSELY-PACKED SPENT FUEL STORAGE POOLS***

The NRC Staff claims (Staff Answer at 23) that Contention 2 raises a Category 1 environmental issue that is not subject to challenge absent a waiver. DTE also argues that Petitioners have raised a Category 1 issue and that "No discussion of mitigation alternatives for

Category 1 issues is necessary because the Commission has already generically concluded ‘that additional site-specific mitigation alternatives are unlikely to be beneficial.’” DTE Answer at 14.

In *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 6 (2001), the Commission concluded that:

Adverse aging effects can result from metal fatigue, erosion, corrosion, thermal and radiation embrittlement, microbiologically induced effects, creep, and shrinkage. Such age-related degradation can affect a number of reactor and auxiliary systems, including the reactor vessel, the reactor coolant system pressure boundary, steam generators, electrical cables, the pressurizer, heat exchangers, **and the spent fuel pool**. Indeed, a host of individual components and structures are at issue.

The Commission added, “Left unmitigated, the effects of aging can overstress equipment, unacceptably reduce safety margins, and lead to the loss of required plant functions, including the capability to shut down the reactor and maintain it in a shutdown condition, and to otherwise prevent or mitigate the consequences of accidents with a potential for offsite exposures.” *Id.*

So while the risk of a spent fuel pool (SFP) accident cannot be subjected, in and of itself, to SAMA analysis, as a cumulative effect of a failure which also affects the reactor at Fermi 2, a spent fuel fire or other accident may be considered as a factor within the SAMA. “Cumulative impacts” is defined as

. . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7. The NRC is bound by Council on Environmental Quality regulations such as §1508.7. *See Brodsky v. United States Nuclear Regulatory Commission*, 704 F.3d 113, 120 fn. 3 (2nd Cir. 2013) (“The weight of authority, however, holds CEQ regulations binding on federal agencies. *See, e.g., Piedmont Env'tl. Council v. FERC*, 558 F.3d 304, 318 (4th Cir.2009); *City of*

*Dallas v. Hall*, 562 F.3d 712, 722 (5th Cir.2009); *Colorado Wild v. U.S. Forest Serv.*, 435 F.3d 1204, 1209 (10th Cir.2006); *Defenders of Wildlife v. Hogarth*, 330 F.3d 1358, 1369 (Fed. Cir.2003); *Heartwood, Inc. v. U.S. Forest Serv.*, 230 F.3d 947, 949 (7th Cir.2000)”).

Recognition must be made of the potential effects of spent fuel fires as a cumulative impact, despite their classification as a Category 1 consideration in the GEIS.

The regulatory requirement that nuclear plants perform a SAMA analysis states: “The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives.” (Appendix B to Subpart A of 10 CFR §51.53).

Petitioners contend, contrary to the NRC Staff, that the “societal and economic impacts from severe accidents” are unlikely to be small for all plants and simply appear so by the use of methods that minimized consequences as set forth in this Motion. In other words, even though the probability of a severe accident is so low that the impacts can be considered small, all plants must still consider alternatives to mitigate the consequences of those accidents.

In the Turkey Point license renewal case, the ASLB interpreted agency regulations as requiring dismissal of the Petitioners’ concerns about particular severe accidents, stating:

. . . [T]he commission’s environmental regulations in 10 C.F.R. Part 51 do not require probabilistic risk assessments. Section 51.53(c) lists the information the Applicant must include in its environmental report, and a probabilistic risk analysis of multiple failures is not specified. Likewise sections 51.71(d) and 51.95(c) set forth the requirements the agency must follow in preparing the draft and final SEIS for the Turkey Point license renewal, and nowhere do those provisions require the preparation of a probabilistic risk analysis of multiple failures.

