

Docket No. 50-423-LA-3

² Effective March 31, 2001 Dominion Nuclear Connecticut became the Licensee for the Millstone Nuclear Power Station.

1999. Application, Exhibit 1 filed in support of NRC Staff's June 30, 2000 filing hereinafter Staff June 30, 2000 filing. This proceeding is subject to the hybrid hearing procedures of 10 C.F.R. Part 2, Subpart K. See *Dominion Nuclear Connecticut* (Millstone Nuclear Power Station Unit 3), LBP-01-17, 53 NRC 398, 399 (2001). The Application sought approval to increase spent fuel storage capacity by installing two types of additional higher density spent fuel racks into the spent fuel pool. On September 7, 1999, the NRC published a notice of proposed no significant hazards consideration determination and opportunity for hearing. On October 6, 1999, CCAM/CAM filed a request for hearing and petition to intervene. The petition to intervene was granted by the Atomic Safety and Licensing Board (Board) by Memorandum and Order, dated February 9, 2000. *Northeast Nuclear Energy Co.* (Millstone Nuclear Power Station, Unit 3), LBP-00-2, 51 NRC 25 (2000). The Board admitted three of the Intervenor's contentions for litigation. *Id.* at 32-41.

The Board heard oral argument pursuant to 10 C.F.R. Part 2, Subpart K, on two of the three contentions admitted in LBP-00-02. Contention 5, however, concerning the need to test for boron concentration, was resolved when NNECO revised its license application to provide for testing the boron concentration every 7 days. On October 26, 2000, the Board issued LBP-00-26, which denied the Intervenor's request for a further hearing on Contentions 4 and 6, resolved those contentions in favor of the Licensee, and terminated the proceeding. *Northeast Nuclear Energy Co.* (Millstone Nuclear Power Station, Unit 3), LBP-00-26, 52 NRC 181, 189-200, 202-213, 214 (2000).

On November 13, 2000, CCAM/CAM petitioned the Commission for review of LBP-00-26, alleging that the Board's decision included clearly erroneous rulings regarding administrative controls and criticality prevention issues. See *Connecticut Coalition Against Millstone/Long Island Coalition Against Millstone Petition for Review of LBP-00-26* dated November 13, 2000.

On November 28, 2000, the Staff, having made a final finding of no significant hazards consideration, issued the license amendment that NNECO had requested in its March 19, 1999, Application.³

While CCAM/CAM's petition for review of LBP-00-26 was pending before the Commission, CCAM/CAM filed a motion to reopen the record before the Licensing Board, based on NNECO's disclosure to the NRC of its inability to account for two spent fuel rods in the spent fuel pool of its Unit 1 reactor, which had been shut down since 1998. See "Connecticut Coalition Against Millstone and Long Island Coalition Against Millstone Motion to Reopen and to Vacate Decision," December 18, 2000. On December 21, 2000, the Commission issued a decision regarding the motion to reopen the record in which it noted that the motion to reopen was improperly filed, as licensing boards lack the jurisdiction to reopen after a petition for review has been filed. *Northeast Nuclear Energy Co.*, (Millstone Power Station Unit 3), CLI-00-25, 52 NRC 355 at 357, n. 3 (2000). Nonetheless, the Commission remanded the motion to the Board, noting that the Board had greater familiarity with the record. The Commission stated that CCAM/CAM was primarily seeking to develop the record further as to Contention 4. *Id.*

On January 17, 2001, the Commission issued CLI-01-03, 53 NRC 22 (2001), in which it denied review of Contention 4 on the grounds that the Board's fact findings appeared "well grounded in the extensive original record" and granted review of Contention 6.⁴ 53 NRC 22, 25-27, 27-29. The Commission noted that it had directed the Board to decide CCAM/CAM's motion to reopen Contention 4 to consider reports of alleged mishandling of two spent fuel rods at Millstone

³ On the same day, the Staff forwarded copies of the amendment to the Licensing Board and parties. Board Notification 2000-08.

⁴ On May 10, 2001, the Commission issued CLI-01-10 in which it affirmed the Board's ruling in LBP-00-26 as to Contention 6, holding that the phrase physical systems or processes in GDC 62 comprehends administrative and procedural measures necessary to implement or maintain such physical systems or processes. *Dominion Nuclear Connecticut*, (Millstone Nuclear Power Station, Unit 3), CLI-01-10, 53 NRC at 369 (2001).

Nuclear Power Station, Unit No. 1 (Unit 1). 53 NRC 22 at 25.

On January 17, 2001, the Licensing Board denied CCAM/CAM's motion to reopen the record. *Northeast Nuclear Energy Company*, (Millstone Nuclear Power Station, Unit 3), LBP-01-01, 53 NRC 75 (2001). CCAM/CAM's filed a request for reconsideration. On May 10, 2001, the Board granted CCAM/CAM's motion for reconsideration of its January 17, 2001 ruling and decided to reopen the record. *Dominion Nuclear Connecticut*, (Millstone Nuclear Power Station, Unit 3), LBP-01-17, 53 NRC 398 (2001)⁵. In so doing, the Board stated that the one matter giving support to the request to reopen the record is "the loss of the fuel rods itself and the failure of DNC thus far, after more than 4 months' search, to have located the rods or accounted for their disposition." *Id.* at 407.

The Board specifically stressed that the Staff and Applicant's affidavits did not contain information pertaining to the relationship, if any, "between the errors leading to the misplacement or loss of the two fuel rods from the Millstone-1 SFP and current operations at the Unit-3 SFP." The Board indicated that there is now reason to discern "whether there is any common link either in procedures or execution of procedures between the accountability failure at Unit 1 and the present methods (or personnel) in use at Millstone-3." *Id.*

On June 21, 2001, the Licensing Board issued a Memorandum and Order (Telephone Conference 5/24/01) (unpublished), in which it granted, in part, a Staff motion to hold the reopened proceeding in abeyance pending completion of an investigation by the Office of Investigations of an allegation of a willful violation of reporting requirements concerning the two "missing" fuel rods at the Unit 1 spent fuel pool.

On November 5, 2001, the Licensing Board issued a Memorandum and Order (Telephone Conference Call, 10/31/01; Schedules for Proceeding)(unpublished), noting that the OI report had

⁵ On March 31, 2001 the Millstone Station was purchased by Dominion Nuclear Connecticut, the current licensee. The continued involvement of Northeast Utilities in the mislaid fuel rod investigation was a condition of the purchase.

been provided to the Board and parties on October 31, 2001, that the licensees Fuel Rod Accountability Project Report and Root Cause Analysis had also been distributed and that, thus, it was now appropriate to establish a schedule for discovery and date for oral argument. In accordance with the Board's Order and 10 C.F.R. § 2.1113, the Staff hereby submits its written summary of all the facts, data, and arguments known to the Staff and on which the Staff intends to rely at oral argument to refute the existence of a genuine and substantial dispute of fact as to reopened Contention 4.

STATEMENT OF FACTS

Unit 3 is a four-loop Westinghouse pressurized water reactor (PWR) operated by Dominion Nuclear Connecticut, Inc. (DNC) in New London County, Connecticut. The initial operating license was issued January 31, 1986, and expires November 25, 2025. The site on which Unit 3 is situated contains two other nuclear power plants, Unit 1, a General Electric design boiling water reactor (BWR), which has been shut down since 1995 and is currently decommissioning, and Millstone Nuclear Power station, Unit No. 2 (Unit 2), a Combustion Engineering design PWR.

Unit 1 is a 660-Megawatt BWR that began commercial operations in December 1970. The plant ceased operations in 1995 and is currently undergoing decommissioning. Affidavit of Ronald Bellamy, March 18, 2002 ¶ 2.

The spent fuel pool (SFP) at Unit 3 is located in the southwestern quadrant of the fuel building and is designed to accommodate fuel racks that store both spent fuel and fresh fuel assemblies. The Unit 3 SFP was designed to hold up to 2169 fuel assemblies; however, at the time Unit 3 was licensed, the licensed storage capacity was 756 fuel assemblies. Application, Staff June 30, 2000 filing, Exhibit 1.

NNECO submitted a proposed license amendment request dated March 19, 1999 (as supplemented by letters dated April 17, 2000, May 5, 2000 and June 16, 2000) to increase the licensed storage capacity from 756 to 1860 fuel assemblies, which will, according to the

Application, provide capability to maintain a full core off-load and provide sufficient licensed capacity to allow operation near to the license expiration date in the year 2025. The license amendment requests and supplements were previously introduced by the Staff on June 30, 2000 as Staff's exhibits 1, 37 and 38.

The Commission was informed on Nov. 16, 2000 that two fuel rods from the Unit 1 SFP could not be accounted for. See LER, Exhibit H. Following this disclosure the licensee undertook a Fuel Rod Accountability Project (FRAP) and commissioned a Root Cause Assessment Team (RCAT). A Special Inspection team from the NRC inspected and reviewed both of those efforts. The final reports from all these teams are now complete. The FRAP Report is Exhibit B. The RCAT Report is Exhibit C. The Special Inspection Report is Exhibit D.

THE REGULATORY FRAMEWORK

A. Subpart K, 10 C.F.R. § 2.1101, et seq.

This proceeding is governed by the hybrid hearing procedures of 10 C.F.R. § 2.1101 et seq. (Subpart K). Subpart K provides that its procedures may be used, at the request of any party, in contested proceedings concerning, *inter alia*, applications for a license amendment "to expand the spent fuel capacity at the site of a civilian nuclear power plant, through the use of high density fuel storage racks...." 10 C.F.R. § 2.1103. The procedures include a 90 day discovery period, followed by submission of a detailed written presentation, and fifteen days thereafter, oral argument. 10 C.F.R. §§ 2.1111, 2.1113. The detailed written presentation must contain all the facts, data, and arguments known to the party and on which the party intends to rely at oral argument to support or refute the existence of a genuine and substantial dispute of fact. 10 C.F.R. § 2.1113(a). All supporting facts and data must be submitted in the form of sworn written testimony or other sworn written submission. *Id.* The written submissions are to be simultaneously served on all other parties. *Id.*

After considering the submissions and the oral arguments, the presiding officer will issue

an order (1) designating any disputed issues of fact and law for hearing, and (2) disposing of any issues of fact or law not designated for hearing. 10 C.F.R. § 2.1115(a). In designating issues for hearing, the presiding officer "shall identify the specific facts that are in genuine and substantial dispute, the reason why the decision of the Commission is likely to depend on the resolution of that dispute, and the reason why an adjudicatory hearing is likely to resolve the dispute." *Id.* As for the issues not designated for hearing, only a brief statement of the reasons for the disposition is required. *Id.*

Subpart K provides for a form of summary disposition procedure. 50 Fed. Reg. 41,662 41,664 (1984). There are several differences between the provisions of Subpart K and traditional NRC summary disposition practice, including: simultaneous filing of pleadings; mandatory oral argument; and placing the burden of demonstrating the existence of a genuine and substantial issue of material fact on the party requesting adjudication. *Id.* at 41,667.

In promulgating Subpart K, the Commission discussed the criteria for designating an issue for hearing, stating that:

Not only must there be a genuine and substantial dispute of fact, but the dispute must be material: *i.e.*, the decision must be likely to depend on resolution of the dispute. In addition, the dispute must be one that can be resolved with sufficient accuracy only by the introduction of evidence in an adjudicatory proceeding.

50 Fed. Reg. at 41,666-667. The Commission also emphasized that the threshold for an adjudicatory hearing is strict:

As the Commission pointed out in connection with the proposed rules, the statutory criteria are quite strict and are designed to ensure that the hearing is focused exclusively on real issues. They are similar to the standards under the Commission's existing rule for determining whether summary disposition is warranted. They go further, however, in requiring a finding that adjudication is necessary to resolution of the dispute and in placing the burden of demonstrating the existence of a genuine and substantial dispute of material fact on the party requesting adjudication.

