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March 15, 2001

OFFICE OF SECRETARY
RULEMAKING AND
ADJUDICATIONS STAFF

Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington DC 20555-0001

Re: Appeal of LBP-00-28

Dear Sir or Madam:

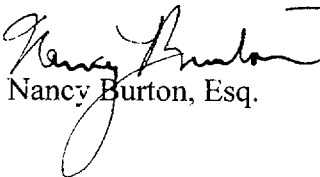
Enclosed please find the original and two (2) copies of the Reply Brief being submitted today on behalf of the Connecticut Coalition Against Millstone and the Long Island Coalition Against Millstone, as per the Commissioners' order in this matter.

Please be advised that the NRC Staff attempted email service of its response on February 28, 2000. However, as I was unable to open the file, I emailed a request immediately for a faxed copy or a reformatted email copy. I received neither. On March 7, 2001, the NRC Staff's hard-cover copy arrived in the mail.

Accordingly, the attached Reply Brief is being submitted within ten (10) days of receipt of the NRC Staff brief.

Thank you for your assistance.

Respectfully,


Nancy Burton, Esq.

cc: Service List

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SECY-02

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMMISSION

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of: : Docket No. 50-423-LA-~~7~~ 3
NORTHEAST NUCLEAR ENERGY : ASLBP No. 00-771-01-LA
COMPANY :
(Millstone Nuclear Power Station, :
Unit No. 3; Facility Operating :
License NPF-49) : March 15, 2001

CONNECTICUT COALITION AGAINST MILLSTONE
AND LONG ISLAND COALITION AGAINST MILLSTONE
REPLY BRIEF ON APPEAL OF LBP-00-26

I. INTRODUCTION AND SUMMARY OF THE ARGUMENT

Connecticut Coalition Against Millstone ("CCAM") and Long Island Coalition Against Millstone ("CAM") hereby reply to the responsive briefs filed on February 28, 2001, by the Appellees, Northeast Nuclear Energy Company ("NNECO"), the Nuclear Regulatory Commission ("NRC" or "Commission") Staff, and Carolina Power & Light Company ("CP&L").¹

General Design Criterion ("GDC") 62 requires that:

Criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations.

There is no dispute between the parties that storage racks providing sufficient spacing between fuel assemblies to prevent criticality, and insoluble neutron absorbers, constitute

¹ Northeast Nuclear Energy Company's Brief on Review of LBP-00-26 (Contention 6) ("NNECO Brief"); NRC Staff Response to "Connecticut Coalition and Against Millstone and Long Island Coalition Against Millstone Brief on Review of LBP-00-26" and "Orange County's Amicus Brief on Review of LBP-00-26" ("NRC Staff Brief"); Carolina Power & Light Company's Brief Amicus Curiae Supporting Affirmance of the Licensing Board Decision in LBP-00-26 ("CP&L Brief").

“physical systems and processes” for criticality prevention that are permitted by GDC 62. The parties disagree, however, as to whether GDC 62 permits the use of soluble neutron absorbers, taking credit for enrichment/burnup, and taking credit for decay time.² In their briefs, CCAM and Orange County argued that these measures are non-physical because they are administrative and procedural in nature; and that therefore they are excluded by GDC 62.³ They also demonstrated that by interpreting GDC 62 to include the procedural criticality prevention measures proposed by NNECO, the Licensing Board erroneously interpreted GDC 62 in a way that is so broad as to deprive the word “physical” of any meaning. Finally, they argued that in the rulemaking for GDC 62, the Commission demonstrated its intent to exclude procedural/administrative measures from the scope of permitted criticality measures, by dropping language that would have permitted the use of procedural controls to prevent criticality.

Appellees offer three basic arguments in support of their contrary position that enrichment/burnup credit and decay time limit credit are permitted by GDC 62: first, that these measures are really “physical” in nature; second, that there is no basis for distinguishing between physical and administrative or procedural measures; and third, that in promulgating GDC 62, the Commission rejected the view that there should be no reliance on procedural controls. These arguments do not stand up to any degree of scrutiny. Moreover, they do not resolve the fundamental problem raised by LBP-00-26: that although GDC limits acceptable criticality prevention measures to “physical systems

² We note that the use of soluble boron under normal conditions is not at issue in the instant license amendment application, nor in the CP&L license amendment application.

