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May 7, 1993

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
NORTHEAST NUCLEAR ENERGY CO.	)	Docket No. 50-336-OLA
	)	(Spent Fuel Pool Design)
(Millstone Nuclear Power Station,	)	
Unit No. 2)	)	

NORTHEAST NUCLEAR ENERGY COMPANY'S  
MOTION FOR SUMMARY DISPOSITION OF CONTENTION 1

I. INTRODUCTION

Northeast Nuclear Energy Company ("NNECO") herein moves, pursuant to 10 C.F.R. § 2.749, for summary disposition of Concerned Citizens Monitoring Network ("CCMN") Contention 1. In Contention 1, CCMN has not raised a genuine issue of material fact. Accordingly, NNECO is entitled to summary disposition in its favor as a matter of law; the contention should be dismissed.

Contention 1 as initially drafted relates to the criticality analysis performed by NNECO to support the license amendment ("Amendment 158") at issue in this proceeding. Contention 1 states that:

[T]here is no basis for the NRC to contend that no significant risk is involved in the issuance of the design change that was issued to address the criticality errors found at Millstone 2.

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This general contention was recast and clarified by the Atomic Safety and Licensing Board ("Licensing Board") in its November 24, 1992, Memorandum and Order (Following Prehearing Conference). The Licensing Board summarized the specific issues raised by Dr. Michio Kaku in his August 23, 1992, affidavit (called a declaration) on behalf of CCMN. For the purpose of discovery and litigation in this proceeding, the Licensing Board focused the general assertions related to "significant risk" onto four specific issues regarding Boraflex panels and the Amendment 158 criticality analysis, as follows:

Licensee's belief that the rearrangement can only reduce the pool's storage capacity and hence make the pool less dangerous, represents premature optimism. Affidavit, ¶ 4. More information is required. Id., passim. A reanalysis of the criticality study is needed and should address the following issues:

1. What is the actual state of the Boroflex [sic] box degradation, and what is the corresponding disposition of the water gaps? Id., ¶ 8. The Licensee examined approximately half of the poisoned rack cells with a defect rate of 16%.<sup>2</sup> If the sample is not representative, the gaps may be larger than expected, or locally concentrated. A concentration of gaps would cause local enhancement of the neutron distribution with an effect of increasing  $k_{eff}$ .

2. To what extent are the benchmark data used by the Licensee representative of the arrangement of Boroflex boxes, fuel boxes, and water in the storage pool? Id., ¶ 9.

3. Have the Monte Carlo calculations incorporated enough iterations to provide a good estimate of the pool's reactivity? Id., ¶ 10(d).

4. If a vertical buckling term has been used, has it been used correctly? Id., ¶ 10(c).

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<sup>2</sup>Dr. Kaku incorrectly stated that only 16% of the Boroflex boxes were examined. Affidavit, ¶ 7. The NRC

Staff caught this error and noted that the defect rate is 16%. The sampling consisted of approximately half of the poisoned rack cells. . . .

As grounds for this motion, NNECO asserts that the attached affidavits of John R. Guerci, George N. Betancourt, and Dr. Stanley E. Turner demonstrate that there is no genuine issue of material fact to be heard with respect to CCMN's Contention 1 (as characterized by the Licensing Board). Messrs. Guerci and Betancourt, and Dr. Turner, present undisputed facts regarding the matters addressed in Contention 1. Dr. Kaku, in his papers filed on behalf of CCMN in this proceeding to date, provides no facts on these issues. His positions are based on mere conjecture and hypothetical concerns, and demonstrate no knowledge of Amendment 158, the underlying criticality analysis, or the state of Boraflex in the Millstone Unit No. 2 spent fuel pool. Accordingly, NNECO is entitled to a decision in its favor as a matter of law.