Id. at 41,667. Therefore, in this case, the burden of going forward and of demonstrating the existence of a genuine and substantial issue of material fact that can only be resolved by the

introduction of evidence at an adjudicatory hearing is on the intervenors, CCAM and CAM. *See, e.g., Carolina power & Light Co. (Shearon Harris Nuclear Power Plant)*, LBP-00-12, 51 NRC 247 (2000). In order for any issue to proceed to hearing, the Board must "identify the specific facts that are in genuine and substantial dispute, the reason why the decision of the Commission is likely to depend on the resolution of that dispute, and the reason why an adjudicatory hearing is likely to resolve the dispute." 10 C.F.R. § 2.1115(a).

General allegations are insufficient to trigger an evidentiary hearing. Factual allegations must be supported by experts or documents to demonstrate that an evidentiary hearing is warranted. The applicant cannot be required to prove that uncertain future events could never happen. Although the ultimate burden of persuasion is on the license applicant, the proponent of a contention has the initial burden of coming forward with factual issues, not merely conclusory statements and vague allegations. *Northeast Nuclear Energy Co. (Millstone Nuclear Power Station, Unit 3)*, CLI-01-03, 53 NRC 22, 27 (2001).

B. Contention 4

As initially admitted by the Licensing Board Contention 4, "Undue and Unnecessary Risk to Worker and Public Health and Safety," states:

The new set of administrative controls trade reliance on physical protection for administrative controls to an extent that poses an undue and unnecessary risk of a criticality accident, particularly due to the fact that the licensee has a history of not being able to adhere to administrative controls with respect, *inter alia*, to spent fuel pool configuration. *Northeast Nuclear Energy Company*, (Millstone Nuclear Power Station, Unit 3), LBP-00-02, 51 NRC 25 at 34.

The Board, in admitting the contention, stated that it has a two pronged basis: (1) "The application contains a complex array of administrative controls;" and (2) "based on past experience, NNECO's ability to carry out such controls successfully is suspect." *Id.* at 32-33.

In its grant of the Intervenor's motion to reconsider and reopen, the Board stated that the record on Contention 4 would be reopened, to the extent the loss of two fuel rods out of Unit 1

"bears upon both the adequacy of administrative controls at the Millstone-3 SFP and DNC's ability or willingness to implement such controls successfully." *Millstone*, LBP-01-17, 53 NRC 398 at 408. The "scope of this reconsideration is limited to the procedures or controls for management of the SFPs and their modes of execution that may be common to Millstone-1 and Millstone-3." *Id.*

FACTS RELIED UPON BY THE STAFF

The facts upon which the Staff relies with respect to the reopened Contention 4 are set forth in the affidavits of Antone C. Cerne (Cerne Affidavit), Ronald R. Bellamy (Bellamy Affidavit), Anthony C. Attard (Attard Affidavit), Anthony P. Ulses (Ulses Affidavit), and the Exhibits submitted herewith. The professional qualifications of the Staff affiants are summarized in their affidavits and set forth in detail in attachments to each affidavit. Mr. Cerne is Senior Resident Inspector at Unit 3. Cerne Aff. ¶ 1. Dr. Bellamy is chief of the Decommissioning and Laboratory Branch in Region I, U.S. NRC in King of Prussia, Pennsylvania. Bellamy Aff. ¶ 1. Dr. Bellamy managed the Special Inspection Team sent by the NRC to inspect NNECO's investigation into the two spent fuel rods missing from Unit 1. Bellamy Aff. ¶ 4. Dr. Attard is a reactor Physicist/Engineer in the Reactor Systems Branch of the Office of Nuclear Reactor Regulation at the U.S. NRC. Attard Aff. ¶ 1. Mr. Ulses is a Nuclear Engineer in the Safety Margins and Systems Assessment Branch in the Office of Research at the U.S. NRC. Ulses Aff. ¶ 1.

A summary of the facts presented in their affidavits is set forth below.

1. The Unaccounted for Fuel Rods from Unit 1

Northeast Utilities undertook an investigation, the FRAP into the unaccounted for fuel rods. Bellamy Aff. ¶ 4. Northeast Utilities also performed a Root Cause Analysis. *Id.* The reports for both of these projects were completed in October, 2001.

In 1972 seawater entered the reactor coolant system in Unit 1. Bellamy Aff. ¶ 5. Fuel assembly MS-557 was disassembled to determine the effect of chlorides in the seawater on the reactor coolant system. *Id.* Two rods, the tie rod and the center spacer capture rod, were not

returned to the reconstituted assembly. *Id.* The two fuel rods were stored in the northwest corner of the pool. *Id.* The rods stopped appearing on maps of the spent fuel pool in September, 1980. *Id.*

In September and October 1979, contract workers cut up local power range monitors (LPRMs) that were stored in the Unit 1 spent fuel pool and placed them in shipping cask liners in the pool. *Id.* LPRM hot sections may be similar in appearance to a fuel rod. *Id.* The FRAP report indicated that contract workers may have assumed that fuel would only be stored in the racks. *Id.* It is plausible that the contract workers could have mistaken the two fuel rods for irradiated hardware, such as LPRMs. *Id.*

Throughout the 1980s, several shipments of waste from the Unit 1 SFP were made to two low level waste facilities, the facility in Barnwell, South Carolina and the Hanford facility near Richland, Washington. Bellamy Aff. ¶ 5. These shipments of waste included LPRM's and other irradiated hardware from the Unit 1 SFP. *Id.*

The NRC created a Special Inspection team to review the thoroughness and completeness of Northeast Utilities' investigation into the unaccounted for rods. Bellamy Aff. ¶ 4. The inspection team affirmed Northeast Utilities' conclusions that the missing fuel rods had most likely been shipped as low level waste to either Barnwell, South Carolina, or to the Hanford facility near Richland, Washington. Bellamy Aff. ¶ 5.

The Special Inspection team found two apparent violations concerning the unaccounted for fuel rods. Bellamy Aff. ¶ 8. The Inspection Report is Exhibit D. The first apparent violation is a failure to keep adequate records, establish adequate procedures for control and accounting, and conduct physical inventories of special nuclear materials. *Id.* The two rods were unaccounted for in 1980. Bellamy Aff. ¶ 5. This possible violation occurred prior to the 1996 Unit 3 shutdown and initiation of the recovery process that led to a significant Millstone Station culture change and improvements that permitted the authorization of the restart of Unit 3 by the Commission in 1998.

improvements that permitted the authorization of the restart of Unit 3 by the Commission in 1998. Cerne Aff. ¶ 5.

The second apparent violation is failure to report a loss of special nuclear material in a timely manner. Bellamy Aff. ¶ 8. Unlike Unit 1, procedures and controls at Unit 3 have been effective in accounting for all spent fuel, and for controlling the location of fuel. Bellamy Aff. 9. The fact that the location of two fuel rods could not be confirmed does not pose a criticality concern. Attard Aff. ¶ 5.

2. The Extent to Which the Two Unaccounted for Fuel Rods from Unit 1 Bear upon the Adequacy of the Administrative Controls in Unit 3.

The Unit 1 supplemental LER 2000-002-02 establishes the licensee's position with regard to the root cause of the loss of accountability of the two Unit 1 spent fuel rods and documents certain behaviors and conditions that led to this event. Cerne Aff. ¶ 11. The weakness and inconsistencies associated with this Unit 1 event are not in evidence in Unit 3, particularly with respect to spent fuel activities, special nuclear material controls, and an overall atmosphere of procedural compliance. *Id.*

In particular Unit 3 does not store fuel outside of the fuel racks. Cerne Aff. ¶ 11. The unaccounted for fuel rods from Unit 1 were stored in the northwest corner of the Unit 1 SFP, outside of the fuel racks. Bellamy Aff. ¶ 5. The one individual fuel rod in Unit 3 is stored in a canister in the spent fuel racks. Bellamy Aff. ¶ 9.

The special nuclear material inventory and control procedures at Unit 1 did not formerly require individual fuel rods to be designated as special nuclear material. Bellamy Aff. ¶ 7. Unit 3 has had an approved special nuclear material inventory and control procedure since 1984, before the initial fuel loading at Unit 3, which has proven to be effective in assuring the control and placement of special nuclear material in the proper designated storage locations. Cerne Aff. ¶ 11.

3. DNC's Ability or Willingness to Implement Administrative Controls Successfully

Since the restart of Unit 3 from its sixth refueling outage in June 1999, the licensee's performance and overall plant operations have been satisfactory. Cerne Aff. ¶ 6. The last operational fuel cycle, from June 1999 to February 2001, encompassed a run of continuous operation of 585 days, and the current operational cycle, from April 2001 to the present, represents a continuous run of almost one year. *Id.*

During the most recent refueling outages in May-June 1999 and again in February-March 2001, the licensee used administrative controls, including double verification, to assure the proper placement of each new fuel assembly into the rack location where it was designated to be placed. Cerne Aff. ¶ 7. Fuel assembly transfers were documented, as procedurally prescribed, on a "Material Transfer Form." *Id.*

The licensee is required to implement procedures to ensure that "the required double verification process is used to check spent fuel assembly movement to the designated spent fuel racks." Cerne Aff. ¶ 10. Fuel movement controls, a computer based tracking system called Shuffleworks, is in place and is being used for all core offload and refueling movements. *Id.*

Administrative controls governing spent fuel pool operations and special nuclear material controls have been effective in controlling the movement, placement, and location of spent fuel, including individual fuel rods, in the spent fuel racks at Unit 3. Cerne Aff. ¶ 13. There is no information available to the NRC Staff that would suggest that the licensee cannot effectively implement these same administrative controls in the future. *Id.*

The entire body of administrative controls employed in refueling operations has sufficient rigor and redundancy to preclude a single human error from presenting a challenge to nuclear safety at Unit 3. Cerne Aff. ¶ 14. Human errors, noncompliances and violations can never be totally eliminated. *Id.* The administrative controls at Unit 3 possess sufficient rigor and defense in depth that, when implemented by trained and properly supervised workers, criticality in the spent fuel pool

will be precluded. *Id.*

From both programmatic and institutional standpoints, Millstone has improved considerably, not only since the 1980 time frame, when the Unit 1 rods became unaccounted for, but also since the first half of the 1990's. Cerne Aff. ¶ 14. The improvements are reflected both in the recent operational performance history of Unit 3 and in the current state of the Unit's administrative controls, the implementation of which underlies the current positive performance. *Id.*

ARGUMENT

In its grant of the Intervenor's motion to reconsider and reopen, the Board stated that the record on Contention 4 would be reopened to the extent the loss of two fuel rods out of Unit 1 "bears upon both the adequacy of administrative controls at the Millstone-3 SFP and DNC's ability or willingness to implement such controls successfully." LBP-01-17, 53 NRC 398 (2001). The "scope of this reconsideration is limited to the procedures or controls for management of the SFPs and their modes of execution that may be common to Millstone-1 and Millstone-3." *Id.*

1. No Link Exists Between the Unaccounted for Fuel Rods in Unit 1 and the Implementation of Administrative controls in the Unit 3 Spent Fuel Pool.

A. The Accountability for the Fuel Rods was Lost Prior to the Improvements Following the Restart.

The fact that Northeast Utilities lost track of two fuel rods in the Unit 1 SFP in 1980 in no way reflects upon the current licensee's ability to carry out administrative controls. Accountability for the two fuel rods was lost around 1980. Bellamy Aff. ¶ 5. Unit 3 was shut down in 1996. Cerne Aff. ¶ 5. After the shut down there was a recovery process that led to a significant Millstone Station culture change and improvements that permitted the authorization of the restart of Unit 3 by the Commission in 1998. Cerne Aff. ¶ 5. In this regard, the Licensing Board has noted that the events that occurred prior to the 1996-98 shutdown and restart of the reactor do not necessarily reflect the Licensee's current capability for carrying out administrative controls properly. *Millstone*, LBP-00-26, 52 NRC 181 at 198 (2000). The Board found that NNECO had demonstrated that it could adhere

to administrative controls, with adequate safety margin and defense-in-depth, without posing an undue or unnecessary risk to plant workers or the public. LBP- 00-26, 52 NRC 181 at 200, October 26, 2000. The licensee's performance and overall plant operations have been satisfactory since the restart of Unit 3 in June 1998. Cerne Aff. ¶ 6.