³ Connecticut Coalition Against Millstone and Long Island Coalition Against Millstone Brief on Review of LBP-00-26 (February 7, 2001) (“CCAM/CAM Brief”); *see also* Orange County’s Amicus Brief on Review of LBP-00-26 (February 7, 2001) (“BCOC Brief”).

and processes,” the Licensing Board has interpreted the regulation to permit *any* criticality prevention measures, whatever their nature. Both the Licensing Board and the Appellees read the phrase “physical systems and processes” out of the regulations.

II. APPELLEES MISINTERPRET THE PLAIN LANGUAGE OF GDC 62.

A. Appellees Fail to Demonstrate that NNECO’s Criticality Prevention Measures are Physical In Nature.

NNECO makes two alternative arguments for the proposition that soluble neutron absorbers and burnup/enrichment control are “physical” means for preventing criticality. First, NNECO asserts physicality by association: these measures are physical because each “involves” a physical process, “is incorporated into” a physical system, or has physical “implications.” NNECO Brief at 7-8. The standard is not whether a criticality prevention measure has some implicit or otherwise tangential relationship to a physical system or process, however; it must *be* a physical system or process.

NNECO next argues that its criticality prevention measures are physical in “combination.” *Id.* at 8. According to NNECO,

The combination of the physical characteristics of the fuel, the corresponding physical processes related to reactivity, the physical racks, and the procedural controls to place fuel in appropriate regions in the SFP is – by normal usage – a physical “system” fully consistent with the plain language of GDC 62.

Id. But when the each of the allegedly combined factors is examined, it is clear that NNECO’s criticality prevention measures are fundamentally procedural, not physical. Neither the “physical characteristics of the fuel” nor the “physical processes related to reactivity” can play any role in criticality prevention *unless they are manipulated through the use of procedures*. They are simply characteristics of the fuel. Similarly, NNECO’s claim that high-density racks are “physical” in nature is neither here nor there. The

question is whether the racks constitute *a physical system or process for preventing criticality*. The high-density racks used by NNECO do not space the fuel widely enough apart to prevent criticality, and thus they cannot be considered a physical system or process for preventing criticality. Finally, there is nothing physical about “the procedural controls to place fuel in appropriate regions in the SFP.” In short, NNECO’s criticality prevention measures rely on procedures to control the physical characteristics of the spent fuel. NNECO’s “combination” argument is utterly without merit.

B. Appellees’ Broad Interpretation of GDC 62 Is Erroneous.

The Appellants attempt to defend the Licensing Board’s extremely broad interpretation of GDC 62 on various grounds, none of which is successful.⁴

⁴ In their Initial Brief, CCAM/CAM pointed out that under the Licensing Board’s extremely broad interpretation of GDC 62, no criticality prevention measures would be excluded. Thus, the Licensing Board renders meaningless the exclusion of non-physical criticality measures that is implied by GDC 62’s language restricting acceptable criticality prevention measures to “physical systems and processes.” See CCAM/CAM Initial Brief at 20-21. In response, NNECO and CP&L appear to concede that GDC 62 must be read to exclude *some* type of criticality prevention measures. See NNECO Brief at 9, CP&L Brief at 10. (The NRC Staff is silent on the issue.) They attempt to identify excluded measures that are qualitatively different from procedural and administrative controls such as burnup/enrichment control. However, their efforts are irrational, and they reflect the internal inconsistency of NNECO’s and CP&L’s position.

NNECO argues that what is excluded by GDC 62 is “anything that would *not* prevent criticality.” NNECO Brief at 9 (emphasis in original). This argument is nonsensical. By requiring that criticality must be “prevented,” GDC 62 obviously excludes measures that would *not* prevent criticality. CP&L makes a similarly nonsensical argument that a technical specification prohibiting criticality would be excluded by GDC 62. CP&L Brief at 10. GDC 62 requires that criticality be “prevented” by some means, not just prohibited.