*Florida Power & Light Company* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-

01-6, 53 NRC 138, 159 (2001). The ASLB said further, “. . . section 51.53(c) does not require the Applicant broadly to consider severe accident risks. Rather, it only requires the Applicant to consider ‘severe accident mitigation alternatives’ (SAMAs). 10 C.F.R. § 51.53(c)(3)(ii)(L).” *Id.* at 160. While in that case, the ASLB rejected the petitioners’ contention related to emergency preparedness, the board’s reading of the regulatory requirement remains instructive. It would make no sense for the NRC to require severe accident mitigation analysis if an applicant could simply multiply all consequences of an accident by extremely low probability and thus reject all possible mitigation as too costly.

The risks of SFP accidents may in and of themselves be “acceptably small,” but as one of a number of hazards postulated as a given within a SAMA which focuses on other causes of reactor failure, they comprise a prospective worsening factor in event of a reactor accident. If SFPs are arbitrarily excluded from any consideration within SAMAs as a cumulative impact, there is a very troublesome void in nuclear regulation. The loss of offsite power and resulting failures at Fukushima-Daiichi have left a spent fuel pool poised precariously off the ground for years, with water constantly being pumped into it via an *ad hoc* rig of pipes. The consequences of this lack of foresight are a matter of historical fact.<sup>3</sup>

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<sup>3</sup>See, for example: “The accident,” beginning at Page 12, in National Diet [Parliament] of Japan, *Official Report of the Fukushima Nuclear Accident Independent Investigation Commission*, Executive Summary, posted online at <http://warp.da.ndl.go.jp/info:ndljp/pid/3856371/naic.go.jp/en/report/>; Chapter 1, “A Fukushima Diary, March 11-16, 2011,” beginning at Page 1, in *The Fukushima Daiichi Nuclear Power Station Disaster: Investigating the Myth and Reality*, by the Independent Investigation Commission on the Fukushima Nuclear Accident, Mindy Kay Bricker, Editor, published in association with the Bulletin of the Atomic Scientists and the Rebuild Japan Initiative Foundation, Rutledge, London and New York, 2014; Chapter 1, “March 11, 2011: ‘A Situation That We Had Never Imagined,’” beginning on Page 1, in *Fukushima: The Story of a Nuclear Disaster*, by David Lochbaum, Edwin Lyman, Susan Q. Stranahan, and the Union of Concerned Scientists, The New Press, New York and London, 2014.

Inadequate consideration of cumulative impacts can doom an environmental impact statement. *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800 (9<sup>th</sup> Cir. 1999) (cumulative impacts analysis was inadequate due to lack of adequate data and rationale). An EIS must include a “useful analysis of the cumulative impacts of past, present and future projects” in sufficient detail to be “useful to the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts.” *Id.* at 810 (quoting *City of Carmel-by-the-Sea v. United States Dep’t of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997)). The lead agency must at a minimum provide a “catalog of past projects” and a “discussion of how those projects and differences between the projects have harmed the environment.” *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir. 2005).

The site-specific facts of the spent fuel storage methodology at Fermi 2, together with its existence as a causative, cumulative impact, require SAMA consideration of this facility.

***REPLY AS TO CONTENTION 3: LACK OF SITE-SPECIFIC  
SAFETY AND ENVIRONMENTAL FINDINGS REGARDING  
STORAGE AND DISPOSAL OF SPENT FUEL***

On September 19, 2014, the date of filing of this Reply memorandum, the NRC published its final rule, “Continued Storage of Spent Nuclear Fuel,” 79 Fed. Reg. 56238 (Sept. 19, 2014) and contemporaneously announced the public availability of its “Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel,” 79 Fed. Reg. 56263 (Sept. 19, 2014). Because Petitioners’ Contention 3 filing was predicated on the lack of a final rule and GEIS which addressed the storage of spent fuel, the contention was premature but certainly not irrelevant. Petitioners continue to believe in good faith that generic treatment of this issue is not legally permissible in light of the legal posture of the spent fuel storage litigation, and are

examining the final rule and GEIS. Petitioners are committed to supplementation of Contention 3 in the near future, well within the time allowed for such action by NRC rules following Federal Register publication.