2. The procedures or controls for management of the Spent Fuel Pool in Unit 1 that caused the two fuel rods to be unaccounted for are not present in Unit 3.

The scope of the issue with respect to Contention 4 is limited to the procedures or controls for management of the spent fuel pools that may be common to Unit 1 and Unit 3. Board Order LBP-01-17, 53 NRC 398, 408 (2001). NNECO's RCAR document the causes of the loss of accountability of the two spent fuel rods. The weaknesses and inconsistencies associated with this Unit 1 event are not in evidence in Unit 3. Cerne Aff. ¶ 11. This is particularly true with respect to SFP activities, special nuclear material controls, and an overall atmosphere of procedural compliance. *Id.*

Unit 1 did not formerly require individual fuel rods to be designated as special nuclear material. See Inspection Report Attached as Exhibit D. The fact that individual fuel rods were not designated as special nuclear material appears to have caused the tracking of the two unlocated rods to have been done in a less exacting manner, which may have contributed to the two rods becoming unaccounted for. Currently Unit 3 has an approved special nuclear material inventory and control procedure which has been proven to be effective in assuring the control and placement of special nuclear material. Cerne Aff. ¶ 11.

Unit 1 permitted fuel rods to be stored outside the fuel racks. Bellamy Aff. ¶ 5. Unit 3 does not permit fuel rods to be stored anywhere other than in designated fuel racks. Cerne Aff. ¶ 11. Unit 3 does have one fuel rod that is separated from the rest of the fuel assembly; however, it is properly stored in a canister in the fuel racks in Unit 3. Bellamy Aff. ¶ 9. The storing of fuel rods outside of the fuel racks in Unit 1 may have led to the material being unaccounted for as the

contract workers appear to have mistaken the rods for other irradiated hardware. Bellamy Aff. ¶

5. Limiting storage of fuel rods to fuel racks appreciably reduces the risk that the fuel rods could be mistaken for anything other than fuel, as no one expects to find fuel outside of the fuel racks.

3. The Licensing Board Should Disqualify David Lochbaum as an Expert Witness, or, in the Alternative, Not Allow Any of His Testimony Concerning Human Factors/Personnel/Management.

On January 25, 2002, the NRC staff filed "NRC Staff's First Set of Discovery Requests directed to Intervenors in the Reopened Proceeding," by which the Staff sought information regarding the persons that CCAM/CAM expected to provide sworn affidavits for the written presentation required in this Subpart K proceeding by 10 C.F.R. § 2.1113. The Staff also sought to discover the basis for CCAM/CAM's assertion that the loss of accountability of the two fuel rods at Unit 1 bears on the adequacy of administrative controls currently in place at the Unit 3 spent fuel pool.

Failing to receive answers to its discovery requests, objections to its discovery requests or a motion for a protective order, the Staff, on February 25, 2002, timely filed "NRC Staff Motion to Compel Connecticut Coalition Against Millstone and Long Island Coalition Against Millstone to Respond to NRC Staff's First Set of Discovery Requests Directed to Intervenors in the Reopened Proceeding." Oral argument was heard on that motion in a telephone conference call on February 28, 2002, which concluded with the Board's granting the Staff's motion and ruling that Intervenors must file responses to the Staff's discovery requests, including the document requests, by March 7, 2002. See Memorandum and Order (Telephone Conference Call, 2/28/02), March 6, 2002.

On March 7, 2002, Intervenors filed "Connecticut Coalition Against Millstone and Long Island Coalition Against Millstone's Response to NRC Staff's First Set of Discovery Requests in the Reopened Proceeding." The Staff's General Interrogatory No. 2 reads as follows:

With regard to reopened Contention 4, identify each person Intervenors intend or

expect to (1) provide sworn affidavits or declarations for the written filing for this Subpart K proceeding and (2) call as a witness to testify in any related subsequent evidentiary proceeding.

For each person Intervenor expect to provide sworn affidavits or declarations for the written filing for this Subpart K proceeding or expect to call as an expert witness: (a) state the details of each expert's education, employment history, and asserted area of expertise; (b) state the subject matter on which each of the witnesses is expected to provide expert testimony; (c) describe the facts and opinions to which each witness is expected to provide expert testimony, including a summary of the grounds for each opinion; and (d) identify all documents, data, or other information which each witness has reviewed and considered or is expected to rely on for his or her testimony. For purposes of answering this Interrogatory, the details of each witness's education and employment history may be provided by a resume attached to intervenor's response, in conjunction with the response to General Document request No. 2.

The Intervenor's response was:

David A. Lochbaum, nuclear safety engineer with the Union of Concerned Scientists, 16 P Street NW, Washington DC, who has been previously disclosed as an expert witness for the Intervenor in these proceedings, may provide a sworn affidavit or declaration in connection with the written filing for the Subpart K proceeding and he may present testimony in a subsequent evidentiary hearing. As to subsections (b), (c) and (d) the Intervenor does not have the requested information available at this time.

The Intervenor reserves the right to present other witnesses.

Specific Interrogatory No. 1 reads as follows:

To the extent that Intervenor asserts that the loss of accountability of the two individual spent fuel rods at Millstone Unit 1 bears upon the adequacy of administrative controls or procedures currently in place at the Millstone Unit 3 spent fuel pool, identify and fully explain all bases for such assertion.

Intervenor's response was as follows:

The Intervenor objects to this interrogatory as it calls for legal conclusions outside the scope of proper discovery.

Having received no further responses from Intervenor as of this writing, the Staff has no indication of what Intervenor might be filing today other than that David A. Lochbaum might be providing a sworn affidavit or declaration.

It is well established that persons who seek to present expert testimony must be qualified

to do so. In order to establish an expert witness's testimony as reliable, a party seeking to offer such a witness's expert opinion must show that the witness has the necessary qualifications to offer an expert opinion on the matter, or must be capable of questioning the soundness of the expert opinions of persons who do appear as witnesses in the proceeding. 10 C.F.R. § 2.743 (2002); *see, e.g., Duke Power Co. (William B. McGuire Nuclear Station, Units 1 & 2)*, ALAB-669, 15 NRC 453, 475 (1972). This standard is at the heart of the Commission's requirement of reliability.

While the Federal Rules of Evidence are not directly applicable to Commission proceedings, NRC adjudicatory boards often look to those rules for guidance, and have adopted the standard for expert witnesses enunciated in Rule 702 as allowing a witness to be qualified as an expert by "knowledge, skill, experience, training, or education" to testify "[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue." *McGuire*, ALAB-669, 15 NRC at 475; *Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 2 & 3)*, ALAB-717, 17 NRC 346, 365 n.32 (1983); *Philadelphia Elec. Co. (Peach Bottom Atomic Power Station Units 2 & 3)*, ALAB-701, 10 NRC 1517, 1524 (1982).

Mr. Lochbaum's testimony may, hypothetically, address such matters as how an apparent failure to follow a reporting regulation when two Unit 1 fuel rods were discovered to be unaccounted for demonstrates that the personnel in Unit 3 are incapable or unwilling to follow administrative procedures regarding the spent fuel pool⁶. Mr. Lochbaum has no training or experience in the area

⁶ Regarding apparent violations, if, as the inspection report concludes, information that was required to be reported was known on September 12, 2000, a report was due within thirty days of that date pursuant to 10 C.F.R. § 20.2201 (a)(ii). Thus, the report would have been due by October 12, 2000, and was, in fact made on December 14, 2000. The delay would have been a delay of two months, not three. Also, the Licensee has thirty days from the issuance of the inspection report, which was issued on February 27, 2002, to respond to the apparent violations. See letter from George Pangburn, Director, Division of Nuclear Materials Safety, Region 1, ' -NRC to J. Alan Price, Vice president, Nuclear Technical services, Dominion Nuclear Connecticut, Inc., February 27, 2000, forwarding the special inspection report. Thus, the licensee's response is due March 29, 2002.

of human factors and Intervenor offered no affidavits addressing human factors in their written presentation for the oral argument held on July 19, 2000. See LBP-00-26, 52 NRC 181 at 197 (2000). In the oral argument held on July 19, 2000 Judge Kelber specifically questioned intervenors about whether they had a qualified expert human factors analysis and noted that Mr. Lochbaum was not such an expert. See Tr. 346⁷. Therefore, any written testimony or declaration Mr. Lochbaum may offer in reference to Contention 4 regarding complexity of administrative procedures used to implement the new three region pool configuration and/or the ability to manage fuel of the Unit 3 workers should be disregarded.

To the extent that Mr. Lochbaum may testify regarding management issues, the Staff notes a recent decision of the Commission addressing contentions that raise management concerns. In *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-01-24, 54 NRC 349 (2001), the Commission addressed a licensing board rejection of a contention concerning removing radiological technical specifications from the technical specifications section

⁷ The specific exchange between Judge Kelber and Ms. Burton, counsel to Intervenor, was as follows:

Kelber: But is he an expert in human factors analysis, that is what I am asking? You are making a contention, which is very important, and what you are stating is that when there is an increased amount of trouble in carrying out an operation, there is an increased likelihood of error. And this may sound very common sense, but what we have found in risk analysis is that really, this is a matter for human factors analysis, and an awful lot depends upon what the nature of the procedures is. And I wanted to know whether you have someone who is skilled in human factor analysis, qualified as an expert in that field. And I don't think, with all due respect to Mr. Lochbaum, that he is qualified as an expert in human factors analysis, but maybe you have someone else who is.

Burton: Well, this may very well present the case that --

Kelber: That is -- if we were to go to an evidentiary hearing, that is the person that I would like to hear from.

Burton: That is just about what I was about to say, that your question seems to suggest yet another reason why there is a need --

Kelber: I wasn't making a reason. I was just saying that if we go there, that is the type of evidence that we would have to hear.

Burton: I understand, But, again, with respect to Mr. Lochbaum, he is a nuclear safety engineer, and I think that curriculum vitae establishes significant experience in this area which you mentioned.

Kelber: Don't try it, Ms. Burton. I have got lots of experience. I would never claim to be a human factors expert.

of those licenses to licensee controlled documents. Addressing Petitioners' allegation that the licensee could not be trusted to follow regulatory standards, the Commission noted that it had always insisted that for management or character to be an issue for adjudication, there must be a direct and obvious relationship between the character issues and the licensing action in dispute. *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-01-24, 54 NRC 349, 365 (2001), citing *Commonwealth Edison Co.* (Zion Nuclear Power Station, Units 1 and 2), CLI-99-4, 49 NRC 185, 189 (1999). The Commission noted that it had placed strict limitations on "management" and "character" contentions and that to accept Petitioners' reasoning would potentially insert management integrity issues into virtually all license amendment proceedings at facilities with prior violations, no matter the nature of the amendment. Further, when "character" and "management" issues were raised, the Commission expected them to be directly germane to the challenged licensing action. *Id.* at 366-67. It is not obvious what relationship, if any, the apparent violation of a reporting requirement bears to the management of fuel assemblies.

Since Intervenors have the burden of demonstrating that a genuine and substantial issue of material fact exists and that an evidentiary hearing is required to resolve the issues, as discussed above, it is imperative that they provide competent evidence to support their positions. Since Mr. Lochbaum lacks the expertise to provide competent evidence as to the issues herein, his testimony should be accorded no weight.

If Intervenors provide testimony of other experts, that testimony should be disregarded. The Board should not ignore Intervenors' frivolous response to its Order of March 6, 2002, but should require parties to adhere to the Board's discovery rulings. The Staff had the right to have its discovery requests answered. Failure to provide a timely response to the Staff's discovery request, followed by a frivolous response to the Board's order compelling responses, leaves the Staff in a position of not knowing what the Intervenors' case is. Because Intervenors have the burden of

demonstrating the existence of a material and substantial issue of material fact, the Staff should not be left in the position of not knowing what Intervenor will present. As regards documents, Intervenor should not be permitted to introduce documents other than those identified in their Response of March 7, 2002. The only document identified there is Mr. Lochbaum's *curriculum vitae*, which the Intervenor states that they have previously provided in these proceedings.