CP&L proposes, as an example of a “non-physical” and “purely procedural” criticality prevention measure, sole reliance on operator observations to position fuel assemblies on fuel racks consisting only of rails, so that fuel assemblies are not placed closer than the minimum spacing needed to prevent criticality. *Id.* Although this example is fanciful and unlikely, it is not qualitatively different from the method of enrichment/burnup control which CP&L and NNECO argue are permitted under GDC 62. CP&L offers no reason why this measure for preventing criticality should be disallowed, while enrichment/burnup control is allowed. In fact, the operator observation/rail placement method suggested by CP&L fits both NNECO’s and CP&L’s all-inclusive models for criticality prevention measures permitted by GDC 62. See NNECO Brief at 8 (“criticality control is assured by a physical characteristic: the condition of the fuel”); CP&L Brief at 6 (“[e]very effective criticality method in use today involves, by necessity, a physical system or process,” because criticality control requires physical control of the neutrons in the storage area.) Just as criticality control might rely on physical control of the condition of the fuel to control neutrons in the

First, NNECO attempts to defend the dictionary definition of the word “process” relied on by the Licensing Board, on the ground that it “accurately describes the processes used in NNECO’s system.” NNECO Brief at 11. The fact that one of many dictionary definitions of the word “process” happens to fit NNECO’s criticality prevention measures does not answer the question posed by this appeal, however, which is whether that dictionary definition is consistent with the language of GDC 62. *See* CCAM/CAM’s Initial Brief at 21. The Board erred by arbitrarily ignoring other narrower definitions of the word “process” that would have been consistent with the language of GDC 62, which limits permissible criticality prevention measures to “physical” systems and processes.⁵

NNECO next argues that nothing in the plain language of GDC 62 specifically prohibits reliance on administrative controls. NNECO Brief at 13. This argument sidesteps the crucial issue on this appeal, which is what is meant by the language in GDC 62 which specifically *limits* criticality prevention measures to “physical systems and processes.” As discussed in CCAM/CAM’s Brief at 20-21, this prescriptive language must be read to exclude non-physical criticality prevention measures. The Licensing Board erroneously ignored the prescriptive (and implicitly exclusive) language in GDC

storage area, controlling criticality by operator observations and placement of fuel assemblies on rails involves the control of neutrons through the arrangement of fuel assemblies in relation to the rails. Thus, CP&L provides no basis for distinguishing its example from any other type of procedural control that it argues should be permitted under GDC 62. As a result, CP&L is unable to demonstrate that there is a category of excluded criticality prevention measures which does not include procedural controls such as enrichment/burnup control.

⁵ NNECO also criticizes Appellants for not addressing the meaning of the word “system” in GDC 62. NNECO Brief at 11. However, when modified by the word “physical,” as in GDC 62, the word “system” unquestionably applies to physical things. The very first definition of “system” provided in the Random House Webster’s College Dictionary, Second Edition (New York 1997) is “assemblage or combination of things or parts forming a complex or unitary whole.”

62 by ruling that *all* known methods for preventing criticality are acceptable under GDC 62.⁶

NNECO also tries to blur the distinction between physical and administrative/procedural measures for preventing criticality, by emphasizing the procedural controls needed for racks and stationary neutron-absorbing panels, and minimizing the number of controls needed for enrichment/burnup control. NNECO Brief at 14-15. This argument attempts to muddy a picture that is relatively simple and straightforward. As NNECO has recognized, the universe of available options for preventing criticality is quite limited. *See* NNECO Brief at 7. The options consist of physical separation by racks, use of fixed neutron absorbers such as Boral panels, introduction of soluble boron to the pools, enrichment/burnup control, and decay time control. As discussed in CCAM/CAM's Initial Brief at 22-24, these measures break down into two basic categories: (a) measures that rely on the physical characteristics of an engineered device in order to prevent criticality, and (b) measures that rely on the ongoing repetition of human actions in accordance with procedures and administrative controls.

While there may be some slight overlap between the two categories, in the sense that human action is necessary to construct, install and inspect a physical criticality prevention system or process, there is a qualitative difference. Once installed, a fuel rack or Boral panels will prevent criticality (a) for every fuel assembly placed in the entire pool; (b) for the entire operating life of the spent fuel pool; and (c) regardless of the

⁶ NNECO also relies on a statement by the Licensing Board that "there is no basis in law or language for differentiating between one type of administrative control or another." NNECO Brief at 13, *citing* LBP-00-26 at 44. The Licensing Board's statement is not incorrect, but neither is it relevant. The question is not whether there is a basis for distinguishing between administrative measures for criticality prevention, but whether there is a basis for distinguishing between physical and administrative measures.