***REPLY AS TO CONTENTION 4: INSUFFICIENT SEVERE ACCIDENT MITIGATION ANALYSIS (SAMA) OF POTENTIAL FERMI 2 AND 3 COMMON-MODE FAILURES AND MUTUALLY EXACERBATING CATASTROPHES***

Petitioners apologize for causing misunderstanding of the extent that they have incorporated information from the Fermi 3 COL proceeding into this one. What was incorporated by reference within this putative Contention 4 was the license application information and NEPA documents from Fermi 3's COLA, including the Fermi 3 Environmental Report, the Draft Environmental Impact Statement (DEIS), and the Final Environmental Impact Statement (FEIS). The purpose of that information is generally to show physical proximity of the proposed Fermi 3 site to Fermi 2, namely, that it is adjacent, shares a common Transmission Corridor ("TC") through which both nuclear reactors will interconnect with the regional and national electric grid once Fermi 3 is constructed. At no time did Petitioners intend to reallege as contentions in this proceeding all of the contentions which they have pursued within the Fermi 3 COL proceeding. Petitioners have cited the Fermi 3 record to preserve the ability to have recourse to it to substantiate the interrelatedness, physical proximity and interconnected or shared facilities between Fermi Units 2 and 3.

Petitioners' observation that Fermi 3 will be a Hitachi-General Electric so-called Economic Simplified Boiling Water Reactor, with presumable initial "shakedown period" learning curve requirements, unexpected miscues and human errors in its operation has been exaggerated by the Staff and DTE into the assertion that Petitioners are challenging the design

itself. The NRC approved a rule on September 16, 2014, which certifies the ESBWR reactor design. <http://www.nrc.gov/reading-rm/doc-collections/news/2014/14-060.pdf>. Petitioners are absolutely *not* challenging that rule.

Petitioners' essential point - that besides the significantly increased risks represented by a breakdown phase, age-degraded Fermi 2 General Electric Mark I BWR hard by a break-in phase, untested flagship Fermi 3 ESBWR, both reactors will be vulnerable to disruptions in the shared Transmission Corridor for 18.6 miles. DTE says that the proposed new transmission lines for Fermi 3 would be built within the existing Fermi 2 transmission corridor for approximately 18.6 mi extending outward from the Fermi site boundary.<sup>4</sup> Consequently, from 2025 to 2045, both Fermi 2 and Fermi 3 would be dependent on offsite electricity flowing through lines within a shared TC, for both the primary Alternating Current (AC) electricity supply needed to run safety and cooling systems on both reactors, as well as both safety-significant high-level radioactive waste (HLRW) storage pools.

The NRC Staff claims (Staff Answer at 40) that “[t]o the extent this argument asserts that a SAMA analysis should include SFPs, it is outside the scope of this proceeding,” citing *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 6 (2001). Notably, however, the Commission in *Turkey Point* concluded that:

Adverse aging effects can result from metal fatigue, erosion, corrosion, thermal and radiation embrittlement, microbiologically induced effects, creep, and shrinkage.

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<sup>4</sup>LBP-14-09, Memorandum (Determining Issues Related to Intervenors' Proposed Contention 23 Merit *Sua Sponte* Review Pursuant to 10 C.F.R. § 2.340(b) and Requesting Commission Approval), ASLBP No. 09-880-05-COL-BD01, DTE Electric Company (Fermi Nuclear Power Plant, Unit 3), Docket No. 52-033-COL, July 7, 2014, ADAMS Accession No. ML14188C420, p. 5 fn. 5, citing Final Environmental Impact Statement (FEIS) for the Combined Licensed (COL) for Enrico Fermi Unit 3, NUREG-2015, at 2-10.

Such age-related degradation can affect a number of reactor and auxiliary systems, including the reactor vessel, the reactor coolant system pressure boundary, steam generators, electrical cables, the pressurizer, heat exchangers, *and the spent fuel pool*. Indeed, a host of individual components and structures are at issue.