## II. ARGUMENT

### A. CCMN And Dr. Kaku Have Not Raised Genuine, Material Factual Issues

The overall concern supporting CCMN's Contention 1, as stated by the Licensing Board, regards the Amendment 158 criticality study. The Licensing Board raised four specific issues. These four issues, stated above, are a distillation of Dr. Kaku's concerns as set forth in his August 1992 affidavit supporting CCMN's Contention 1. The Licensing Board cited, as sufficient to provide a basis for an admissible contention, a number of

paragraphs in Dr. Kaku's August 1992 affidavit as bases for these four issues. However, as discussed below and in the attached affidavits, on the merits, Dr. Kaku's bases for the four issues supporting Contention 1 comprise no facts specific to Millstone Unit No. 2. Further, Dr. Kaku provided no basis to relate his generalized concerns to NNECO's specific methods and calculations in support of Amendment 158. This failure to raise specific factual issues is not remedied by Dr. Kaku's second affidavit (again, a "declaration") filed by CCMN, in March 1993, in response to NNECO's discovery requests.

On January 15, 1993, NNECO provided CCMN (and, a few days later, personal copies directly to Dr. Kaku) information and documents in response to CCMN's discovery requests in this proceeding.<sup>1/</sup> These materials contained sufficient information to resolve Dr. Kaku's concerns as stated in his August 1992 affidavit, or at a minimum to focus his concerns on the actual analysis performed by NNECO in support of Amendment 158 rather than on hypothetical matters. However, Dr. Kaku nonetheless in his March 1993 affidavit merely reiterated earlier concerns with a similar lack of focus on actual, documented information. The March 1993 affidavit gives the impression that Dr. Kaku has not reviewed relevant information available in public documents and the discovery responses. In the August 1992 and March 1993

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<sup>1/</sup> "Northeast Nuclear Energy Company's Response to CCMN Discovery Requests of December 5, 1992, and December 16, 1992," January 15, 1993.

affidavits, Dr. Kaku has provided no facts, germane to the four admitted questions, that would raise a genuine issue.

NNECO's position on the four admitted issues is summarized here, and is presented in more detail in the accompanying affidavits of John R. Guerci ("JRG Affidavit"), George N. Betancourt ("GNB Affidavit"), and Dr. Stanley E. Turner ("SET Affidavit").

#### Issue 1: Boraflex Degradation

Boraflex is a neutron absorber ("poison") material incorporated in the Millstone Unit No. 2 spent fuel pool Region A and B fuel storage racks. By absorbing neutrons, Boraflex reduces the effective neutron multiplication factor,  $K_{eff}$ , and increases the margin from criticality. Each side of a fuel storage cell has a Boraflex panel. Thus, each cell has four panels. When subjected to radiation, Boraflex panels tend to shrink. This shrinkage makes the panels susceptible to degradation characterized by formation of gaps in the material. GNB Affidavit ¶ 6. Gaps are regions free of Boraflex; therefore, these gaps must be considered in criticality calculations.

In addition to Boraflex panels, neutron-absorbing boron is dissolved in the spent fuel pool water. Sufficient soluble boron poison is provided to maintain  $K_{eff}$  less than 0.75 under normal conditions. JRG Affidavit ¶ 8. Further, the spent fuel rack design, including the Boraflex panels in Regions A and B, and the fuel burnup, enrichment and loading pattern limitations ensure

that  $K_{eff}$  will remain less than 0.95 given either a loss of all Boraflex or a loss of all soluble boron. JRG Affidavit ¶ 9.

Contention 1, issue 1, questions whether NNECO has determined the state of degradation of the Boraflex panels in the Millstone Unit No. 2 spent fuel pool, and whether the observed degradation has been properly "dispositioned" in the Amendment 158 criticality analysis. In his August 1992 affidavit, ¶ 8, Dr. Kaku alleged that the amount of Boraflex degradation is unknown and, as a result, the criticality calculations may be "obsolete." This concern is repeated in his March 1993 affidavit: "[N]o one has taken the time or effort to perform a detailed examination of the Boraflex boxes . . . . [N]either I nor the utility knows the state of Boraflex degradation, so calculations of  $K_{eff}$  performed by the utility are pure fiction." March 1993 affidavit at 2.

Contrary to Dr. Kaku's repeated claim (made in the face of contrary information provided during discovery), the actual state of Boraflex box degradation at Millstone Unit No. 2 is known and is modeled conservatively in the Amendment 158 criticality analysis. GNB Affidavit ¶¶ 18, 20. The Boraflex boxes at Millstone Unit No. 2 were subjected to two extensive Blackness testing campaigns which characterized the present condition of the Boraflex panels. (The Blackness testing technique is described by Dr. Turner in his Affidavit.) Almost seventy percent of the cells subject to significant radiation, and thus potentially subject to Boraflex shrinkage and gaps, were tested during these two Blackness testing campaigns. This amounts to approximately 46% of

the Boraflex cells overall. GNB Affidavit ¶¶ 9, 10; SET Affidavit ¶ 17. This testing, coupled with other industry data on Boraflex degradation, provides reasonable assurance that the state of the Boraflex panels at Millstone Unit No. 2 is known.