burnup characteristics of any additional single fuel assembly that is placed in the pool, *i.e.*, without depending on human accuracy in placing spent fuel assemblies in any particular location. In contrast, where administrative and procedural measures such as enrichment/burnup control are relied on, each time new fuel assemblies are added to the pool, procedural measures must be relied on to ensure that the fuel assemblies will not cause a criticality accident the fuel pool.⁷ Thus, NNECO is incorrect when it states that under an enrichment/burnup control program, once fuel of a certain permitted reactivity is moved to its prescribed location, “no further control is needed until the fuel is again moved.” NNECO Brief at 14. In reality, each time new assemblies are placed in the pool, there is the possibility of a criticality accident *unless* enrichment/burnup control procedures have been followed correctly. No such risk arises with the use of racks for spacing, or fixed neutron absorbing panels.

The Staff also attempts to support LBP-00-26’s broad interpretation of GDC 62 by arguing that it establishes only “engineering goals,” and that CCAM/CAM and Orange County improperly interpret GDC 62 to require “precise tests or methodologies.” *Id.* NRC Staff Brief at 6, note 7. This argument misconstrues both the Appellants’ case and GDC 62. Appellants do not interpret GDC 62 as requiring specific methodologies; rather, it establishes a *category* of acceptable methodologies. In this way, GDC 62 establishes engineering goals. These goals are mandatory, as demonstrated by the word “shall” as used in the regulation.

III. APPELLEES MISINTERPRET THE REGULATORY HISTORY OF GDC 62.

⁷ Similarly, in the case of reliance on soluble boron under normal conditions (which is not at issue here), the pool is under an ongoing risk of criticality *unless* procedures for introducing boron periodically are successfully carried out.

If the plain language of GDC 62 leaves any room for doubt as to whether procedural controls for preventing criticality are prohibited by GDC 62, all doubts are resolved by the rulemaking history of GDC 62: language in the proposed rule referring with approval to “procedural controls” was *excised* from the final version of the rule. *See* BCOC Brief at 10.

According to NNECO, “the rulemakng history actually shows that the Commission specifically rejected the view that there should be no reliance on procedural controls.” NNECO Brief at 22. However, it is impossible to reconcile this position with the fact that the Commission *removed* language referring to procedural controls from the final rule. In removing the reference to procedural controls, the Commission undoubtedly recognized that inconsistency had crept into the language of the rule over the course of various revisions.⁸

Similarly, the Staff claims that “it is apparent that the Staff and the Commission did not agree with Oak Ridge [National Laboratories] that procedural controls should be prohibited,” since the AEC did not adopt specific language proposed by ORNL that would have stated that “[s]uch means as geometrically safe configurations shall be used to insure that criticality cannot occur.” Staff Brief at 12. This argument is simply absurd. The AEC did indeed respond to ORNL’s comment, *by completely removing any*

⁸ It is extremely significant that in a previous version of the rule, the Commission made no mandatory reference to physical systems and processes, but only said that possibilities for inadvertent criticality “must be prevented by physical systems or processes to every extent practicable.” In the second sentence of that version of the rule, procedural controls were listed among acceptable, but not preferred, options. In the proposed rule that went out for comment directly prior to the promulgation of GDC 62, the use of physical systems or processes was changed from discretionary to mandatory; but the second sentence of the rule did not remove the reference to procedural controls. By the time the final rule was promulgated, the reference to procedural controls had been completely eliminated. *See* BCOC Brief at 11-12. Both NNECO and

reference to procedural controls. The fact that the AEC did not adopt ORNL's specific suggested language shows only that it did not care for that particular language. The crucial purpose of ORNL's comment was achieved, which was to eliminate any suggestion of reliance on procedural controls.

NNECO also argues that by expressing a preference for "one particular type of physical system – geometrically safe configurations," the Commission showed that it was not prohibiting procedural controls. *Id.* This argument is based on an incorrect reading of GDC 62. The exclusion of procedural controls is accomplished by (a) the language in the first part of GDC 62 which restricts criticality prevention measures to "physical systems and processes," and (b) the removal of the previous reference to procedural controls from the list of acceptable examples. The phrase "preferably by means of geometrically safe configurations" cannot correctly be read to express a preference for geometrically safe configurations among the universe of all other available criticality prevention systems and processes; rather, it expresses a preference for geometrically safe configurations among the *physical* criticality prevention measures that are permitted by GDC 62.⁹

Moreover, contrary to the arguments made by Appellees, the rulemaking history of 10 C.F.R. § 50.68 does not demonstrate any intention by the Commission to alter the requirements of GDC 62. As discussed at length in Orange County's Brief at 12-17, 10

CP&L focus exclusively on the proposed rule, and do not address the significance of the draft language that immediately preceded it. See NNECO's Brief at 21-24, CP&L Brief at 14.