The Commission added, “Left unmitigated, the effects of aging can overstress equipment, unacceptably reduce safety margins, and lead to the loss of required plant functions, including the capability to shut down the reactor and maintain it in a shutdown condition, and to otherwise prevent or mitigate the consequences of accidents with a potential for offsite exposures.” *Id.*

So while the risk of a spent fuel pool (SFP) accident cannot be subjected, in and of itself, to SAMA analysis, as a *cumulative effect of a common-mode failure that affects the TC*, Petitioners believe it can be considered as a given within the analysis itself. “Cumulative impacts” is defined as

. . . the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7. Despite the NRC’s historical position that it is not governed by Council on Environmental Quality regulations such as §1508.7, because the authority for the CEQ is derived from executive order rather than legislation, the NRC is, indeed, so bound. *See Brodsky v. United States Nuclear Regulatory Commission*, 704 F.3d 113, 120 fn. 3 (2nd Cir. 2013) (“The weight of authority, however, holds CEQ regulations binding on federal agencies. *See, e.g., Piedmont Env’tl. Council v. FERC*, 558 F.3d 304, 318 (4th Cir.2009); *City of Dallas v. Hall*, 562 F.3d 712, 722 (5th Cir.2009); *Colorado Wild v. U.S. Forest Serv.*, 435 F.3d 1204, 1209 (10th Cir.2006); *Defenders of Wildlife v. Hogarth*, 330 F.3d 1358, 1369 (Fed.Cir.2003); *Heartwood, Inc. v. U.S. Forest Serv.*, 230 F.3d 947, 949 (7th Cir.2000)”). Recognition must be made of the

potential effects of spent fuel fires as a cumulative impact, despite their classification as a Category 1 consideration in the GEIS.

The regulatory requirement that nuclear plants perform a SAMA analysis states: “The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives.” (Appendix B to Subpart A of 10 CFR §51.53). Petitioners contend, contrary to the NRC Staff, that the “societal and economic impacts from severe accidents” are unlikely to be small for all plants and simply appear so by the use of methods that minimized consequences as set forth in this Motion. In other words, even though the probability of a severe accident is so low that the impacts can be considered small, all plants must still consider alternatives to mitigate the consequences of those accidents.

In the Turkey Point license renewal case, the ASLB interpreted the regulations to dismiss the Petitioners’ concerns about particular severe accidents, stating:

. . . [T]he commission’s environmental regulations in 10 C.F.R. Part 51 do not require probabilistic risk assessments. Section 51.53(c) lists the information the Applicant must include in its environmental report, and a probabilistic risk analysis of multiple failures is not specified. Likewise sections 51.71(d) and 51.95(c) set forth the requirements the agency must follow in preparing the draft and final SEIS for the Turkey Point license renewal, and nowhere do those provisions require the preparation of a probabilistic risk analysis of multiple failures.

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at 160. While in that case, the ASLB rejected the petitioners' contention related to emergency preparedness, the board's reading of the regulatory requirement remains instructive. It would make no sense for the NRC to require severe accident mitigation analysis if an applicant could simply multiply all consequences of an accident by extremely low probability and thus reject all possible mitigation as too costly.

The risks of SFP accidents may in and of themselves be "acceptably small," but as one of a number of hazards postulated as a given within a SAMA which focuses on common-mode TC failure, they should be considered as a prospect which could worsen a reactor accident. If SFPs are instead arbitrarily excluded from any consideration within SAMAs as a cumulative impact, there is a very troublesome void in nuclear regulation. For Fermi 2 and 3 - an aging Mark I reactor and a new, untested ESBWR reactor - the lack of imagination about possibilities of common mode problems affecting both reactors could be disastrous. There are many multiple-reactor sites in the United States; doubtless many if not all of them share transmission corridors interconnecting to the regional grid, similarly to Fermi Units 2 and 3. The loss of offsite power and resulting common-mode failure isolated a spent fuel pool at Fukushima-Daiichi which for more than three years has remained poised precariously above the ground, with water constantly being pumped into it via an *ad hoc* rig of pipes. The consequences of this lack of foresight are a matter of historical fact.<sup>5</sup>