In NNECO's testing, the maximum gap size was determined to be less than three inches (two percent of a panel's axial span), with a 13% average panel defect rate for all cells tested.<sup>2/</sup> GNB Affidavit ¶ 12. The maximum gap size was determined to be in cell J9 which was then replaced. The average gap size, based on testing, was 0.8 inches. Gap distribution was essentially random throughout the length of the panels. SET Affidavit ¶ 21; GNB Affidavit ¶¶ 14, 15. Shrinkage is a function of radiation exposure and tends to saturate at 3 - 4%, at an accumulated gamma fluence of about  $5 \times 10^{10}$  rads. GNB Affidavit ¶ 7. NNECO specifically confirmed the accuracy, calibration and resolution of the equipment used to perform the Blackness testing by comparison of testing results to actual measurements of a disassembled cell. GNB Affidavit ¶ 19. Actual measurements confirmed that Blackness testing results were accurate within 1 - 2% for gap location and 10% for gap size. GNB Affidavit ¶ 19.

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2/ A defect rate of 16% was observed during the second Blackness testing campaign. See GNB Affidavit, Table 1. This is not representative of the overall defect rate because all known defective boxes from the first campaign were included in the second campaign as well as additional boxes. The 16% is, therefore, skewed and 13% is the accurate measure of the overall defect rate.

Based on information from Blackness testing, the observed and anticipated Boraflex gaps were conservatively bounded in the Amendment 158 criticality analysis. Gaps were assumed in all four panels in each storage cell (i.e., a 100% panel defect rate), even though the actual panel defect rate was measured to be only 13%. SET Affidavit ¶ 23; GNB Affidavit ¶ 20. Gap size was assumed to be 5.65 inches (4% of axial span), even though the average gap size was measured to be only 0.8 inches. GNB Affidavit ¶¶ 15, 20; SET Affidavit ¶ 21. Finally, panels were also assumed to shrink 4% in width. SET Affidavit ¶ 24; GNB Affidavit ¶ 20. Width shrinkage and gaps also were assumed to remove the Boraflex material from the pool. The criticality analysis conservatively ignored the actual increased density of the material elsewhere as a result of shrinkage and gap formation. SET Affidavit ¶ 28.

Thus, contrary to Dr. Kaku's contention, NNECO has put forth considerable effort, and has accurately characterized the extent and effects of Boraflex degradation in the Millstone Unit No. 2 spent fuel pool. NNECO then applied the Boraflex characterization results to conservatively model the spent fuel pool and calculate  $K_{eff}$ . CCMN in its pleadings, including Dr. Kaku's affidavits, bases its case regarding Contention 1, issue 1, on a faulty factual premise (that nobody knows the actual state of the Boraflex panels), unsubstantiated allegations, and hypothetical concerns unsupported by fact. Blackness testing at Millstone Unit No. 2 provides reasonable assurance that the actual state of Boraflex has been conservatively enveloped in the Amendment 158

criticality analysis. SET Affidavit ¶ 20; JRG Affidavit ¶ 16; GNB Affidavit ¶ 20. Thus, no genuine issue exists as to any material fact.

Issue 2: Benchmark Data

Contention 1, issue 2, questions whether benchmark data used for the Amendment 158 criticality analysis adequately represent the arrangement of Boraflex, fuel, and water in the Millstone Unit No. 2 spent fuel pool. In his August 1992 affidavit, ¶ 9 (the first paragraph with this number), Dr. Kaku voiced a concern with use of the diffusion method for criticality calculations and with unrepresentative benchmarking. Dr. Kaku apparently in August 1992 was unaware that the Amendment 158 criticality analysis was not based on diffusion theory. Likewise, he apparently was unaware of the substantial benchmarking performed for the computer model used.