⁹ NNECO asks the question, if the Commission intended to eliminate "procedural controls" as an acceptable element of criticality control, "why would the broad word 'systems' and 'processes' be retained?" NNECO Brief at 24. As discussed above and in CCAM/CAM's Initial Brief at 19-21, these nouns have many definitions, including definitions that are consistent with the modifier "physical." The fact that the words "systems" and "processes" may have additional broader meanings cannot be found to deprive the modifier "physical" of any meaning.

C.F.R. § 50.68 is consistent with GDC 62. The Appellees' arguments are based on an extremely broad interpretation of 10 C.F.R. § 50.68 which is not supported by the language or history of the rule.¹⁰

IV. CONGRESS HAS NOT ENDORSED HIGH-DENSITY SPENT FUEL POOL STORAGE OF SPENT REACTOR FUEL.

NNECO and CP&L claim that Congress endorsed high-density storage in the Nuclear Waste Policy Act.¹¹ This is a bald misrepresentation. None of the statutory provisions cited by NNECO and CP&L provide *any* endorsement by Congress of high-density spent fuel storage. While the NWPA expresses a desire to maximize the use of existing storage facilities "to the extent practical," it provides no specific endorsement of high-density spent fuel storage. *See* 42 U.S.C. § 10151 ("Findings and purposes"). Section 10154, cited by NNECO and CP&L, lists high-density storage as one of a number of spent fuel storage technologies for which the NRC may receive applications. No preference is expressed for any of these technologies. The statute simply establishes a process for hearing the applications in an expedited manner.

¹⁰ In the header of an argument, the NRC Staff also claims that reactivity limits "Have Been Previously Accepted by the Commission, Establishing a Long Course of Practice." NRC Staff Brief at 17. In the text of the argument, however, the long history of Commission practice turns out to be a long history of *NRC Staff* practice. *Id.* at 17-19. The repetition of a mistake does not legitimize it. *See* BCOC Brief at 17. As discussed in CCAM/CAM's Detailed Summary of Facts, Data, and Arguments, Etc. at 71, the Staff has experienced a great deal of pressure from the nuclear industry to permit the expansion of spent fuel pool capacity at nuclear plants. As a result, over the course of the last twenty years, the Staff has strayed farther and farther from its original adherence to the requirements of GDC 62. The Commission should reverse the Staff's error and instruct the Staff to make licensing decisions that are consistent with GDC 62.

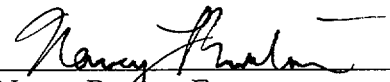
¹¹ *See* NNECO Brief at 16 ("In enacting the NWPA in 1982, Congress fully endorsed the use of high-density storage systems"); CP&L Brief at 18 (emphasis in original) ("Congress went to far as to set up an expedited hearing process 'to expand the spent nuclear fuel storage capacity at the site of a civilian nuclear power reactor, through the use of high-density fuel storage racks'").

V. CONCLUSION

For the foregoing reasons, the Commission should reverse LBP-00-26 on the ground that it relies on an erroneous interpretation of GDC 62.

Respectfully submitted,

**THE INTERVENORS
CONNECTICUT COALITION
AGAINST MILLSTONE
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**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMISSION**

In the Matter of:	:	Docket No. 50-423-LA- 7 3
NORTHEAST NUCLEAR ENERGY	:	ASLBP No. 00-771-01-LA
COMPANY	:	
(Millstone Nuclear Power Station,	:	
Unit No. 3; Facility Operating	:	
License NPF-49)	:	March 15, 2001

CERTIFICATE OF SERVICE

I hereby certify that copies of "CONNECTICUT COALITION AGAINST MILLSTONE AND LONG ISLAND COALITION AGAINST MILLSTONE REPLY BRIEF ON APPEAL OF LBP-00-26" in the above-captioned proceeding have been served on the following by E-Mail as indicated by asterisk and to all by conforming copy via U.S. Mail, postage pre-paid, on March 15, 2001:

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