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<sup>5</sup>See, for example: "The accident," beginning at Page 12, in National Diet [Parliament] of Japan, *Official Report of the Fukushima Nuclear Accident Independent Investigation Commission*, Executive Summary, posted online at <http://warp.da.ndl.go.jp/info:ndljp/pid/3856371/naic.go.jp/en/report/>; Chapter 1, "A Fukushima Diary, March 11-16, 2011," beginning at Page 1, in *The Fukushima Daiichi Nuclear Power Station Disaster: Investigating the Myth and Reality*, by the Independent Investigation Commission on the Fukushima Nuclear Accident, Mindy Kay Bricker, Editor, published in association with the Bulletin of the Atomic Scientists and the Rebuild Japan Initiative Foundation, Rutledge, London and New York, 2014; Chapter 1, "March 11, 2011: 'A Situation That We Had Never Imagined,'"

Inadequate consideration of cumulative impacts can doom an environmental impact statement. *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800 (9<sup>th</sup> Cir. 1999) (cumulative impacts analysis was inadequate due to lack of adequate data and rationale). An EIS must include a “useful analysis of the cumulative impacts of past, present and future projects” in sufficient detail to be “useful to the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts.” *Id.* at 810 (quoting *City of Carmel-by-the-Sea v. United States Dep’t of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997)). The lead agency must at a minimum provide a “catalog of past projects” and a “discussion of how those projects and differences between the projects have harmed the environment.” *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir. 2005).

The NRC Staff argues (Staff Answer at 46) that “[t]he Commission’s rules regarding SAMA analysis are not so prescriptive as to require any particular method or set of events to be considered,” and that “[t]he rule does not provide particular requirements for a SAMA analysis, just that a consideration of SAMAs be included in the license renewal ER if such consideration has not previously been included in a NEPA document.” The Staff evidently wishes to ignore the prospect of “domino effect” disasters at multi-unit sites, and the potential that multi-unit sites with both degraded old and brand-new reactors may spawn increased breakdown phase and break-in phase risks which exacerbate each other, raising the potential for high-consequence effects not only on the multiple reactors, but also on the multiple pools. So much risk in one location also increases probability - if a reactor melts down at the Fermi site, then the probability

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beginning on Page 1, in *Fukushima: The Story of a Nuclear Disaster*, by David Lochbaum, Edwin Lyman, Susan Q. Stranahan, and the Union of Concerned Scientists, The New Press, New York and London, 2014.

that the other reactor will also melt down, and that both pools will catch on fire, goes up significantly.

Petitioners do not believe this is a regulatory void, but that, instead, it can be amply covered by construing the “scope of the project” far more generously and realistically than DTE proposes to do. DTE has adopted an impermissibly narrow scope to avoid dealing with these significant matters. But the conditions driving such analysis are uniquely local characteristics of Fermi 2 and 3 which must be identified and treated within Severe Accident Mitigation Alternatives (SAMA) analyses, and approached as Category 2 Issues in the NRC’s forthcoming Draft Supplemental Environmental Impact Statement (DSEIS).

**WHEREFORE**, for all the above reasons, Petitioners assert that the Atomic Safety and Licensing Board should admit their four proffered contentions for adjudication.

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**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
Before the Atomic Safety and Licensing Board**

In the Matter of	)	Docket No. 50-341
DTE Electric Company	)	September 19, 2014
(Fermi Nuclear Power Plant, Unit 2)	)	
	)	

\* \* \* \* \*

**CERTIFICATE OF SERVICE**

I hereby certify that copies of the foregoing “INTERVENORS’ COMBINED REPLY IN SUPPORT OF PETITION FOR LEAVE TO INTERVENE AND REQUEST FOR HEARING OF DON’T WASTE MICHIGAN, CITIZENS ENVIRONMENT ALLIANCE OF SOUTHWESTERN ONTARIO AND BEYOND NUCLEAR” were served by me upon the parties to this proceeding via the NRC’s Electronic Information Exchange system this 19th day of September, 2014.

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