The criticality analysis supporting Amendment 158 is not based on diffusion theory. SET Affidavit ¶ 12. The analysis used a three-dimensional NITAWL-KENO-5a model with the 27-group SCALE neutron cross-section library. JRG Affidavit ¶ 13. It is part of the SCALE (Standardized Computer Analysis for Licensing Evaluation) package developed by Oak Ridge National Laboratory ("ORNL") for the NRC. SET Affidavit ¶ 10. KENO uses a Monte Carlo technique based upon a mathematical model derived from statistical theory. SET Affidavit ¶ 11. Monte Carlo techniques

have long been considered the closest analytical technique to an actual experiment. SET Affidavit ¶ 38.

The KENO model used in the Amendment 158 criticality analysis was, contrary to Dr. Kaku's claim, extensively benchmarked against critical experiments and against an independent means of evaluation. SET Affidavit ¶ 31. As described in a report provided to CCMN in January 1993 as part of the discovery in this proceeding, the critical experiments were selected from a series of Babcock & Wilcox critical experiments consisting of boxes holding fuel assemblies and surrounded by thin sheets of a neutron absorber. These experiments were chosen to be as representative of the Millstone Unit No. 2 spent fuel pool conditions as possible. Other, less representative critical experiments were checked and were found to provide good agreement. Id.

The KENO model also was benchmarked against CASMO-3 as an independent means of verifying the NITAWL-KENO-5a methodology with a 27-group SCALE neutron cross-section library as effective for use in criticality safety calculations of high density spent fuel storage racks with strongly-absorbing panels. SET Affidavit ¶ 32. Such intercomparison calculations are endorsed by NRC Regulatory Guide 5.14. Although both methods are based on transport theory, CASMO-3 solves the neutron transport problem by a methodology entirely different from KENO. The comparison calculations, performed on identical cells, provided results within the normal statistical variation of KENO calculations. Id.

In his March 1993 affidavit, Dr. Kaku states also that he believes the KENO codes used by NNECO to be "riddled with hidden, unwarranted assumptions" which may create biases and errors of a few percent. He alleges (March 1993 affidavit at 3 and 4) that uncertainties in the KENO calculation arise from uncertainties involving Boraflex degradation, inadequate benchmarking, increasing the Region B fission product inventory, and hidden assumptions within Monte Carlo calculations. Dr. Kaku's hypothetical concerns are largely based on irrelevant concerns premised on diffusion theory.

As previously stated, the Amendment 158 KENO analysis is not based on diffusion theory; it is grounded in transport theory. SET Affidavit ¶ 12. The KENO codes and the Monte Carlo method have been recognized for many years as standard techniques for nuclear analysis. SET Affidavit ¶ 38 - 39 (note the references cited in ¶ 38). Also, the extensive benchmarking analyses carried out under conditions conforming closely to the Millstone Unit No. 2 spent fuel pool confirm the adequacy of these techniques. SET Affidavit ¶¶ 31, 32. Dr. Kaku's speculation that "no benchmarking of the spent fuel pond with Boraflex boxes was ever done" (March 1993 affidavit at 12) is simply not correct.

In sum, contrary to Contention 1 and Dr. Kaku's allegations, NNECO conducted extensive benchmarking under conditions representative of the Millstone Unit No. 2 spent fuel pool. As with Contention 1, issue 1, CCMN in its pleadings, including Dr. Kaku's affidavits, bases its case regarding issue 2 on a faulty factual

premise (that no benchmarking was ever done), unsubstantiated allegations, and hypothetical concerns unsupported by relevant fact. Thus, no genuine issue exists as to any material fact.

Issue 3: Sufficiency of "Iterations"

Contention 1, issue 3, questions whether the Monte Carlo calculations incorporated enough iterations to provide a good estimate of the Millstone Unit No. 2 spent fuel pool's reactivity. As the basis for this issue, in his August 1992 affidavit, ¶ 10(d), Dr. Kaku voiced a concern with the number of iterations, noting that if the number is small the calculation will not converge very well. He notes further in his March 1993 affidavit, at 12 - 13, that "it is impossible for me to say how many histories were performed by the utility for the spent fuel pond," and that he needs a complete copy of the KENO code to fully answer this question.