4. The Fact that Two Fuel Rods from Millstone Unit 1 cannot be Accounted for Does Not Increase the Chance of Criticality in the Unit 3 Spent Fuel Pool.

The contention as originally admitted was that the reliance on administrative controls posed an undue and unnecessary risk of a criticality accident. The reopened portion of the contention is that the loss of two fuel rods from Unit 1 is an example of the failure of an administrative control applicable to the Unit 3 SFP that increases the risk of a criticality accident in the Unit 3 SFP. However, there is no link between the loss of two fuel rods and the risk of a criticality accident in the SFP. The fact that the location of two BWR fuel rods at Millstone Unit 1 SFP could not be confirmed does not pose a criticality concern. Attard Aff. ¶ 5. Even if, hypothetically, these two rods were in the Unit 3 SFP, the boron concentration in the Unit 3 SFP effectively precludes criticality in the event of an error of a misplaced fuel assembly. *Id.* Two fuel rods are a small fraction of a fuel assembly. *Id.* Furthermore, the two rods in question are less reactive than any of the fuel in the Unit 3 Spent Fuel Pool. *Id.* This type of loss of accountability does not increase the risk of a criticality accident in the SFP.

Based on the foregoing, there are no genuine and substantial disputes of material fact or of law as to any aspect of the reopened Contention 4 and there is no issue raised in the reopened Contention 4 that requires the introduction of evidence in an adjudicatory proceeding for resolution.

D. NRC STAFF RESPONSES TO BOARD'S QUESTIONS FOR PARTIES

On March 6, 2002, the Licensing Board issued a memorandum and order requesting that the Staff and the Licensee answer two questions. The NRC Staff hereby responds.

Board Question Number 1

The extent to which [the Licensee and the Staff] are aware of NRC Regulatory Issue Summary 2001-12, "Nonconservatism in Pressurized Water Reactor Spent Fuel Storage Pool Reactivity Equivalencing Calculations," dated May 18, 2001, and whether it applies to matters at issue in this proceeding.

STAFF RESPONSE Number 1

The staff is aware of Regulatory Issue Summary (RIS) 2001-12. The staff does not believe that it materially affects Unit 3. Ulises Aff. ¶ 5. Any errors introduced into the final Region 3 k_{eff} would be more than offset by the following conservatisms in either the configuration analyzed or the actual plant configuration: (1) The Unit 3 analyses predicted that 425 ppm was required to maintain $k_{eff} < 0.95$, but the licensee agreed to a technical specification requirement to have a minimum of 800 ppm of boron present at all times. This additional 375 ppm of boron by itself will more than likely any errors introduced into the predicated k_{eff} by the use of reactivity equivalencing and allow the $k_{eff} < 0.95$ acceptance criterion to be met; (2) The actual boron concentration in the Unit 3 SFP is administratively controlled at a minimum of 2600 ppm. This means that there is a high likelihood that significant conservatism (on the order of 20 percent in delta- k) will be present at all times in the spent fuel pool; (3) The configuration analyzed was conservative in that all of the assemblies in the Region 3 racks were assumed to be at the minimum allowed burnup except for the misloaded or dropped assemblies. Ulises Aff. ¶ 5.

Board Question Number 2

With respect to the report of the Special Inspection 05000245/2001013, dated February 27, 2002 (which the Staff has provided to all parties and the Board), to what extent is the Millstone Corrective Action Plan, including the additions to the plan mentioned in the foregoing report, applicable to Millstone Unit 3.

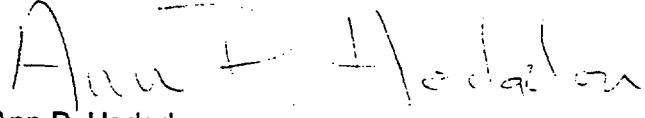
STAFF RESPONSE Number 2

None of the corrective measures are specifically directed toward Unit 3. Cerne Aff. ¶ 12. The corrective action is required to address the Unit 1 event. To the extent that the overall corrective action plan provides an enhancement to the programmatic station controls, future Unit 3 activities could be affected. *Id.* However, any such measures implemented with respect to Unit 3 would be viewed as improvements to the already existing and effective controls, and not as required corrective actions. *Id.*

CONCLUSION

Based on the foregoing, there are no genuine and substantial disputes of material fact as to any aspect of the reopened Contention 4 and there is no issue raised that requires the introduction of evidence in an adjudicatory proceeding for resolution.

Respectfully submitted,


Ann P. Hodgdon
Counsel for NRC Staff


Sara E. Brock
Counsel for NRC Staff

Dated at Rockville MD
this 18th day of March, 2002

March 18, 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
Dominion Nuclear Connecticut, Inc.)	Docket No. 50-423-LA-3
)	
(Millstone Nuclear Power Station,)	
Unit No. 3))	

AFFIDAVIT OF RONALD R. BELLAMY IN SUPPORT OF THE
NRC STAFF'S BRIEF AND SUMMARY OF RELEVANT FACTS, DATA AND
ARGUMENTS UPON WHICH THE STAFF PROPOSES TO RELY AT
ORAL ARGUMENT ON CONTENTION 4 IN THE REOPENED PROCEEDING

Ronald R. Bellamy, being duly sworn, does hereby state as follows:

1. My name is Ronald R. Bellamy. I am Chief of the Decommissioning and Laboratory Branch, Division of Nuclear Materials Safety in Region I, U.S. Nuclear Regulatory Commission. I have held this branch chief position for six years and have held various regional branch chief positions since 1983. Prior to that time, I was assigned to the Three Mile Island Program Office for three years, and also was assigned to other various positions in the Office of Nuclear Reactor Regulation from 1973 until 1980. I hold a Bachelor of Science degree in Chemical Engineering (1969), a Master's degree in Nuclear Engineering (1970) and a Doctor of Philosophy degree in Nuclear Engineering (1973). A statement of my professional qualifications is attached hereto as Exhibit A.
2. Millstone Unit 1 is a 660-Megawatt boiling water reactor that began commercial operations in December, 1970. The plant ceased operations in 1995 and is currently undergoing decommissioning.
3. I first became aware that there were two potentially unaccounted for fuel rods

from the Millstone Unit 1 spent fuel pool on November 16, 2000, when I was informed by Todd Jackson, lead inspector for Millstone 1 and leader of the Special Inspection Team, following a weekly plant status teleconference call.

4. Northeast Utilities undertook an investigation, the Fuel Rod Accountability Project (FRAP), into the unaccounted for fuel rods. Northeast Utilities also performed a Root Cause Analysis. I was the manager responsible for the Special Inspection, conducted onsite at Millstone in October 2001, to review the Northeast Utilities investigation into two unaccounted for spent fuel rods from the Millstone 1 spent fuel pool. The purpose of the Special Inspection was to review the thoroughness and completeness of Northeast Utilities' investigation. The special inspection team was also chartered to assess the root cause analysis, and to determine if Northeast Utilities was in compliance with NRC regulations. The findings of the Special Inspection Team are described in detail in the inspection report, which is attached hereto as Exhibit B.

5. The Special Inspection team determined the Northeast Utilities investigation into the two unaccounted for spent fuel rods was thorough and complete, and the conclusions were reasonable and supportable. Fuel assembly MS-557 was disassembled after a 1972 seawater intrusion into the Millstone 1 reactor coolant system, to determine the effect of chlorides in the seawater on fuel assembly components. Two rods, the tie rod and the center spacer capture rod, were not returned to the reconstituted assembly. The two fuel rods were stored in the northwest corner of the pool, outside of the fuel racks. In September and October 1979, contract workers cut up local power range monitors (LPRMs) that were stored in the spent fuel pool and placed them in shipping cask liners in the pool. LPRM hot sections may be similar in length and diameter to a fuel rod. The two rods stopped appearing on maps of the spent fuel pool in September, 1980.

The FRAP indicated the contractors may have assumed that fuel would only be stored in the fuel storage racks and that it is plausible that the contract workers could have mistaken the two

fuel rods for irradiated hardware, such as LPRMs. The NRC Special Inspection team found this FRAP conclusion to be reasonable and supportable. Throughout the 1980's, several shipments of waste from the Unit 1 spent fuel pool were made to two low level waste facilities, the facility in South Carolina at Barnwell and the Hanford facility near Richland, Washington. The shipments of waste included LPRMs and other irradiated hardware from the Unit 1 Spent Fuel Pool. As a result of the Special Inspection, the NRC team affirmed Northeast Utilities' conclusions that the missing fuel rods had most likely been shipped as low level waste to either Barnwell, South Carolina, or to the Hanford facility near Richland, Washington. The NRC team also concluded that, while it is highly unlikely the rods in their entirety remain in the Millstone 1 spent fuel pool, it is possible that fuel pellets or fragments remain on the spent fuel pool floor as a result of the cutting methods used to process waste hardware. The inspection team did not concur with the FRAP that GE Vallecitos was a potential location for the fuel rods, and determined that GE Vallecitos was not a plausible location. The FRAP report is attached hereto as Exhibit C.

6. The inspectors found the root cause analysis to be comprehensive and concurred with the conclusions regarding the reasons why accountability for the fuel rods was lost. The Root Cause Analysis report is attached hereto as Exhibit D. The inspectors also concluded that management controls and supervision of activities related to handling of special nuclear material and irradiated fuel were insufficient at the time accountability for the fuel rods was lost to prevent the loss of accountability. Sixteen corrective and preventive actions were recommended by Northeast Nuclear Energy Co.'s root cause assessment team, and Dominion Nuclear Connecticut, the current licensee, incorporated them into the Millstone Station corrective action program.

7. As part of the Special Inspection, the team reviewed the current administrative controls in place now at Millstone Unit 1, Unit 2, and Unit 3, and determined these are adequate to control and account for special nuclear material. The inspectors reviewed the current material

control and accounting procedures, which include the following improvements compared to earlier versions: provision for recording and tracking items of special nuclear material that are generated during fuel assembly reconstitution and other non-standard special nuclear material movement; an instruction to compare the results of a physical inventory with those of the previous physical inventory; and designation of fuel rods (in addition to assemblies) as units of special nuclear material. All special nuclear material and spent fuel at Millstone 1, 2, and 3 is accounted for, except for the two spent fuel rods from the Unit 1 spent fuel pool.

8. The Special Inspection team found two apparent violations concerning the Millstone 1 unaccounted for fuel rods. The first apparent violation is a failure to keep adequate records, establish adequate procedures for control and accounting, and conduct physical inventories of special nuclear material. The second apparent violation is a failure to report the loss of special nuclear material in a timely manner.

9. I understand that the current issue before the licensing board is limited to the failures of procedures or controls at Millstone Unit 1 that could carry over to Millstone Unit 3, thereby increasing the risk of a criticality accident in the Millstone Unit 3 spent fuel pool. Unlike Millstone Unit 1, procedures and controls at Unit 3 have been effective in accounting for all spent fuel, and for controlling the location of fuel. No discrepancies were identified at Unit 3 in accounting for all spent fuel or its location in the spent fuel pool, including the one individual fuel rod stored in a canister in the spent fuel racks. The Special Inspection team observed the location of the storage canister for the individual fuel rod in the spent fuel racks.

5

10. I hereby certify that the foregoing is true to the best of my knowledge, information and belief. I hereby certify that the FRAP report and the Root Cause Analysis report attached hereto are true and correct copies of what was received from Northeast Nuclear Utility Company. I hereby certify that the rest of the attachments are true and correct copies of the original.