During discovery, NNECO provided to CCMN and Dr. Kaku information on the number of histories used in the KENO calculations supporting Amendment 158. (One does not need the KENO code to know how many histories were run for a specific application.) The minimum number of histories used in these calculations was 500,000. A reference case used 1,250,000. In these analyses, usually 125,000 histories are adequate to reach convergence, but 500,000 histories were used in the Amendment 158 calculations to ensure convergence in the Boraflex gap regions. SET Affidavit ¶ 36; JRG Affidavit ¶ 18. For purposes of addressing issue 3 and further confirming the

conservatism of NNECO's approach, a calculation has also been run with 5,000,000 histories. SET Affidavit ¶ 36.

Contrary to Dr. Kaku's uninformed allegations, therefore, the number of neutron histories utilized in the Amendment 158 criticality calculations was sufficient. CCMN in its pleadings, including Dr. Kaku's affidavits, bases its case regarding issue 3 on unsubstantiated allegations and concerns unsupported by fact. Thus, no genuine issue exists as to any material fact.

#### Issue 4: Vertical Buckling

Contention 1, issue 4, questions whether a vertical buckling term, if used in the Amendment 158 analysis, has been used correctly. As the basis for this issue, in his August 1992 affidavit, ¶ 10(c), Dr. Kaku raised a concern with the relevance of the concept of buckling in the presence of high levels of neutron absorption.

The Amendment 158 criticality analysis does not use a vertical buckling term. JRG Affidavit ¶ 20; SET Affidavit ¶ 48. Vertical buckling is a term associated with diffusion theory. The Amendment 158 analysis is a full three-dimensional representation of the storage racks which includes an explicit calculation of the axial leakage of neutrons. Vertical buckling, therefore, was not necessary and is not an issue in this proceeding. SET Affidavit ¶ 39. In raising this issue, Dr. Kaku again demonstrates a lack of specific knowledge of the Amendment 158 criticality analysis. His argument was pure conjecture.

In its statement of Contention 1, issue 4, the Licensing Board referred to paragraph 10(c) of Dr. Kaku's August 1992 affidavit. This paragraph addressed additional matters not relevant to use of buckling terms. Nonetheless, NNECO has addressed the issues in the attached affidavits to show that again Dr. Kaku has not raised a genuine issue.

Specifically, in paragraph 10(c), Dr. Kaku raised a concern with the number of neutron groups (27) assumed in the criticality analysis. He repeats this concern in his March 1993 affidavit, at 10 - 11. In each affidavit he argues that, because of small spatial edge effects, 27 neutron groups may not be a good assumption. However, he presents no information in either affidavit to support his opinion that 27 groups may not be adequate.

The criticality analysis supporting Amendment 158 uses a 27-group cross-section library. This library has been demonstrated by comparison to 218-group models and by benchmarking comparisons to be more than adequate to represent the Millstone Unit No. 2 spent fuel pool. JRG Affidavit ¶ 19; SET Affidavit ¶ 37. For example,  $K_{eff}$  for the 27-group cross-section library was 0.920 as compared to a  $K_{eff}$  of 0.919 for the 218-group library. SET Affidavit ¶ 37. The slightly lower value for  $K_{eff}$  was within 95% confidence limits. JRG Affidavit ¶ 19.

As with Contention 1, issues 1 - 3, CCMN in its pleadings, including Dr. Kaku's affidavits, bases its case regarding issue 4 on unsubstantiated speculation which reflects a lack of knowledge of the facts. No genuine issue exists as to any material fact.

B. NNECO is Entitled to Summary Disposition

Under 10 C.F.R. § 2.749(d), summary disposition is appropriate if the filings, depositions, answers to interrogatories, and admissions in a proceeding, together with the statements of the parties and affidavits, show that no genuine issue exists as to any material fact and that the moving party is entitled to a decision as a matter of law. This standard is met in the present case. The affidavits attached hereto provide the relevant facts known to NNECO with respect to Contention 1. The record contains no contrary facts.

The Commission encourages licensing boards to invoke the summary disposition procedure "on issues where there is no genuine issue of material fact so that evidentiary hearing time is not unnecessarily devoted to such issues." Statement of Policy on Conduct of Licensing Proceedings, CLI-81-8, 13 NRC 452, 457 (1981); see also Houston Lighting and Power Company (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550-1 (1980); Northern States Power Company (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 194 (1973), aff'd, CLI-73-12, 6 AEC 241, 242 (1973), aff'd sub nom, BPI v. AEC, 502 F.2d 424 (D.C. Cir. 1974). Given the information in the attached affidavits, it is clear that an evidentiary hearing in the present matter will serve no purpose. The Commission's policy favoring summary disposition should be applied.