Ronald R. Bellamy
Ronald R. Bellamy

Subscribed and sworn to before me
this 18th day of March, 2002

Roselyn H. Levin
Notary Public

My Commission expires: 3/11/04

Notarial Seal
Roselyn H. Levin, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires Mar. 11, 2004
Member, Pennsylvania Association of Notaries

March 18, 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
Dominion Nuclear Connecticut, Inc.)	Docket No. 50-423-LA-3
)	
(Millstone Nuclear Power Station,)	
Unit No. 3))	

AFFIDAVIT OF ANTONE C. CERNE IN SUPPORT OF THE
NRC STAFF'S BRIEF AND SUMMARY OF RELEVANT FACTS, DATA AND
ARGUMENTS UPON WHICH THE STAFF PROPOSES TO RELY AT
ORAL ARGUMENT ON CONTENTION 4 IN THE REOPENED PROCEEDING

Antone C. Cerne, being duly sworn, does hereby state as follows:

1. My name is Antone C. Cerne. I am the Senior Resident Inspector (SRI) at Millstone Unit 3. I have more than twenty-four years of nuclear experience, including over twenty-one years in the U.S. Nuclear Regulatory Commission's resident inspector program. For the past six years I have been the Millstone Unit 3 SRI. Prior assignments were at Seabrook Station and Pilgrim Nuclear Power Station. I have participated in more than thirty NRC team inspections at nuclear power plants around the country, with designation as team leader or assistant team leader on some of these inspections.

I was senior resident inspector at Millstone 3 during the conduct of the Independent Corrective Action Verification Program, recovery and startup activities, and had the responsibility for managing the "significant items list" inspection and closure, as part of the U.S. Nuclear Regulatory Commission's Inspection Manual Chapter 0350 process. I am qualified as both a Construction and Operations (Pressurized Water Reactor) Senior Resident Inspector. I hold a Bachelor of Science degree from the United States Military Academy (West Point), 1968, and a Master of Science degree in Nuclear Engineering from the Massachusetts Institute of Technology. A statement of my professional qualifications is attached as Exhibit E.

2. I have read the Intervenor's motion for reconsideration, dated January 29, 2001, the Licensing Board's Memorandum and Order of May 10, 2001, LBP-01-17, the Millstone Unit 1 (Docket Number 50-245) Licensee Event Report (LER) 2000-002-00, attached hereto as Exhibit H, along with supplements 2000-002-01, attached hereto as Exhibit I and 2000-002-02, attached hereto as Exhibit J. There is no new information set forth in any of these documents that alters any of the statements that I have subscribed and sworn to in my previous three affidavits on these matters.

3. For the existing spent fuel rack configuration in Unit 3, which includes the added racks described in the license amendment application submitted by the licensee, the proposed boron concentration in the spent fuel pool effectively precludes the possibility of a criticality accident caused by a fuel assembly misplacement.

4. Section 6.8.1 of the Millstone Unit 3 Technical Specifications (TS) states that written procedures shall be established, implemented, and maintained for refueling operations, as well as for typical safety-related activities (included by reference to Appendix A of Regulatory Guide 1.33, Revision 2 (Feb. 1978)) involving operations and other spent fuel pool storage functions. Millstone Unit 3 TS 6.8.1, "Administrative Controls" was previously submitted on June 30, 2000 as Staff's Exhibit 9. Section 13.5 of the Millstone Unit 3 FSAR requires plant procedures, including administrative procedures, to control the specifics of station operations. Millstone Unit 3 FSAR Section 13.5 was previously submitted on June 30, 2000 as Staff's Exhibit 10.

5. I first became aware of the unaccounted for Millstone Unit 1 spent fuel rods on November 16, 2000 when I was briefed about this situation by licensee personnel involved in the Unit 1 decommissioning activities. The new issues raised regarding the loss of two Millstone Unit 1 spent fuel rods are not related to Millstone Unit 3. Unlike the situation at Millstone Unit 1, there have been no reported problems with special nuclear material accountability at Millstone Unit 3.

Furthermore, the Unit 3 shutdown in 1996 was unrelated to any of the refueling concerns that were associated with Millstone Unit 1. At Millstone Unit 3, the licensee implemented a recovery process that led to a significant Millstone Station culture change and improvements that permitted the authorization of the restart of Unit 3 by the Commission in 1998.

6. Since the restart of Millstone Unit 3 from its sixth refueling outage in June 1999, the licensee's performance and overall plant operations have been satisfactory. See NRC Combined Inspection 50-245/99-08, 50-336/99-08 (Sept. 20, 1999) previously submitted on June 30, 2000 as Staff's Exhibit 33; Plant Performance Review-- Millstone Unit 3 (Mar. 3, 2000) previously submitted on June 30, 2000 as Staff's Exhibit 40; Annual Assessment Letter - Millstone Units 2 and 3 - Reports 05000336/2001-001 and 05000423/2001-001 (May 31, 2001) is attached hereto as Exhibit K ; Annual Assessment Letter - Millstone Units 2 and 3 (Report Nos. 50-336/02-001 and 50-423/02-001) (March 4, 2002) is attached hereto as Exhibit L. The last operational fuel cycle, from June 1999 to February 2001, encompassed a run of continuous operation of 585 days, and the current operational cycle, from April, 2001 to the present, represents a continuous run of almost one year. During any future fuel movements, the licensee is required to implement the applicable, approved procedures to ensure that all spent fuel assemblies are stored in the correct spent fuel rack locations and that the required double verification process is used to check spent fuel assembly movements to the designated storage rack positions. 10 C.F.R. Part 50, Appendix B, Criterion V. (2001).

7. I inspected and supervised other NRC inspectors in the review and observation of Millstone Unit 3 refueling activities during the refueling outage in May - June 1999, and again during the last refueling outage in February - March 2001. During licensee preparations for the latter refueling activities, I reviewed the licensee's administrative controls and witnessed the transfer of a number of new fuel assemblies from their dry storage locations to the new Region 1

fuel racks in the spent fuel pool (SFP). Even though any new fuel assembly could have been stored in any designated (3 out of 4) new fuel storage rack location without adverse impact upon criticality margins, I observed the use of the licensee's administrative controls, including double verification, to assure the proper placement of each new fuel assembly into the rack location where it was designated to be placed. Likewise during both aforementioned refueling outages, I witnessed the movement of fuel assemblies in the spent fuel pool, verifying the adequate use of administrative controls and the required double verification of fuel assembly placement into the designated SFP rack locations. For special nuclear material accountability, I verified that such fuel assembly transfers were documented, as procedurally prescribed, on a "Material Transfer Form."

8. Millstone Unit 1 LER 2000-002-00 was submitted pursuant to the requirements of 10 CFR 20.2201(b), which is entitled "Reports of theft or loss of licensed material." Under this regulation, the licensee is required in its written report, in part, to set forth information regarding the probable disposition of the licensed material involved and the possible radiation exposures of individuals. In this context, Section IV of the LER discusses an assessment of the health and safety aspects of the two unaccounted for fuel rods. Of the possible scenarios, an assessment of the possibility that the two unaccounted for fuel rods might still be located in the Millstone Unit 1 spent fuel pool is discussed. The statement in this LER paragraph IV.1 that is most pertinent to 10 CFR 20.2201(b) is: "If the rods remain in the SFP, they are stored safely with the other spent fuel and there is no undue threat to the health and safety of the public or plant workers."

The "criticality calculation" referenced by the licensee in LER Section IV.1 was performed to support the conclusion regarding the undue threat to workers or the public set forth above. In my opinion, contrary to the assertion of the intervenors that a challenge to criticality is implied, this LER Section IV discussion confirms the conservative criticality margin for the Millstone Unit 1 spent fuel pool configuration. This conservatism is entirely consistent with that of the Millstone Unit 3

spent fuel pool, as previously stated in paragraph 4 of my affidavit filed on June 30, 2000, regarding Millstone Unit 3: "For both the existing and 'new' spent fuel rack configurations, the proposed boron concentration in the spent fuel pool would effectively preclude the possibility of a criticality accident caused by a fuel assembly misplacement."

9. The core configuration of Millstone Unit 3 is different from that at Millstone Unit 1. At Unit 1 (a boiling water reactor), the core consisted of 580 fuel assemblies, each of which had fuel rods in a 7x7 or 8x8 square array. The fuel rods that are unaccounted for at Unit 1 were removed from a fuel assembly with a 7x7 array (i.e., 49 fuel rods). At Millstone Unit 3 (a pressurized water reactor), the core consists of 193 fuel assemblies, each in a 17x17 square array of 264 fuel rods. As stated by Laurence Kopp and Anthony Attard in their affidavit filed with the staff's opposition to the motion to reopen, the boron concentration in the Millstone Unit 3 Spent Fuel Pool effectively precludes criticality in the event of an error that results in a misplaced fuel assembly (i.e., a fuel assembly with 264 fuel rods). While there is no evidence to suggest the unaccounted for Unit 1 rods are misplaced in the Unit 3 spent fuel pool, a criticality accident would not be possible even considering such a hypothetical scenario.

10. As I stated in paragraph 7 of my affidavit dated June 30, 2000, in controlling fuel movements by the workers performing such activities, the licensee is required to implement the applicable procedures to ensure that "the required double verification process is used to check spent fuel assembly movement to the designated spent fuel racks." Therefore, the emphasis for the workers implementing such controls is upon the fuel assembly locations (either in the reactor pressure vessel or in the spent fuel pool), rather than the need for knowledge of specific fuel assembly enrichment, burnup, or decay time. During the last two Millstone Unit 3 refueling outages (May - June 1999 and February - March 2001), I confirmed that the fuel movement controls (i.e., a computer-based fuel tracking system, called "Shuffleworks" backed up by control room

"pegboard" designations for the location of any particular fuel assembly at any given time) were in place and were being used for all core offload and refueling movements.

11. In reviewing Millstone Unit 1 supplemental LER 2000-002-02, issued pursuant to the requirements of 10 CFR 20.2201(d), it was noted that Section II of this LER establishes the licensee's position with regard to the root cause of the loss of accountability of the two Unit 1 spent fuel rods and it further documents "certain behaviors and conditions that led to this event." Based upon my inspection of Millstone Unit 3 refueling activities and spent fuel pool operations over the last few years, the weaknesses and inconsistencies associated with this Unit 1 event, as documented in Section II of the LER, were not in evidence at Unit 3, particularly with respect to SFP activities, special nuclear material (SNM) controls, and an overall atmosphere of procedural compliance. Some facts which support this conclusion include: 1) spent nuclear fuel is not stored outside the fuel racks in the Unit 3 spent fuel pool; 2) an approved SNM Inventory and Control procedure has been implemented at Unit 3 since 1984 (i.e., before initial fuel loading at Millstone Unit 3) and has proven to be effective in assuring the control and placement of SNM in the proper, designated storage locations; 3) an approved spent fuel pool operations procedure has been effective at Unit 3 since 1989; and 4) seven refueling outages have taken place at Unit 3, to date, and have involved the proper movement of 193 fuel assemblies to the current reactor core, as well as the transfer of 573 spent fuel assemblies to their correct SFP rack storage locations. These facts, and the above conclusion they support regarding the lack of applicability of LER 2000-002-02 to Unit 3 activities, are consistent with my previous statements regarding licensee performance, plant operations, and the proper use of administrative controls (i.e., approved procedures) at Millstone Unit 3, as documented in my affidavits dated June 30 and July 17, 2000.

12. It should also be noted that while certain corrective actions are documented in

LER 2000-002-02, none of these corrective measures are specifically directed toward Millstone Unit 3. These are corrective actions required to address the cause of the Millstone Unit 1 event. These actions may be augmented by additional corrective measures, as may be described in the licensee's required response to the USNRC Region I letter dated February 27, 2002, transmitting inspection report (05000245/2001013), which documents apparent violations of NRC regulations with respect to this Unit 1 event. To the extent that the licensee's overall corrective action plan provides an enhancement to the programmatic station controls, future Unit 3 activities could be affected. However, any such measures implemented with respect to Unit 3 would be viewed as improvements to the already existing and effective controls, and not as required corrective actions.