For a contention to survive summary disposition, § 2.749 requires a genuine issue of material fact, i.e., a fact that may

affect the outcome of a litigation. Mutual Fund Investors, Inc. v. Putnam Management Co., 553 F.2d 620, 624 (9th Cir. 1977).<sup>3/</sup> "To be genuine . . . the factual record, considered in its entirety, must be enough in doubt so that there is a reason to hold a hearing to resolve the issue." Cleveland Electric Illuminating Company (Perry Nuclear Power Plant, Units 1 & 2), LBP-83-46, 18 NRC 218, 223 (1983). Further, to be a genuine issue, evidence must be presented. See Southern Distributing Company, Inc. v. Southdown, Inc., 574 F.2d 824, 826 (5th Cir. 1978) (in affirming a summary judgment against the defendant, the court noted that "[a] pretended issue, one that no substantial evidence can be offered to maintain, is not genuine" (quoting Fireman's Mutual Ins. Co. v. Aponaug Mfg. Co., 149 F.2d 359, 362 (5th Cir. 1945)).) Thus, to overcome a motion for summary disposition, "an adverse party may not rest upon the mere allegations or denials of the adverse party's pleading, but the adverse party's response . . . must set forth specific facts showing that there is a genuine issue for trial." FRCP Rule 56(e) (emphasis added).<sup>4/</sup> The record in the present proceeding contains no facts presented by CCMN to support a proposition that any of the four specific issues identified by the Licensing Board gives rise to a

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3/ The Commission's summary disposition rule is a judicial counterpart of Rule 56 of the Federal Rules of Civil Procedure (FRCP). Alabama Power Co. (Joseph M. Farley Nuclear Plant, Units 1 and 2), ALAB-182, 7 AEC 210, 217 (1974). Thus, Section 2.749 can be construed in light of case law pertinent to FRCP Rule 56.

4/ Similarly, the adverse party may not rest "on averments of his pleadings which on their face present an issue," but do not produce any evidentiary matter. Commentary on the 1963 Amendment to FRCP Rule 63, Subdivision (e).

"significant risk" as stated by CCMN in Contention 1. Likewise, the affidavits of Dr. Kaku present only unfounded assertions and charges made without knowledge of the specific Amendment 158 analyses at issue. Summary disposition of these four questions is appropriate.

Even if there is a formally-stated issue which is admitted at the pleading stage, such as Contention 1 in this proceeding, "[t]here may be no genuine issue . . . . Neither a purely formal denial nor, in every case, general allegations, defeat summary judgment." Dewey v. Clark, 180 F.2d 766, 772 (D.C. Cir. 1950) (discussing a rigid rule where an assertion and a denial always preclude the granting of summary judgment). "[A] party cannot rest on the allegations contained in his complaint in opposition to a properly supported summary judgment motion made against him." First National Bank of Arizona v. Cities Service Co., 391 U.S. 253, 289 (1968).<sup>5/</sup> The moving party need only demonstrate the absence of a genuine issue of material fact. Adickes v. Kress & Co., 398 U.S. 144, 157 (1970). This may be done by pointing out an absence of evidence in the opposing party's case. Celotex Corp. v. Catrett, 477 U.S. 317, 325 (1986). The moving party need not prove the opposing party's allegations false. "There is no sound reason why conclusory allegations should suffice to require a trial when there is no evidence to support them even if the movant lacks contrary

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<sup>5/</sup> A party cannot overcome a summary disposition motion "on the basis of allegations in their complaints, coupled with the hope that something can be developed at trial in the way of evidence to support those allegations . . . ." Cities Service, 391 U.S. at 290-9.

evidence." Fotenot v. Upjohn Co., 780 F.2d 1190, 1195 (5th Cir. 1986).