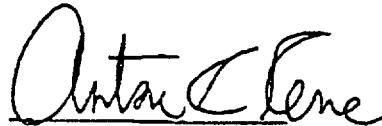
13. Administrative controls governing spent fuel pool operations and SNM controls have been effective in controlling the movement, placement, and location of spent fuel, including individual fuel rods, in the spent fuel pool racks at Millstone Unit 3. This has been confirmed by licensee corrective action and verification activities, conducted in response to the discovery that two fuel rods were missing from the spent fuel pool at Millstone Unit 1. Current inventory results have demonstrated that all the spent fuel is located where it should be in the Unit 3 spent fuel pool. In my opinion, this is a result of the proper implementation of administrative controls by the licensee, including the conduct of activities during the last refueling outage (February - March 2001) during which time the additional spent fuel racks were in place and three distinct fuel storage Regions were in effect. There is no information available to the NRC staff that would suggest that the licensee cannot effectively implement these same administrative controls in the future.

14. I am of the opinion that in dealing with the complexity of activities involved with the operation of a nuclear power plant, human errors, noncompliances and violations can never be totally eliminated. It has been my experience that such problems are normally very minor, with little or no impact. The entire body of administrative controls employed in the refueling operations

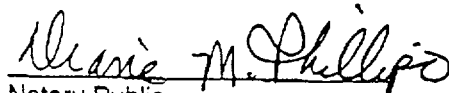
that I have inspected contains both the procedural specificity and the redundancy necessary to preclude a single human error from presenting a challenge to nuclear safety at Millstone Unit 3. The administrative controls at Millstone Unit 3 also possess sufficient rigor and defense in depth that, when implemented by trained and properly supervised workers, criticality in the spent fuel pool will be precluded. From both programmatic and institutional standpoints, the procedural controls and their implementation at Millstone Station have greatly improved since the 1980 time frame, when the accountability for the two Unit 1 rods was lost. At Millstone Unit 3, which received its full power license in 1986, such improvements are reflected both in the recent operational performance history, which as previously mentioned has been good, and in the current state of the unit's administrative controls, the implementation of which underlies such positive performance.

9

15. I hereby certify that the attachments to this affidavit are true and correct copies of the originals. I hereby certify that the foregoing is true and correct to the best of my knowledge, information and belief.


Antone C. Cerne

Subscribed and sworn to before me
this 18 day of March, 2002.


Notary Public

My Commission Expires: _____
DIANE M. PHILLIP
NOTARY PUBLIC
MY COMMISSION EXPIRES 12/31/2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
DOMINION NUCLEAR CONNECTICUT, INC)	Docket No. 50-423-LA-3
)	
(Millstone Nuclear Power Station,)	
Unit No. 3)	

AFFIDAVIT OF ANTHONY C. ATTARD IN SUPPORT OF
NRC STAFF'S BRIEF AND SUMMARY IN THE REOPENED PROCEEDING

Anthony C. Attard, being duly sworn, does hereby state as follows:

1. My name is Anthony C. Attard. I have been employed as a reactor Physicist/Engineer by the U.S. Nuclear Regulatory Commission (NRC) for almost twelve years. My tenure at the NRC has been spent exclusively in the Reactor Systems Branch (SRXB) in the Office of Nuclear Reactor Regulation. My assignments cover a wide range of licensing and operating reactor issues, such as reloads, technical specification changes, accident analysis, advanced reactors, boron dilution transients and probabilistic risk assessment methods. I have a Ph. D. in Nuclear Physics and Engineering from Carnegie-Mellon University and a Bachelor of Science in Mathematics and Physics from the University of Michigan. I have 25 years experience in the nuclear power industry, commercial and military reactors. A statement of my Professional Qualifications is attached hereto as Exhibit G.

2. Dr. Laurence I. Kopp and I provided an affidavit in support of the NRC Staff's Brief and Summary of Relevant Facts, Data and Arguments, filed June 30, 2000, in this proceeding. On January 8, 2001, we provided an additional affidavit in support of the NRC Staff's Opposition to the Intervenor's Motion to Reopen and Vacate, filed December 18, 2000. Dr. Kopp is now retired.

3. The purpose of this affidavit is to update the previously filed affidavits referenced above.

4. I note that in paragraph 25 of our affidavit filed in support of the Staff's Brief and Summary, filed June 30, 2000, referenced above, we discussed criticality concerns. In paragraph 25 we stated:

As part of the NRC review of the NNECO amendment request to establish three regions (Regions 1, 2 and 3) for fuel storage in the spent fuel pool, the Staff reviewed the Holtec report, which presented the criticality evaluation for the misloading of a fresh fuel assembly in the Millstone 3 spent fuel pool. Application, Exh. 1, Att. 5. Based on the analysis described in this report, NNECO has determined that a soluble boron concentration of only 425 ppm would be sufficient to maintain a 5% subcriticality margin in the event of a fuel assembly misloading event (i.e., a fresh PWR assembly enriched to 5 weight-percent U-235 inadvertently loaded into an empty cell in Region 3 with the remainder of the rack fully loaded with fuel of the highest permissible reactivity). The Staff noted that, for conservatism, NNECO has chosen a value of 800 ppm in the proposed TS. Based on experience in evaluating the criticality safety of spent fuel pools, we find the calculational methods and assumptions made in these analyses to be acceptable and conservative.

5. NNECO's inability to confirm the location of two BWR (boiling water reactor) fuel rods at its Millstone Unit 1 spent fuel pool (SPF) does not pose a criticality concern. Even if, hypothetically, these two rods were in the Millstone Unit 3 SPF, as Dr. Kopp and I attested to in our affidavit filed January 8, 2001, the proposed concentration for the Millstone Unit 3 SFP effectively precludes criticality in the event of an error that results in a misplaced fuel assembly. The reopened issue concerns only two fuel rods at Millstone Unit 1. Two fuel rods are a small fraction of a fuel assembly. Thus, the analysis contained in paragraph 25 of the June 30, 2000 affidavit bounds the effect of the two fuel rods that are of concern here. Further, the two fuel rods in question are less reactive than any fuel in the Millstone Unit 3 SPF. The previous testimony on criticality issues regarding the Millstone Unit 3 SPF remains valid.

6. I hereby certify that the foregoing is true and correct to the best of my knowledge, information and belief.

Anthony C. Attard

Subscribed and sworn to before me
this day of March 2002.

Notary Public

My commission expires: _____

March 18, 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
Dominion Nuclear Connecticut, Inc.)	Docket No. 50-423-LA-3
)	
(Millstone Nuclear Power Station,)	
Unit No. 3))	

AFFIDAVIT OF ANTHONY P. ULSES IN SUPPORT OF THE
NRC STAFF'S BRIEF AND SUMMARY OF RELEVANT FACTS, DATA AND
ARGUMENTS UPON WHICH THE STAFF PROPOSES TO RELY AT ORAL
ARGUMENT ON CONTENTION 4 IN THE REOPENED PROCEEDING

Anthony P. Ulses, being duly sworn, does hereby state as follows:

1. My name is Anthony P. Ulses. I have been employed at the Nuclear Regulatory Commission since 1992. My current position is Nuclear Engineer in the Safety Margins and Systems Assessment Branch in the Office of Research. I was previously a Nuclear Engineer in the Reactor Systems Branch in the Office of Nuclear Reactor Regulation. My responsibilities include performing reactor physics and criticality calculations. I have a Masters Degree in Nuclear Engineering from the University of Maryland and a Bachelors of Science and Engineering degree in Nuclear Engineering from the University of Michigan. A statement of my professional qualifications is attached hereto as Exhibit F.
2. The purpose of this affidavit is to address the Atomic Safety and Licensing Board's (Board) question regarding the applicability of RIS 2001-12, "Nonconservatism in Pressurized Water Reactor Spent Fuel Storage Pool Reactivity Equivalencing Calculations," to Millstone Unit 3.

3. As the technical contact for RIS 2001-12, of which I am also the author, I am aware of RIS 2001-12 and the ORNL report (ORNL/CR-6683), "A Critical Review of the Practice of Equating Reactivity of Spent Fuel to Fresh Fuel in Burnup Credit Criticality Safety Analyses for PWR Spent Fuel Storage." The ORNL report discusses nonconservative errors introduced by the use of "reactivity equivalencing." This process equates the reactivity of a spent fuel assembly to a hypothetical fresh assembly of the same geometry. Errors are introduced when this hypothetical "equivalent" assembly is used in conditions different from those used when it was defined. RIS 2001-12 and ORNL/CR-6683 are attached as Exhibits M and N.

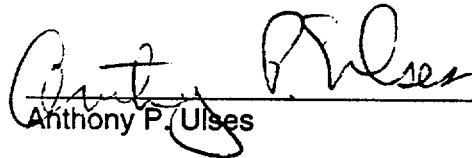
4. The only aspect of the ORNL report that applies to Millstone Unit 3 is the section discussing the use of "equivalent" assemblies in the presence of soluble boron. For the limiting case, Millstone Unit 3 credits 425 ppm of soluble boron to meet the $k_{eff} < 0.95$ acceptance criterion for the misloading or dropped fuel assembly accidents in Region 3 of its spent fuel pool. As the Millstone Unit 3 safety analysis of checkerboard loading patterns assumed the presence of fresh fuel in every storage location, the findings of the ORNL report related to checkerboard loading do not apply.

5. The information in the ORNL report does not materially affect Millstone Unit 3. This conclusion is based on my determination that any errors introduced into the final Region 3 k_{eff} would be more than offset by the following conservatisms in either the configuration analyzed or the actual plant configuration: (1) The Millstone Unit 3 analyses predicted that 425 ppm was required to maintain $k_{eff} < 0.95$, but the licensee agreed to a technical specification requirement to have a minimum of 800 ppm of boron present at all times. This additional 375 ppm of boron by itself will more than likely offset any errors introduced into the predicted k_{eff} by the use of reactivity equivalencing and allow the $k_{eff} < 0.95$ acceptance criterion to be met; (2) The actual boron concentration in the Millstone


spent fuel pool is administratively controlled at a minimum of 2600 ppm. This means that there is a high likelihood that significant conservatism (on the order of 20 percent in delta-k) will be present at all times in the spent fuel pool; (3) The configuration analyzed was conservative in that all of the assemblies in the Region 3 racks were assumed to be at the minimum allowed burnup except for the misloaded or dropped assemblies.

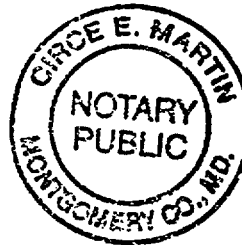
6. The exhibits attached hereto are true and correct copies of the documents relied upon in this affidavit.

7. I hereby certify that the foregoing is true and correct to the best of my knowledge, information and belief.


Anthony P. Ulises

Subscribed and sworn to before me
this day of March, 2002


Notary Public



My commission expires:  Circe E. MARTIN
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 1, 2003

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

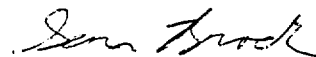
In the Matter of)	
)	
DOMINION NUCLEAR CONNECTICUT, INC.)	Docket No. 50-423-LA-3
)	
(Millstone Nuclear Power Station,)	
Unit No. 3))	
)	

NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney enters an appearance in the above-captioned matter. In accordance with 10 C.F.R. § 2.713(b), the following information is provided:

Name:	Sara E. Brock
Address:	U.S. Nuclear Regulatory Commission Office of the General Counsel Mail Stop: O-15D21 Washington, D.C. 20555
Telephone Number:	(301) 415-8393
Fax Number:	(301) 415-3725
E-mail Address:	seb2@nrc.gov
Admissions:	Virginia Supreme Court
Name of Party:	NRC Staff

Respectfully Submitted



Sara E. Brock
Counsel for NRC Staff

Dated at Rockville, MD
this 18th day of March, 2002.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
DOMINION NUCLEAR CONNECTICUT, INC.)	Docket No. 50-423-LA-3
)	
(Millstone Nuclear Power Station,)	
Unit No. 3))	
)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S BRIEF AND SUMMARY OF RELEVANT FACTS, DATA AND ARGUMENTS UPON WHICH THE STAFF PROPOSES TO RELY AT ORAL ARGUMENT ON CONTENTION 4 IN THE REOPENED PROCEEDING" and "NOTICE OF APPEARANCE OF SARA E. BROCK" in the above-captioned proceeding have been served on the following through electronic mail and with copies by deposit in the NRC's internal mail system, or through electronic mail with copies by deposit in the U.S. Postal Service as indicated by an asterisk, this 18th day of March, 2002:

Charles Bechhoefer, Chairman
Administrative Judge
Atomic Safety and Licensing Board
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
(E-mail copy to CXB2@nrc.gov.)

Dr. Richard F. Cole
Administrative Judge
Atomic Safety and Licensing Board
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
(E-mail copy to RFC1@nrc.gov.)

Office of the Commission Appellate
Adjudication
Mail Stop: O 16C-1
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dr. Charles N. Kelber
Administrative Judge
Atomic Safety and Licensing Board
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
(E-mail copy to CNK@nrc.gov.)

Office of the Secretary
ATTN: Rulemaking and Adjudications Staff
Mail Stop: O 16C-1
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
(E-mail copy to
HEARINGDOCKET@nrc.gov.)

Lillian M. Cuoco, Esq.*
Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Building 475/5
Rope Ferry Road (Route 156)
Waterford, Connecticut 06385
(E-mail copy to Lillian_Cuoco@dom.com.)

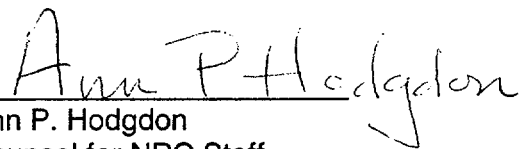
Nancy Burton, Esq.*
147 Cross Highway
Redding Ridge, CT 06876
(E-mail copy to
nancyburtonesq@hotmail.com.)

Adjudicatory File
Atomic Safety and Licensing Board Panel
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

David A. Repka, Esq.*
Donald P. Ferraro
Counsel for Dominion Nuclear
Connecticut, Inc.
Winston & Strawn
1400 L. Street N.W.
Washington, D.C. 20005-3502
(E-mail copy to drepka@winston.com.)

Diane Curran, Esq.*
Harmon, Curran, Spielberg & Eisenberg
1726 M Street, N.W., Suite 600
Washington, D.C. 20036
(E-mail copy to
dcurran@harmoncurran.com)

Michelle McKown, Esq.
Atomic Safety and Licensing Board Panel
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001


Ann P. Hodgdon
Counsel for NRC Staff

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Docket No. 50-423-LA-3

Exhibit A	Ronald Bellamy, Statement of Professional Qualifications
Exhibit B	FRAP report ML012850473 10/05/01
Exhibit C	Root Cause Analysis ML020030327 10/29/01
Exhibit D	Special Inspection Report ML020660003 2/28/02
Exhibit E	Antone Cerne Statement of Professional Qualifications
Exhibit F	Anthony Uises, Statement of Professional Qualifications
Exhibit G	Anthony Attard, Statement of Professional Qualifications
Exhibit H	Licensee Event Report (LER) 002-00 ML010230082 1/11/01
Exhibit I	LER 002-01 ML011010081 3/30/01
Exhibit J	LER 002-02 ML020150002 11/2/01
Exhibit K	Annual Assessment Letter- Millstone Units 2 and 3 Reports 05000336/2001-001 ML011510458 5/21/01
Exhibit L	Annual Assessment Letter Report Nos. 50-336/02-001 (Mar. 4, 2002) ML 20630567 3/4/02
Exhibit M	Regulatory Issue Summary (RIS) 2001-12 ML010990300 5/18/01
Exhibit N	ORNL/CR 6683 ML003751298 9/30/00

Exhibit 1	Application, Letter to US NRC from RP Necci, March 19, 1999.
Exhibit 9	Millstone Unit 3 TS 6.8.1 "Administrative Controls"
Exhibit 10	Millstone Unit 3 FSAR Section 13.5

- Exhibit 33 NRC Combined Inspection 50-245/99-08, 50-336/99-08 (Sept. 20, 1999)
- Exhibit 37 Application Supplement Dated May 5, 2000
- Exhibit 38 Application Supplement Dated June 16, 2000
- Exhibit 40 Plant Performance Review Millstone Unit 3 Mar. 3, 2000

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Docket No. 50-423-LA-3

Lillian M. Cuoco, Esq.**
Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Building 475/5
Rope Ferry Road (Route 156)
Waterford, Connecticut 06385
(E-mail copy to Lillian_Cuoco@dom.com.)

Nancy Burton, Esq.
147 Cross Highway
Redding Ridge, CT 06876
(E-mail copy to
nancyburtonesq@hotmail.com.)

Adjudicatory File*
Atomic Safety and Licensing Board Panel
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

David A. Repka, Esq.
Donald P. Ferraro
Counsel for Dominion Nuclear
Connecticut, Inc.
Winston & Strawn
1400 L. Street N.W.
Washington, D.C. 20005-3502
(E-mail copy to drepka@winston.com.)

Diane Curran, Esq.
Harmon, Curran, Spielberg & Eisenberg
1726 M Street, N.W., Suite 600
Washington, D.C. 20036
(E-mail copy to
dcurran@harmoncurran.com)

Michelle McKown, Esq.*
Atomic Safety and Licensing Board Panel
Mail Stop: T 3F-23
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

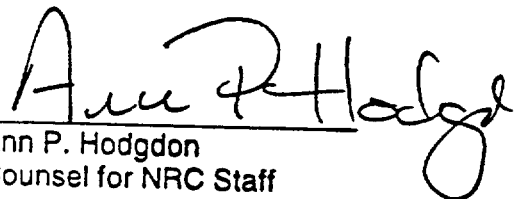

Ann P. Hodgdon
Counsel for NRC Staff

EXHIBIT A

RONALD B. LAMMY

~~Ph.D.~~ 1973 - Nuclear Engineering (Ohio State University)
~~MS~~ 1970 - Nuclear Engineering (Ohio State University)
~~BS~~ 1969 - Chemical Engineering (Lehigh University)

Dr. Bellamy was assigned as Chief, Decommissioning and Laboratory Branch, Division of Nuclear Materials Safety, Region I, in 1995. From 1991 until 1995, he served as Chief, Nuclear Materials Safety Branch, Division of Nuclear Materials Safety, Region I. From 1983 to 1991, he served as Chief of the Facilities Radiation Safety and Safeguards Branch, Division of Radiation Safety and Safeguards, Region I. Prior to being assigned to Region I, Dr. Bellamy was in the Office of Nuclear Reactor Regulation. From March 1980 to February 1983, he was the Chief of Technical Support Section located at Three Mile Island, and from March 1979 until March 1980 he was detailed to the Rogovin Committee investigating the accident at Three Mile Island. Prior to being stationed at Three Mile Island, he held a number of technical positions including assignments in the Effluents Treatment Systems Branch, the Accident Evaluation Branch, and the Siting Analysis Branch. In 1977 he also spent six months as an ACRS Fellow.

Aggression
Number
ML012850473

EXHIBIT B

:

EXHIBIT C

Accession
Number
MLO20030327

EXHIBIT D

Accession
Number
ML02066003

EXHIBIT E

NAME: ANTONE C. CERNE

ORGANIZATION: USNRC, Region I

TITLE: Senior Resident Inspector, Millstone Unit 3

EDUCATION: B.S., United States Military Academy (West Point), 1968
(graduated in top 1% of class)

M.S., Massachusetts Institute of Technology (MIT), 1972,
Nuclear Engineering

Mellon (post-graduate) Fellowship, MIT, 1989, Program in Science,
Technology and Society

EXPERIENCE: Over twenty-four years nuclear experience including:

Approximately twenty-two years in the USNRC resident inspection
program, including the last six (+) years at Millstone Unit 3, with prior
assignments at Seabrook Station and the Pilgrim Nuclear Power Station;

Temporary USNRC assignment as a technical assistant to Commissioner
Kenneth Carr, and details to the agency's special review effort for
Comanche Peak, the NRC Regulatory Review Group, the NRR South
Texas Project Task Force, and the NRR group reviewing the
Construction Inspection Program for Future Reactors;

Participation in over thirty NRC team inspections at nuclear power plants
around the country, with designation as team leader or assistant team
leader on some of these inspections;

Senior Resident Inspector at Millstone Unit 3 during conduct of the
Independent Corrective Action Verification Program, recovery, and
startup activities, including responsibility for managing the "significant
items list" inspection and closure, as part of the USNRC Inspection
Manual Chapter 0350 process;

Qualification as both a Construction and Operations (Pressurized Water
Reactor) Senior Resident Inspector.

AWARDS: USNRC (agency-level) award recognitions include:

NRC Resident Inspector of the Year, 1985 (first time award was
presented);

NRC Meritorious Service Award for Resident Inspector Excellence, 1992;

NRC Distinguished Service Award for Senior Resident Inspector
Excellence, 1999.

EXHIBIT F

Anthony P. Ulses

Education

Master's of Science (MS) in Nuclear Engineering
University of Maryland at College Park, May 1999.

Bachelor's of Science and Engineering (BSE) in Nuclear Engineering, *Cum laude*
University of Michigan at Ann Arbor, August 1992.

Experience

United States Nuclear Regulatory Commission
Nuclear Engineer, Office of Research 7/01-Present

United States Nuclear Regulatory Commission
Nuclear Engineer, Reactor Systems Branch, Division of Systems Safety and Analysis 5/93-7/01

United States Nuclear Regulatory Commission
Graduate Fellow, Advanced Reactors Project Directorate 9/92-5/93

Computer Code Development

- Maintained and upgraded legacy physics codes on UNIX workstations
- Developed VIKTORIA code for fuel channel analysis
- Coupled TRAC and NESTLE codes
- Assisted in NEWT development

Computer Code Analysis

- SCALE Fuel lattice criticality studies, depletion and collapsed cross section preparation
- MCBEND Reactor pressure vessel fluence studies
- NEWT Fuel power distributions, depletion and collapsed cross sections
- DOORS 3.2 3D Transport Calculations
- TRAC/NESTLE 3D BWR ATWS Studies
- DRAGON 3.2 Fuel power distributions, depletion and collapsed cross sections

Computer Codes

- DANTSYS 3.1, MONK

Computer Languages and Operating Systems

- UNIX, Fortran 90/95, Fortran 77, C, Windows, DOS, PVM

Regulatory Experience:

- License amendment evaluations
- Fuel manufacturer inspections
- Performing Audit Calculations of Licensee Analyses

General Experience:

- Managing High Performance Computer Networks
- Digital UNIX System's Administration

EXHIBIT G

EXPERIENCE

REACTOR PHYSICIST

1990 to Present

U. S. Nuclear Regulatory Commission, Rockville, MD.

- Twenty five years in the Nuclear Industry. This includes conducting safety assessments (conformance with NRC rules, regulations, and guidelines), at the Vendor or licensee's main office or nuclear facility.
- Lead Engineer, responsible for the review of the neutronics and thermal-hydraulic analyses of existing reactors and advanced reactors, such as, the Westinghouse AP600 (Advanced Passive) reactor, and the ABB-CE System 80+ reactor. Experienced in analyzing and participating in thermal-hydraulic testing of existing fuels and advanced reactor fuels at various Vendor sites in the U.S. and abroad. These tests were designed to arrive at a more efficient nuclear fuel, contributing to a safer fuel while enhancing the performance and economics of operation of the nuclear plant.
- Lead Engineer, responsible for the review of the neutronics and thermal-hydraulic of the Tritium Production Core (TPC), in conjunction with the Department of Energy.
- Member of the NRC team overseeing the DOE usage of weapon grade material (Plutonium) in commercial reactors.
- Consultant to the Office of International Program in fuel management, reload and safety analysis, shutdown margin, neutronics and thermal-hydraulic methodologies.
- Frequently requested to brief foreign personnel from nuclear facilities around the world, regarding: control rod misalignment, mixed fuel reloads, and computer codes.
- Recognized as the in-house expert in safety reviews of Vendor's new fuel "Critical Heat Flux (CHF) Correlation development. This includes review of analytics, and pertinent computer codes, such as VIPRE, CASMO, SIMULATE, COBRA, etc.
- Recognized in-house expert in transient safety analysis of the Small Break Loss of Coolant Accident (SBLOCA), boron dilution event.
- Currently, tasked with assuming lead responsibilities regarding reviews of on-site storage and surface storage of commercial spent fuel at nuclear facilities.
- Performed end-of-cycle fission products (Isotopic) inventory studies.
- Performed evaluations and inspections of complex technical issues, regulations and guidelines as well as prepare Safety Evaluation Reports (SER) and inspection reports.
- Prepared technical position papers and evaluations, provide requested information, make presentations to NRC management, the advisory committee on reactor safe guards (ACRS), the Chairman, and the Commission in support of any "high priority" technical issue that may come up.
- Served as member of various committees including working groups, and subcommittee task forces regarding neutronics and thermal-hydraulic issues.
- Identified and evaluated necessary confirmatory research to be performed by the office of Nuclear Regulatory Research, in areas of steady-state, transient neutronics and thermal-hydraulics safety issues.
- Keep appropriate levels of management aware of key issues and decisions made.
- Drafted correspondence and reports in response to inquiries received from the Commission, members of Congress, other Federal Agencies, state and local governments and the general public.
- Technical Assistant to the Division of System Safety and Analysis (DSSA), responsible for providing technical input to the decision making process, as well as assuming responsibility for administering the division contract budget.