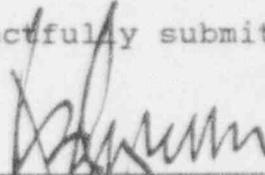
CCMN has had access to information on Amendment 158 and the supporting analysis since the license amendment application was filed. Moreover, it has had access to a significant number of documents since NNECO's discovery responses of January 15, 1993. To justify a hearing, it is incumbent upon CCMN to review this material and raise specific factual issues. To date, CCMN has failed in this task. The four issues admitted in this proceeding are not, given the facts presented here, susceptible to dispute. "The purpose of summary judgment would be defeated if a party who has obtained by discovery and from affidavits information which he should seek to amplify or test by further discovery merely rests on a statement of ignorance of the facts." Robin Construction Company v. United States, 345 F.2d 610, 613 (3rd Cir. 1965). To justify a hearing on the merits, "[i]t is not enough to rest upon the uncertainty which broods over all human affairs or to pose philosophic doubts regarding the conclusiveness of evidentiary facts." Id. at 614. Yet, this sort of academic, uninformed speculation is precisely what CCMN and Dr. Kaku have relied upon. It is not enough.

In sum, under NRC regulations, to justify a hearing in this matter CCMN must present material facts sufficient to indicate the existence of a genuine issue. Conjecture, allegations, statements of doubt and concern, and academic theories, such as those offered to date by CCMN are not substitutes for material facts. Summary disposition is appropriate.

### III. CONCLUSION

The attached affidavits address each of the four issues identified by the Licensing Board as the bases for admitting Contention 1. These affidavits demonstrate that CCMN has not raised a genuine issue as to any material fact. The information presented herein was available to CCMN in public documents and documents provided to CCMN and Dr. Kaku during discovery in this proceeding. However, in the face of this information, CCMN and Dr. Kaku have not provided any material facts, i.e., facts that may affect the outcome of this litigation. Thus, NNECO is entitled to a decision as a matter of law.

Respectfully submitted,



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Dated at Washington, D.C.,  
this 7th day of May, 1993

STATEMENT OF MATERIAL FACTS AS TO WHICH  
THERE IS NO GENUINE ISSUE TO BE HEARD

1. The actual state of Boraflex box degradation and water gaps is known and very conservatively modeled in the Amendment 158 criticality analysis.
  - a. Boraflex boxes at Millstone Unit 2 have been subject to two extensive Blackness testing campaigns.
  - b. This Blackness testing accurately characterized the condition of the Boraflex panels.
  - c. The Blackness testing campaigns encompassed almost 70% of the Boraflex boxes subject to significant radiation and therefore most susceptible to gap formation (i.e., about 46% of the total Boraflex boxes).
  - d. The Blackness testing conducted provides assurance that the actual state of Boraflex has been conservatively enveloped in the Amendment 158 criticality analysis. The conservative assumptions made in that analysis bound the observed degradation with respect to the number of gaps (100% panel defect rate assumed vs. 13% defect rate observed), size of gaps (5.65 inch gaps assumed vs. average observed gap of 0.8 inches), and distribution of gaps (observed as essentially random).
  
2. The model used in the Amendment 158 criticality analysis was extensively benchmarked.
  - a. The KENO model used for the criticality analysis was benchmarked against critical experiments chosen from the B&W critical experiments to be as nearly representative of the Millstone Unit 2 spent fuel racks as possible.
  - b. These critical experiments included a geometric array of spent fuel boxes with thin strong neutron absorbers. This benchmark data is representative of the arrangement of Boraflex boxes, fuel boxes, and water in the spent fuel pool.
  - c. The KENO model, using 27 neutron groups, also was verified against an independent means of evaluation (CASMO-3).
  
3. The Monte Carlo calculations have incorporated enough "iterations" to provide a good estimate of the pool's reactivity.

- a. Monte Carlo analysis is an accepted and adequate technique for calculating  $K_{eff}$  in the Millstone Unit 2 spent fuel pool.
  - b. KENO is well-suited to analysis of complex systems containing thin, strong absorbers, such as in the Millstone 2 spent fuel pool.
  - c. The number of neutron histories used in NNECO's criticality calculations was at least 500,000.
  - d. Convergence was normally achieved by 125,000 histories. 500,000 histories therefore was more than adequate to achieve convergence in the Monte Carlo calculations.
4. A vertical buckling term was not used in the Millstone 2 spent fuel pool criticality analysis.