Significant Accomplishments:

- As lead investigator at a Vendor safety inspection, uncovered unaccounted biases built into the safety limit calculation, significantly effecting the margin of safety associated with the operating limit.

ML00002 65711

- Immediate response by the Vendor resulted in a successful resolution of the problem.
- In reviewing a technical submittal, discovered that the authors of the submittal had made a serious mathematical mistake that could have lead to a reactor operating at a power level much higher than it was licensed allowed. The problem was corrected, leading to an acceptable resolution of the problem.
- Recognized for making significant contributions to the Office of International Program byway of presenting technical briefings to foreign representatives in a timely, clear, and concise manner.
- Independently propose staff positions and responses to safety concerns that consistently result in a positive action.
- Reviewed, recommended and implemented changes to codes and standards, Regulatory Guides, NRC regulations and policies.
- Participated in and led numerous research review groups and recommended research or changes in research programs.
- Represented the NRC in technical meetings with industry and academia. Recommended directions that resulted in a successful resolution and closure.
- Recognized with a special award by the division Director for preparation of the division's budget of \$8M/year.

ADJUNCT PROFESSOR

University of Maryland

1990 to Present

- Responsible for teaching required undergraduate and graduate levels courses (Reactor Kinetics, Fuel Management, Reactor Safety Analysis, Radiation Theory and Dosimetry, Reactor Systems, Thermal-Hydraulics, Fluids Mechanics, and Nuclear Engineering) within the Office of Professional Development (OPD).
- Consultant to the OPD in course development, course review, program structure and marketing of the nuclear program to government laboratories, nuclear facilities and the private sector. Research advisor to graduate students.
- Committee member responsible for formulating and establishing the Health Physics degree program at the University of Maryland, within the Office of Special Programs.
- Consultant to OPD regarding the establishment of the distance learning program in Nuclear Engineering.
- Responsible for formulating and implementing computerized nuclear engineering courses as part of the nuclear program at the University of Maryland.
- Subject matter expert in such fields as Nuclear Physics, Nuclear Engineering, Thermal-Hydraulics, and Fluid Dynamics.
- Travel extensively on behalf of the University of Maryland to off campus locations, either to teach required degree courses or consult at the site. This is part of the computer distance learning program.

Significant Accomplishments:

- Successfully implemented the Nuclear Engineering Program via distance learning.
- Evaluated and updated all the mid-to-upper level courses in the Nuclear Engineering Program.
- Contributed significantly to the Hazardous Waste Management Degree Program.
- Chairman of the Health Physics Committee since 1997.
- Successfully promoted the Health Physics and the Nuclear Degree Program at various institutions and locations.

SENIOR SCIENTIST

B-K Dynamics, Rockville, MD

1986 to 1990

- Defense Contractor to DOD, DOE, NAVSEA, and National Laboratories.

- Responsible for soliciting and working my own contracts in such areas as the Strategic Defense Initiative (SDI), SP-100 space based reactor program.
- Coordinated the efforts of major corporations Raytheon, General Dynamics, and Motorola, in the nuclear hardening of the Navy's STANDARD Missile (SM-2).
- Generated the initiative with NAVSEA to extend the hardening program to include High Power Microwave (HPM) hardening.
- Compiled extensive lists of emerging and maturing technologies for the Air Force and U.S. Department of Research and Engineering (USDR&E).

Significant Accomplishments:

- Resolved key technical issues while maintaining open channels of communications between the participating agencies, laboratories and companies.
- Evaluated and compiled a list of Allied Technologies pertinent to the Strategic Defense Initiative (SDI) as Lead Scientist working on the SP-100 program.

NUCLEAR SCIENTIST/ ENGINEER

1981 to 1986

Westinghouse-Bertis, Pittsburgh, PA

- Coordinated and managed the steady-state and transient neutronic and thermal-hydraulic re-analysis program for the Nimitz Class Reactors.
- Lectured in nuclear physics and mathematics at the Westinghouse-Bettis Nuclear Engineering School.
- Participated in numerous special and emergency task forces.

Significant Accomplishments:

- Successfully completed the re-analyses of the Nimitz class nuclear reactors.
- Received numerous accolades regarding my teaching techniques at the Westinghouse- Bettis Nuclear Engineering School.

NUCLEAR SCIENTIST/ENGINEER

1979 to 1981

B-K Dynamics, Rockville, MD

- Defense Contractor--Responsible for the design, computer simulation, and building of a new electron gun (Gyrotron).
- Team member responsible for designing and simulating the building of a free electron laser (FEL) gun at the Naval Research Laboratory in Washington D.C.

Significant Accomplishments:

- The FEL research effort resulted in breakthroughs in electron beam intensity development.

MECHANICAL DESIGN ENGINEER

1969 - 1971

McLaren Motor Racing, Collinbrook, England

- Actively participated in the design, development and production of Grand Prix, CAN-AM and Indianapolis 500 cars.

Significant Accomplishments:

- Five CAN-AM Championships.
- Three Formula One (F1) Grand Prix Championships.

EDUCATION

CARNEGIE-MELLON

Ph.D., Nuclear Physics & Engineering, 1985

INDIANA UNIVERSITY

MS Nuclear Physics, 1979

UNIVERSITY OF MICHIGAN

BS, Physics and Mathematics, 1976

SECURITY CLEARANCE

Q Clearance(Active); Top secret and SBI , (In-active).

LIST OF PUBLICATIONS FOR
ANTHONY C. ATTARD

- Boron Dilution Reactivity Transients. An Overview of Past and Present Events. Published in NUREG/IA, December 1996.
- Standard Missile-2 Block IV - Nuclear Hardening Status, TR-9-34, 17 November 1989, UNCLASSIFIED.
- The Nuclear Survivability Working Group (NSWG) Yearly Summary Report, TR-8-18, 31 December 1988, UNCLASSIFIED.
- Nuclear Driven X-Ray Laser (U), BKD-9978-C-88, 28 April 1988, CONFIDENTIAL.
- High Power Microwave (HPM) Susceptibilities/Vulnerabilities Considerations (U), BKD-9927-S-88, 18 February 1988, SECRET.
- 1987 OSD High Priority Militarily Critical Technologies List (MCTL), TR-8-05, November 1987, UNCLASSIFIED.
- WSS Effectiveness Analysis: Threat Scenarios, September 1987, UNCLASSIFIED.
- Users Guide to the Militarily Critical Technologies List (MCTL) and Supporting Documentation, TR-7-30, August 1987, UNCLASSIFIED.
- DoD-Wide Signal Processing Overview, TR-7-23, 8 July 1987, UNCLASSIFIED.
- IBM SCIMS, TR-7-08, February 1987, UNCLASSIFIED.
- Master List of Militarily Significant Emerging Technologies, TR-7-05, 12 January 1987, UNCLASSIFIED.
- Linkage of the Militarily Critical Technologies List (MCTL) to Generic Weapons Systems, TR-6-845, November 1986, UNCLASSIFIED.
- Record of International Armaments Cooperation Meetings to Develop a Short-Range Anti-Radiation Missile (SRARM), TR-6-835, 31 October 1986, UNCLASSIFIED.
- Plan for FORECAST II: International Cooperation, TR-6-815, September 1986, UNCLASSIFIED.
- Identification of the Air Force Emerging Technologies and Militarily Significant Emerging Technologies, TR-6-810, 19 August 1986, UNCLASSIFIED.
- DoD-Wide Technology Base Study Program Supporting Sensors and Signal Processing, Volume II - Sensor/Signal Processing Susceptibility and Hardening (U), BKD-9126-SNF-86, August 1986, SECRET NOFORN.
- Use of High Power Microwaves as Tactical Directed Energy Weapons (U), BKD-9076-S-86, 21

July 1986, SECRET.

System/Technology Linkage, Air-to-Ground Missiles/Guided Bombs, TR-6-804, 16 July 1986, UNCLASSIFIED.

"A Resolution of the Stiffness Problem of Reactor Kinetics."

Y.A. Chao and A.C. Attard, Nuclear Science and Engineering, 90, 40-46, (1985).

"Stiffness Confinement Method for Solving Nuclear Reactor Kinetics Equations", A.C. Attard, Doctor of Philosophy Thesis, Carnegie Mellon University, Pittsburgh, PA (1985).

Report of the 1982 Defense Science Board Summer Study on New Weapons Concepts Made Possible by Advanced Technology (U), BKD-6979, November 1979, SECRET.

Directed Energy Technology Strategy for Navy 6.2 Program (U), BKD-5358, November 1979, SECRET.

Threat Missile Models for High Power Radiation Damage Studies (U), BKD-5800, March 1980, SECRET.

Test of the Factorization Approximation in the $^{40}\text{Ca}(p,2p)^{39}\text{K}$ Reaction at 148.2 MeV. W.P. Jones, D.W. Devins, D.L. Friesel, and A.C. Attard, R.S. Henderson, I.A. Svalbe, B.M. Spicer, V.C. Officer and G.G. Shute, Melbourne University. Bull. Am. Phys. Soc. 23, 594 (1978)

Experimental Test of the Factorization Approximation in the Reaction $^{40}\text{Ca}(p,2p)^{39}\text{K}$ at 148.2 MeV. P.G. Ross, N.S. Chant, D.W. Devins, D.L. Friesel, W.P. Jones, A.C. Attard, R.S. Henderson, I.A. Svalbe, B.M. Spicer, V.C. Officer, and G.G. Shute, Phys. Rev. Letters 40, 1439 (1978).

Concept Feasibility of Laser Propulsion and High Power Microwave Techniques in Soviet Non-Nuclear Kill ABM and Anti-Satellite Applications (U), SECRET.

$^{40}\text{Ca}(p,2p)^{39}\text{K}$ Reaction at 150 MeV, D.W. Devins, D.L. Friesel, W.P. Jones, A.C. Attard, R.S. Henderson, I.A. Svalbe, B.M. Spicer, V.C. Officer, and G.G. Shute, Bull. Am. Phys. Soc. 22, 1023 (1977).

Multistep Processes in the $^{12}\text{C}(p,2p)^{11}\text{B}$ Reaction at 100 MeV in an Asymmetric Energy Sharing Mode. D.W. Devins, D.L. Friesel, W.P. Jones, and A.C. Attard, Indiana University, I.A. Svalbe, V.C. Officer, R.S. Henderson, B.M. Spicer, and G.G. Shute, University of Melbourne.

Accession
Number
ML010230082

EXHIBIT H

EXHIBIT I

Accession
Number
ML011010081

EXHIBIT J

Accession
Number
ML 02015800 2

EXHIBIT K

Accession
Number
ML011510458

EXHIBIT L

Accession
Number
MLO20630567

EXHIBIT M

Accession
Number
ML 010990300

EXHIBIT N

Accession

Number

ML003751298